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**STUDY ON THE IMPACT OF DEMOGRAPHIC VARIABLES ON THE PURCHASE OF BATHING SOAP**

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**ABSTRACT**

Every company wants to reach and serve the maximum number of customers, but it cannot satisfy all the customers with limited varieties in that product category. To understand the preferences of society, the market is divided into various segments based on certain common characteristics. Dividing the whole market on the basis of demographics is the most widely used methods in the market segmentation. But with the changing scenario in the markets and changing habits of the customers, the needs and requirements of the individuals representing different age groups show no consistency. This research paper is an attempt to analyse the impact of demographical variables on the purchase behavior of bathing soap.

**KEYWORDS**

segmentation, consistency.

**JEL CODE**

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**INTRODUCTION**

Age is one of the most common and relevant variable in demographic segmentation. The reason can be that needs and wants changes with the change in age profile of the customers. A youngster or teenager look for stylish things might want a mobile phone but an earning professional will want a communicator with lots of extra features such as email and file editing support. Thus, even though the basic functionality of the product is same, the wants are different. This is the primary reason for using age as a variable in demographic segmentation.

**OBJECTIVE OF THE STUDY**

The objective of the study was to analyse the impact of demographical variables on the purchase behavior of bathing soap.

**SCOPE OF THE STUDY**

The study was restricted to the bathing soap and the respondents were taken from the Chandigarh Union Territory. The data was collected during June-August, 2018.

**RESEARCH METHODOLOGY**

The study was descriptive in nature; a structured questionnaire was used for this research. Random sampling technique was used to select 500 customers of the bathing soap and the respondents were contacted personally for the same. The study was carried out in Chandigarh Union Territory and for data analysis, IBM SPSS software was used

**DATA COLLECTION AND ANALYSIS**

Demographical Analysis of the 500 respondents:

	Frequency	Percent	Valid Percent	Cumulative Percent
Male	376	75.2	75.2	75.2
Female	124	24.8	24.8	100.0
Total	500	100.0	100.0	

It was found that out of the total respondents, 75.2% were male and only 24.8% were representing female category.

	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 20	13	2.6	2.6	2.6
Between 20 to 30	301	60.2	60.2	62.8
Between 30 to 40	111	22.2	22.2	85.0
More than 40	75	15.0	15.0	100.0
Total	500	100.0	100.0	

Most of the respondents (60.2%) were in the age group of 20 to 30, 22.2% were the respondents in the age group of 30 to 40, 15% respondents were over 40 and very little (2.6%) were below 20 years.

	Frequency	Percent	Valid Percent	Cumulative Percent
No Income	163	33	33	33
Less than 10k	75	15	15	48
Between 10k to 20k	86	17	17	65
More than 20k	176	35	35	100
Total	500	100	100	

33% respondents were not having any income as most of them were the students and some of them were looking for job, where as 15% respondent were earning less than Rs10,000 per month, 17% respondents were earning between Rs 10000 to Rs 20000 and a large number of the respondents (35%) were earning more than Rs 20000 per month.

	Frequency	Percent	Valid Percent	Cumulative Percent
Un Married	200	40.0	40.0	40.0
Married	300	60.0	60.0	100.0
Total	500	100.0	100.0	

60% respondents were married and 40 % of the respondents were unmarried.

	Frequency	Percent	Valid Percent	Cumulative Percent
No Education	25	5.0	5.0	5.0
School	73	14.6	14.6	19.6
Graduation	199	39.8	39.8	59.4
Post Graduation	203	40.6	40.6	100.0
Total	500	100.0	100.0	

40.6 % of the respondents were post graduate, 39.8% respondents were graduates, and 14.6% have done basic schooling only, only 5% were having no education. This shows the increasing number of literacy rate in Chandigarh

**TABLE 6: RELATIONSHIP BETWEEN BUYING ROUTINE OF BATHING SOAP AND THE AGE OF THE RESPONDENTS**

			Age				Total
			Less than 20 years	Between 20 to 30 years	Between 30 to 40 years	More than 40	
How often bathing soap is being purchased	Once in a week	Count	0	12	0	0	12
		% within Age	.0%	4.0%	.0%	.0%	2.4%
	Once in fortnight	Count	0	64	0	0	64
		% within Age	.0%	21.3%	.0%	.0%	12.8%
	Once in a month	Count	0	114	37	38	189
		% within Age	.0%	37.9%	33.3%	50.7%	37.8%
	Not Fixed	Count	13	111	74	37	235
		% within Age	100.0%	36.9%	66.7%	49.3%	47.0%
Total		Count	13	301	111	75	500
		% within Age	100.0%	100.0%	100.0%	100.0%	100.0%

**TABLE 7: CHI-SQUARE TESTS**

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	82.585a	9	.000
Likelihood Ratio	111.646	9	.000
Linear-by-Linear Association	21.038	1	.000
N of Valid Cases	500		

**TABLE 8: SYMMETRIC MEASURES**

	Value	Asymp. Std. Errora	Approx. Tb	Approx. Sig.
Interval by Interval Pearson's R	.205	.034	4.682	.000c
Ordinal by Ordinal Spearman Correlation	.204	.041	4.649	.000c
N of Valid Cases	500			

- a. Not assuming the null hypothesis
- b. Using the asymptotic standard error assuming the null hypothesis.
- c. Based on normal approximation.

**CONCLUSION**

The analysis has shown that none of the respondents under 20 years of age are fixed about their buying routine. Respondents between 20 to 30 years of age like to purchase bathing soap once in a week 4%, 21.3% like to purchase bathing soap once in fortnight, 37.9% like to purchase once in a month and 36.9% are not fixed about their buying routine.

Respondents between 30 to 40 years of age prefer purchasing once in a month (33.3%) or they are not fixed about their buying routine (66.7%). 50.3% respondents above 40 years have the buying routine monthly or they are not fixed (49.7%).

That has shown that the respondents from all the age groups have different buying routines. So, the buying routine tends to be different for respondents under 30 years and above 30 years of age. In nutshell, it remains not fixed (47%) or purchasing once in a month (37.8%). Therefore, there is not much impact of the change of age of the respondents on the purchasing routine of the respondents.

Chi square, likelihood ratio and linear by linear association has the significant value.000 each that has shown that they exist a significant relation between buying routine and gender of the respondents

Furthermore, Pearson's R and Spearman Correlation has values.205 and.204 respectively, which has shown that data was indeed associated and its significance value.000 has also shown that data was significantly interrelated.

So based on above findings its being concluded that purchase routine is independent of the age or it does not vary with the change in the age of the respondents.

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## AN EMPIRICAL STUDY ON EMPOWERMENT OF WOMEN AND WEAKER SECTIONS THROUGH AGRICULTURAL FINANCE IN REGIONAL RURAL BANKS IN KARNATAKA

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### ABSTRACT

*The banking movement has come a long way in India. The primary objectives of regional rural banks include – financing small scale economic activities at lower rate of interest, rendering the benefits of loan and subsidy, facilitating the decentralization of economic benefits and opportunities and enhancing the standard of living of marginalized sections of rural society. The active involvement of rural people in the banking activities empowers them educationally, socially, economically and politically. The participation of women and weaker sections in banking activities widens the scope for their empowerment in several aspects. The present study evaluated the role of regional rural banks in agricultural finance with special reference to Hassan district of Karnataka state. Investigations dealing exclusively with the role of regional rural banks in the agricultural finance management with special reference to Karnataka state are scanty as seen through the paucity of literature. The role of regional rural banks in agricultural finance with special reference to Hassan district of Karnataka state is chiefly focused in the study.*

### KEYWORDS

regional rural banks, empowerment, women & weaker sections of the society, agricultural finance.

### JEL CODES

Q14, G21.

### INTRODUCTION

Rural development is the watchword of the 21<sup>st</sup> century planners in India and other developing countries. Practically all developing countries have accepted agriculture and rural development as the most important components of development planning. Regional rural banks are established in the country side in order to provide useful credit service to the farmers, artisans, business people and other disadvantaged sections of rural society.

Many scholars and statesmen have explored alternative approaches to agriculture and rural developments. Participatory banking approaches are required at the grassroots level to bring about integrated rural development. Several programmes are also implemented all over the country to facilitate the empowerment of women and weaker sections in rural society. Several investigations have revealed the importance of re-examining the impact of micro credit and income generating programs on the empowerment of farmers and other disadvantaged sections of rural society in the age of globalization of economy.

### OBJECTIVES OF THE STUDY

With welfare and development of farmers, artisans, women and weaker sections in the regional rural banks of the Karnataka State being the thrust area, the research proposes to:

1. Assess the effects of exposure to regional rural banks and access to financial resources in galvanizing the empowerment of people.
2. Suggest appropriate programmes and strategies for the empowerment of women and weaker sections through agricultural finance in regional rural banks.

### REVIEW OF LITERATURE

Bagchi, Kanti and Hadr (1979) investigated the financial viability and profitability trends of regional rural banks in India and West Bengal and observed that in the past, almost all the RRBs in the State were in losses and a number of factors contributed to these losses such as defective lending policies, high operational costs, restricted area of operation, poor recovery, etc. The study revealed that at the beginning of the 21st century all RRBs in the State turned into profit making institutions from losses and has been able to achieve viability on the basis of prudential norms introduced by the Reserve Bank of India. The scholars suggested certain measures for the reduction of low level of profitability of RRBs and enhancement of economic viability.

Kumar, Singh and Singh (1989) assessed the impact of self-help groups in Punjab and noted that after joining the SHG, the average income of the member households increased to Rs. 54,474 from Rs. 30,962, average value of assets rose to Rs. 34,302 from Rs. 20,345 and average borrowing increased to Rs. 27,665 from Rs. 8,999 in the pre-SHG situation. The problems faced by SHGs included harassment during opening of bank account, marketing problems, lack of monitoring, absence of leadership qualities and so on. The scholars suggested that the organizers of SHGs should be oriented by the specialists regarding the conduction of financially viable and socially beneficial activities.

Shivappa (2002) analyzed the agricultural credit utilization pattern and its repayment performance of borrowers' of regional rural banks in Chitradurga Gramina Bank of Karnataka state on the basis of both secondary and primary data. The scholar observed that the delay in renewal of loan under lending, and non-availability of loan for domestic purpose forced the farmers to depend on private sources. The study suggested that the desire for getting enhanced loan in future, legal and moral duty to repay loan, persuasion by bank personnel, minimization of loan burden, better yield etc., are the major factors responsible for regular repayment of loan.

Goyal, Chamola and Kumar (1999) examined the growth, performance and loaning pattern of regional rural banks (RRBs) in Haryana on the basis of secondary data available from different published sources. The study revealed that the deposits and advances have also increased considerably during the study period but the total loan outstanding was on account of agricultural and allied activities. The scholars suggested that lending to non-target groups and lending for non-productive purpose would result in making the RRBs a viable unit in the study area.

Tyagi, Kumar and Kar (1996) studied the trends in progress of institutional lending to agriculture in India during the period 1980-95 and noted that institutional lending was unorganized, unscientific and inadequate. The scholars suggested certain policy measures for meeting the credit requirements of small and marginal farmers. The study provides certain benchmarks for the progress of financial institutions like commercial banks, RRBs and co-operative banks in Indian society on the basis of authentic data and experience.

Tripathi and Sharma (2005) evaluated the impact of SHG-bank linkage programme on financial behavior of rural poor in Rae Bareilly district of Uttar Pradesh and noted that there was considerable improvement in saving and credit usage by SHG members in the study area. The study also revealed that there was reduction in interest burden on SHG members over a period of time. The scholars suggested that self-help groups and regional rural banks should develop partnership and facilitate the sustainable development of rural poor in India.

## STATEMENT OF THE PROBLEM

The role of regional rural banks in the process of agricultural finance was primarily considered in the study because:

- Modern regional rural banks have also evolved specific developmental strategies for the empowerment of people in Karnataka State.
- Modern regional rural banks have a social responsibility of promoting the empowerment of people and protecting human rights of disadvantaged sections of rural society in this age of competitiveness.
- Constant and continued research on the role of regional rural banks in the empowerment of women and weaker sections is imperative developing nation like India.

## RESEARCH METHODS

This part enumerates the hypotheses of the study, study variables, study area and selection of sample, research design, development of tools, primary data collection techniques, secondary data collection techniques, computation of data, statistical analysis, limitations of the study and definitions of the terms used in the study.

### HYPOTHESES OF THE STUDY

*H1: The regional rural banks cater to the needs of women and weaker sections.*

### VARIABLES OF THE STUDY

Keeping the above hypotheses in view, the following variables were selected for the present study on the basis of review of literature and discussion with subject experts.

#### INDEPENDENT VARIABLES

- Gender
- Age
- Education
- Profession
- Income

#### DEPENDENT VARIABLES

- Association of the Respondents with Credit Organisations
- Attitude of the Respondents towards Regional Rural Banks
- Impact of the Service of Regional Rural Banks

### STUDY AREAS AND SAMPLE

#### DISTRIBUTION OF STUDY AREA AND SAMPLE

TABLE 1

Sl. No	Name of the Block	Number of Respondents
1.	Alur	10
2.	Arakalagud	11
3.	Arasikere	8
4.	Belur	15
5.	Channarayapatna	6
6.	Hassan	10
7.	Holenarasipura	10
8.	Sakaleshapura	10
	<b>Total</b>	<b>80</b>

Primary data were collected through structured, organized and standardized interview schedules which were administered to the beneficiaries of regional rural banks in Hassan district. In addition to interview, informal discussions were also held with the authorities who directly dealt with the management of regional rural banks in the study area. Besides survey method, non-participant observation, informal discussions and secondary data analysis were also followed by the researcher. The entire study was exploratory in nature. Several ideas which emerged during the course of discussion and consultation with the policy makers, banking officials, academicians and researchers interested in the management of regional rural banks were suitably incorporated into the research design. Therefore, research methods were designed on the basis of flexibility, appropriateness, feasibility, adaptability, empirical evidences and professional considerations.

#### COMPUTATION OF DATA

The primary data gathered from the survey on the functioning of regional rural banks in Hassan district were consolidated and computed by using descriptive analysis which consisted of frequency counts and percentage distribution which revealed the relationship between the independent and dependent variables considered in the study.

#### LIMITATIONS OF THE STUDY

The usual limitations of the survey method and case study, namely time, human inadequacies, resource constraints, recollection and communication were experienced by the researcher. It was practically not possible to contact all the service providers and users of regional rural banks in Karnataka State due to lack of time and resources.

TABLE 2: DETAILS OF HASSAN DISTRICT SHARE OF ADVANCES TO WOMEN AND WEAKER SECTIONS 2010-11 (in crores)

Sl. No.	Sections	Advance	%
1.	Women Beneficiaries	Rs. 346 cr	- 17%
2.	Weaker Sections Beneficiaries	Rs. 750 cr	37%
3.	SC/ST Beneficiaries	Rs. 117 cr	- 6%

The above table provides details regarding the share of advances to women and weaker sections for the financial year 2010-11 in Hassan district. The data reveal that other backward sections of society received priority based financial assistance when compared to women and Dalit beneficiaries in Hassan district.

TABLE 3: DETAILS OF HASSAN DISTRICT PRIORITY SECTOR ADVANCES 2010-11 (in crores)

Sl. No.	Sector	Rupees	%
1.	Priority sector advances	116398	86
2.	Agriculture sector	78960	58
3.	Non-farm sector	4157	03
4.	Trade/Service	33281	25
5.	Non priority sector	19606	14
6.	Commercial banks	97624	72
7.	Regional rural banks	11506	08
8.	Cooperative banks	26174	19
9.	KSFC	700	01

The total potential linked plan in 2010-11 was Rs. 117051 while the district credit plan for the year 2010-11 was Rs. 116398 respectively. The percentage of DCP to PLP was 99%. The amount provided for agriculture sector is Rs. 78960 lakhs which is 10% increase over 2009-2010 plan. The amount earmarked for Crop loan is Rs. 57089 lakhs which accounts for 72% of total agriculture plan. The plan for non farm sector is Rs. 4157 lakhs which is 18% increase over 2009-2010 plan.

TABLE 4: DEMOGRAPHIC DETAILS OF THE RESPONDENTS

Independent Variables	Number	Percentage
<b>Gender</b>		
Male	45	56.25%
Female	35	43.75%
<b>Age</b>		
<40 yrs	30	37.50%
>40yrs	50	62.50%
<b>Education</b>		
<Matriculation	35	43.75%
>Matriculation	45	56.25%
<b>Occupation</b>		
Agriculture	30	37.50%
Businessmen	20	25.00%
Artisan	10	12.50%
Others	20	25.00%
<b>Monthly Income</b>		
< Rs.10000/-	41	51.25%
>Rs.10000/-	39	48.75%
<b>Total</b>	<b>80</b>	<b>100%</b>

Regional Rural Banks Cater to the Needs of Women and Weaker Sections.

TABLE 5

Variables	Sub variable	Responses			Total	Test statistics
		Agree	No Response	Disagree		
Gender	Female	F	34	-	4	X <sup>2</sup> =0.061 P=.806
		%	91.95	-	8.05	
	Male	F	36	-	6	
		%	91.39	-	8.61	
Age	< 40yrs	F	31	-	4	X <sup>2</sup> =3.055 P=.081
		%	94.0	-	6.0	
	> 40yrs	F	40	-	5	
		%	90.0	-	10.0	
Education	<Matriculation	F	32	-	8	X <sup>2</sup> =0.498 P=.480
		%	92.31	-	7.69	
	>Matriculation	F	30	-	10	
		%	90.68	-	9.32	
Occupation	Agriculture	F	38	-	2	X <sup>2</sup> =14.654 P=.001
		%	95.94	-	4.06	
	Cottage Industry	F	35	-	05	
		%	87.50	-	12.50	
	Business	F	5	-	3	
		%	86.67	-	12.50	
Monthly Income	<Rs.10,000	F	4	-	2	X <sup>2</sup> =8.277 P=.004
		%	94.26	-	5.74	
	>Rs.10,000	F	-	-	-	
		%	87.61	-	12.39	
Total	F	5	-	5	X <sup>2</sup> =3.727 P=.044	
	%	91.67	-	8.33		

Table provides the opinion of the respondents about the statement - 'Regional rural banks cater to the needs of women and weaker sections'. A vast majority of the female (91.95%) and male respondents (91.39%) have stated that regional rural banks catered to the needs of women and weaker sections in the rural areas. There is insignificant association ( $X^2=0.061$ ;  $P=.806$ ) between the gender group and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas.

A vast majority of the respondents below 40 years (94.0%) and above 40 years (90.0%) have perceived that regional rural banks catered to the needs of women and weaker sections in the rural areas. There is insignificant association ( $X^2=3.055$ ;  $P=.081$ ) between the respondents' age and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas.

A vast majority of the respondents with the below matriculation background (92.31%) and above matriculation background (90.68%) have perceived that regional rural banks catered to the needs of women and weaker sections in the rural areas. There is insignificant association ( $X^2=0.498$ ;  $P=.480$ ) between the respondents' educational status and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas. A vast majority of the respondents representing agriculturists' category (95.94%) artisans' category (87.50%) and business category (86.67%) respectively have perceived that regional rural banks catered to the needs of women and weaker sections in the rural areas. There is significant association ( $X^2=14.654$ ;  $P=.001$ ) between the respondents' professional status and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas.

A vast majority of the respondents with the monthly income of less than Rs. 10,000/- (94.26%) and above Rs.10,000/- (87.61%) have perceived that regional rural banks catered to the needs of women and weaker sections in the rural areas. There is significant association ( $X^2=8.277$ ;  $P=.004$ ) between the respondents' income status and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas.

Overall, a vast majority of the respondents (91.67%) regardless of gender, age, education, occupation and income have stated regional rural banks primarily catered to the needs of women and weaker sections in the rural areas in the present times. There is significant association ( $X^2=3.727$ ;  $P=.044$ ) between the demographic features and perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections in the rural areas.

#### **Results on H1: The regional rural banks cater to the needs of women and weaker sections.**

The table presents the data regarding the perception of the respondents about the role of regional rural banks in the empowerment of women and weaker sections. The data reveals that a vast majority of the respondents (91.67%) have rightly stated that regional rural banks catered to the needs of women and weaker sections in the study area. Hence, the hypothesis stands approved according to the finding and analysis of data.

## **FINDINGS OF THE STUDY**

The total number of respondents was 80 out of which 50.33% were male respondents and 49.67% were female respondents. A vast majority of the respondents (85%) belonged to the matriculation and pre-university groups, belonged to the age group of below 40 years (58.33%), belonged to the group of agriculturists (53.33%) and earned a monthly income of Rs. 10000-15000 (64.83%).

### **EMPOWERMENT OF BENEFICIARIES RELATED SUGGESTIONS**

- The regional rural banks should conduct field survey and identify deserving beneficiaries for the purpose of providing financial assistance.
- The regional rural banks should enable the beneficiaries to fight against the child labour and bonded labour.
- The regional rural banks should enable the beneficiaries to fight against the dowry system and fight against early marriage.
- The regional rural banks should enable the beneficiaries to participate actively in political movements.
- The regional rural banks should enable the beneficiaries to participate actively in elections.
- The regional rural banks should sensitize the beneficiaries to demand their rights and privileges.
- The regional rural banks should enable the non-members to network with civil society institutions and also to understand the role of getting together.

## **CONCLUSION**

The builders of Indian Republic and architects of Indian Constitution had considered it necessary to provide specific safeguards in the Constitution for the empowerment of farmers, artisans, women and weaker sections of Indian society mainly due to existing gender bias, caste system, social order, economic order, political order and a combination of various circumstances. It is distressing to note that the gains of development have not yet reached the rural masses to the desired extent. Despite various measures to improve their status, they remain helpless and backward in all spheres of human life in India. Research and developmental activities concerning the role of regional rural banks in the process of agricultural finance management assume great significance in a developing country like India. The present empirical study reveals that regional rural banks have played a limited role in the process of agricultural finance management in general and integrated rural development in particular due to several in built constraints and limitations. This chapter contains the summary of the study, findings of the study, implications of the study and implications on future research.

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## DISCRETE SINE TRANSFORM INTERPOLATION APPROACH TO DESIGN A FRACTIONAL ORDER DIFFERENTIATOR

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### ABSTRACT

*In this article, discrete sine transforms interpolation approach is presented for designing a digital fractional order differentiator i.e. (DST-II). First described the definition of fractional differentiation. Then, DST based interpolation method i.e. (DST-II) is applied to compute the fractional differentiation of a given digital signal to obtain the transfer function of proposed method i.e. fractional order digital differentiator by using index mapping method. Finally, some numerical problems show their effectiveness of the proposed DST-II method as compared to Radial Basis function and Improved design of digital fractional-order differentiators using fractional sample delay.*

### KEYWORDS

digital differentiator, fractional derivative, hanning window, discrete sine transform (DST-II).

### JEL CODES

C00, C60.

### INTRODUCTION

During the past several decades, fractional calculus has played an important role in various fields like fluid flow, automatic control, biomedical applications, electrical networks, electromagnetic theory and image processing [1]-[2]. Fractional dimension is used to measure some real-world data such as coastline, clouds dust in the air and network of neurons in the body [3]-[4], we aim out interest at the realization of digital fractional derivative, which named as digital fractional order differentiator (FOD). Because digital FOD can determine and estimate the more characteristic of a given digital signal than integral order differentiator (IOD), it has been being an especial and useful tool in many increasing application, such as fractional order controls, radar and sonar processing, nonlinear or chaos time series processing and forecasting, geological signal detecting and processing, image signal compress and processing etc. Fractional sample delay has become an important device in the applications of time adjustment in the digital receiver, antenna array processing, speech coding.

Synthesis, modeling of musical instrument, and comb filter design etc [5]-[6]. The integer order  $n$  of derivative  $D^n f(x) = (d^n f(x)/dx^n)$  of function is generalized

to fractional order  $D^v f(x)$ , where  $v$  is a real number. One of the important research topics in fractional calculus is to implement the fractional operator  $D^v$  in continuous and discrete time domain for continuous-time case, some methods for obtaining an approximated rational function using evaluation, interpolation and curve fitting techniques have been studied. These methods include Carlson's method, Roy's method, Charle 's method and Oustaloup's method. For the discrete -time case, there have been several methods presented to design finite-impulse-response (FIR) and infinite-impulse-response (IIR) filters for implementing operator  $D^v$ , including fractional differencing formula or Euler method, Tustin method, continued fraction method, least square method and Prony's method, continued fraction method [7], fractional sample delay method [8] and radial basis function [9].

On the other hand, the Discrete Sine Transform (DST) which is known to be statistically optimal performance with Karhunen-Loeve transform for highly correlated signal [10]. Until now, DST has been successfully applied to transform domain adaptive filtering [11], signal interpolation [12], image coding and compression [13], speech enhancement [14], image encryption [15].

In this paper, we will use one of the best interpolation method DST-II and Grunwald-Letnikov fractional derivative to design fractional order digital differentiator. In section II, the definitions of fractional derivative will be discussed in briefly. In Section III, the interpolation type of DST method i.e.(DST-II) is applied to design the fractional order digital differentiator. In section IV comparison result are presented. Finally, the conclusion is made.

### FRACTIONAL DIFFERENTIATION

There are several definitions for fractional integral and fractional derivative to obtain the transfer function of the fractional order differentiator such as the Riemann-Liouville, the Grunwald-Letnikov and Caputo definitions. But in this paper we will use the Grunwald - Letnikov definition which is given by



$$C_k^v = \frac{\gamma(v+1)}{\gamma(k+1)\gamma(n-k+1)}$$

$$D^v f(x) = \lim_{h \rightarrow 0} \sum_{k=0}^{\infty} \frac{(-1)^k}{h^v} c_k^v f(x - kh) \tag{1}$$

The above notation (:) is gamma function. Based on this definition, the fractional derivative of exponential and sinusoidal signals are given by

$$D^v e^{ax} = a^v e^{ax} \tag{2}$$

$$D^v A \sin(\omega t + \varphi) = A \omega^v \sin\left(\omega t + \varphi + \frac{\pi v}{2}\right) \tag{3}$$

$$D^v A \cos(\omega t + \varphi) = A \omega^v \cos\left(\omega t + \varphi + \frac{\pi v}{2}\right) \tag{4}$$

The definition of fractional derivative has been described.

**DESIGN METHOD USING DST-II**

There are several types of discrete sine transform, namely DST-I, DST-II, DST-III, DST-IV. In this section the DST-II is presented. The continuous signal x(t) are sampled in the discrete-time sequence x(0),x(1),..., x(N-1). Firstly, we will study how to compute the fractional order differentiation D<sup>v</sup> x(t) using the DST-II method. The DST-II is defined as

$$X(k) = \sqrt{\frac{2}{N}} \sum_{n=0}^{N-1} x(n) c_k \sin\left(\frac{(n+0.5)(k+1)\pi}{N}\right) \tag{5}$$

$$x(n) = \sqrt{\frac{2}{N}} \sum_{k=0}^{N-1} X(k) c_k \sin\left(\frac{(n+0.5)(k+1)\pi}{N}\right) \tag{6}$$

Substituting forward DST-II in equation (5) and into inverse DST-II in equation (6), we get

$$c_k = \begin{cases} \frac{1}{\sqrt{2}} & k = N - 1 \\ 1 & \text{otherwise} \end{cases}$$

$$x(n) = \sqrt{\frac{2}{N}} \sum_{k=0}^{N-1} \left[ \sqrt{\frac{2}{N}} \sum_{m=0}^{N-1} x(m) c_k^2 \sin\left(\frac{(m+0.5)(k+1)\pi}{N}\right) \right] \sin\left(\frac{(n+0.5)(k+1)\pi}{N}\right) \tag{7}$$

$$x(n) = \sum_{m=0}^{N-1} x(m) c_k^2 \left[ \frac{2}{N} \sum_{k=0}^{N-1} \sin\left(\frac{(m+0.5)(k+1)\pi}{N}\right) \sin\left(\frac{(n+0.5)(k+1)\pi}{N}\right) \right]$$

$$x(t) = \sum_{m=0}^{N-1} x(m) b(m, t) \tag{8}$$

The interpolation basis function is given by

$$b(m, t) = \frac{2}{N} \sum_{k=0}^{N-1} \sin\left(\frac{(m+0.5)(k+1)\pi}{N}\right) \sin\left(\frac{(t+0.5)(k+1)\pi}{N}\right) \tag{9}$$

Taking the  $v^{th}$  order fractional differentiation at both sides of equation (8)

$$D^v x(t) = \sum_{m=0}^{N-1} x(m) [D^v b(m, t)] \tag{10}$$

Using Linear property of fractional differentiation

$$[D^v b(m, t)] = \frac{2}{N} \sum_{k=0}^{N-1} \left(\frac{(k+1)\pi}{N}\right)^v \sin\left(\frac{(m+0.5)(k+1)\pi}{N}\right) \sin\left(\frac{(t+0.5)(k+1)\pi}{N} + \frac{\pi v}{2}\right) \tag{11}$$

Substitute the equation 11 into the equation 10 given below:

$$x(t) = \sum_{m=0}^{N-1} x(m) P_m(t) \tag{12}$$

$$P_m(t) = \frac{2}{N} \sum_{k=0}^{N-1} \left(\frac{(k+1)\pi}{N}\right)^v \sin\left(\frac{(m+0.5)(k+1)\pi}{N}\right) \sin\left(\frac{(t+0.5)(k+1)\pi}{N} + \frac{\pi v}{2}\right) \tag{13}$$

To obtain transfer function of fractional order digital differentiator that approximate the following Ideal frequency response is given below :

$$H_d(\omega) = (j\omega)^v e^{-j\omega l} \tag{14}$$

Where  $l$  represent delay values. The transfer function of the FIR filter is given as:

$$H(z) = \sum_{r=0}^{N-1} h(r)z^{-r} \tag{15}$$

After integer delayed samples the output will be

$$y(n) = \sum_{r=0}^{N-1} h(r)s(n-r) \tag{16}$$

Now a problem is that how we can determine the filter coefficient  $h(r)$  from the equation (12), such that the filter output  $y(n)$  is almost equal to the delayed fractional differentiation  $D^v = s(N-l)$ , that is

$$y(n) \approx D^v s(N-l) \tag{17}$$

Index mapping technique can be used to solve task, if

$$\begin{aligned} s(n) &= x(N-1) \\ s(N-1) &= x(N-2) \\ s(n-N+1) &= x(0) \end{aligned} \tag{18}$$

After link the equation (12) and (16), equation (18) can be written as

$$x(m) = s(n - (N-1) + m) \quad 0 \leq m \leq N-1 \tag{19}$$

Putting the values of  $x(t) = s(n - (N-1) + t)$  into equation (12), we get

$$D^v s(n - (N-1) + t) = \sum_{m=0}^{N-1} s(n - (N-1) + m) P_m(t) \tag{20}$$

$$h(r) = P_{N-1-r}(N-1-l) \tag{21}$$

Substituting equation (13) into (21), then the filter coefficient will be

$$h(r) = \frac{2}{N} \sum_{k=0}^{N-1} \left(\frac{(k+1)\pi}{N}\right)^v \sin\left(\frac{(N-r-0.5)(k+1)\pi}{N}\right) \sin\left(\frac{(N-l-0.5)(k+1)\pi}{N} + \frac{\pi v}{2}\right) \tag{22}$$

We can modify the filter coefficient by using the optimization techniques and window techniques.

The Hanning window transfer function is given below

$$w(r) = 0.5 - 0.5 * \cos((2 * \pi * r)/(N-1)) \tag{23}$$

So the modified filter coefficients can have determined by

$$h_w(r) = h(r)w(r) \tag{24}$$

To evaluate the performance of the DST-II, the integral square error of frequency response

$$E = \sqrt{\int_0^{\lambda \pi} |H(e^{j\omega}) - H_d(\omega)|^2 d\omega} \tag{25}$$

If the error E is smaller, then the performance of the design method will be better.

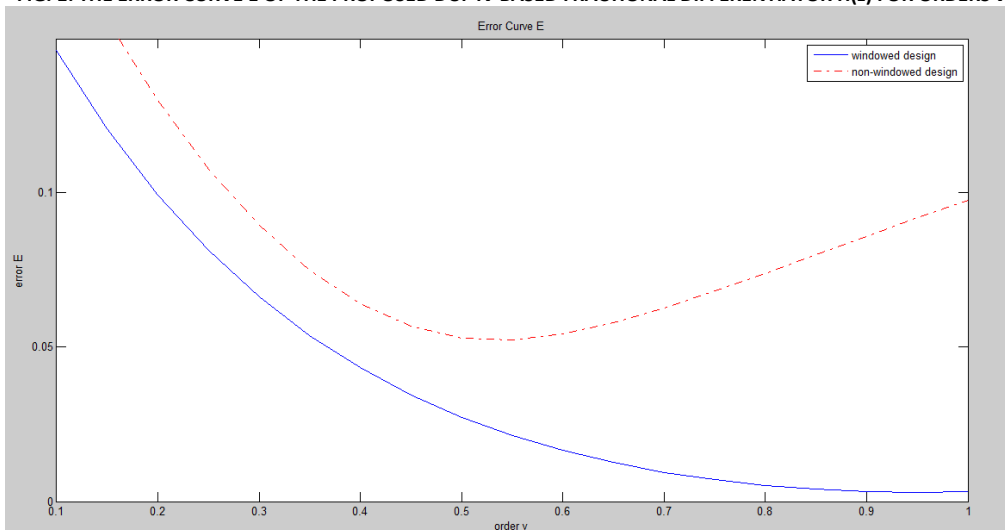
**Design Examples**

To evaluate the performance of the DST-II, the integral square error of frequency response is defined as

$$E = \sqrt{\int_0^{\lambda \pi} |H(e^{j\omega}) - H_d(\omega)|^2 d\omega} \tag{26}$$

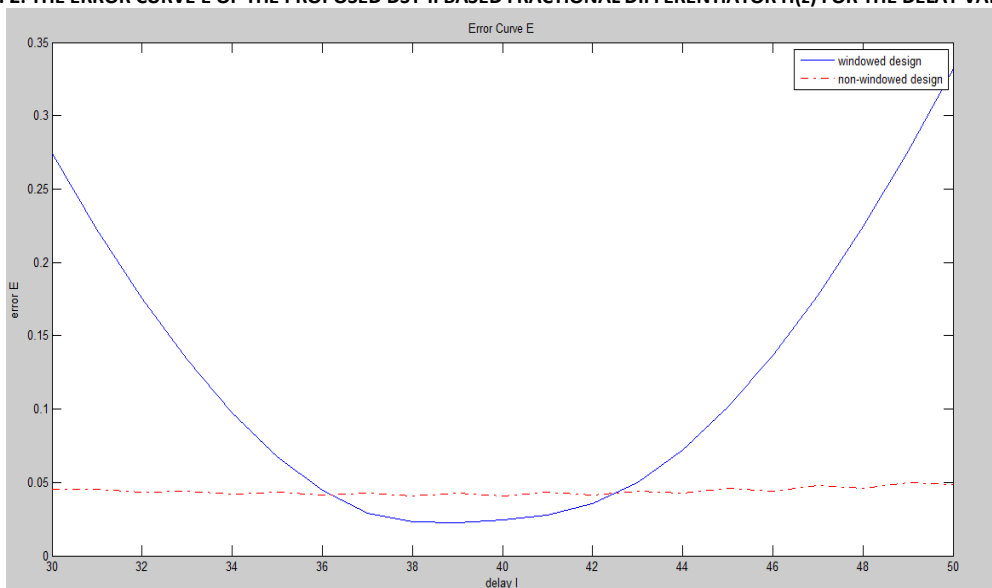
If the error E is smaller, then the performance of the design method will be better. **Example 1:** In this example, we will study the relation between the error E and for the DST-II method and. The design parameters are chosen as  $N = 80$ ,  $l = 40$ ,  $v = 0.2$ , and  $\lambda = 0.9$ . Moreover, Fig.1 shows the error curve E of the proposed DST-II based fractional order differentiator for the windowed and non-windowed function. In this figure, it can be seen that the windowed design error is minimum than the non-windowed design for the orders.

FIG. 1: THE ERROR CURVE E OF THE PROPOSED DCT-IV BASED FRACTIONAL DIFFERENTIATOR H(z) FOR ORDERS v



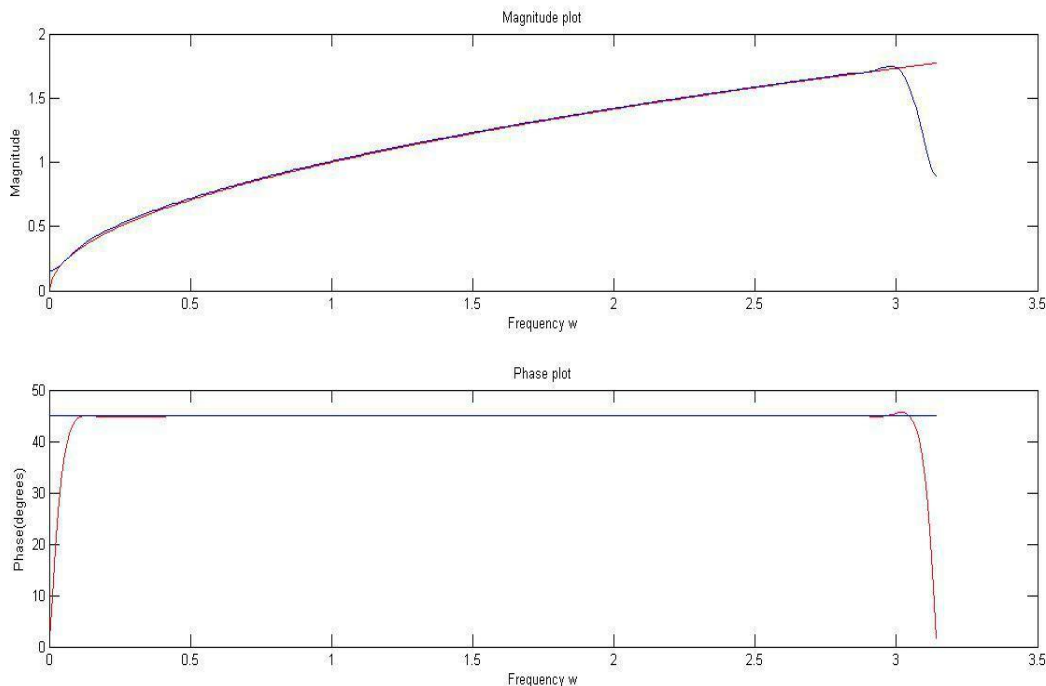
**Example 2:** In this example, we will study the relation between the error E and delay value I for the DST-II method and The design parameters are chosen as  $N = 80$ ,  $I = 40$ ,  $v = 0:2$ , and  $= 0:9$ . Moreover, Fig.2 shows the error curve E of the proposed DST-II based fractional order differentiator for the windowed and non-windowed function. The value of E is minimum at  $I = 20$ .

FIG. 2: THE ERROR CURVE E OF THE PROPOSED DST-II BASED FRACTIONAL DIFFERENTIATOR H(z) FOR THE DELAY VALUES I



**Example 3:** In this example, we will study the study the magnitude and phase response for the DST-II. The design parameters are chosen as  $N = 80$ ,  $I = 40$  and  $= 0:9$ . Moreover, Fig.3 (a), (b) show the magnitude and phase responses (solid line) for the DST-II and order  $v = 0:5$ . In Fig.3(a) the dashed line show the ideal magnitude response  $w^v$ . Fig.3 (b) show the phase response  $90 [\text{angle}(B(e^{jw})) + w \cdot I] = 0:5$ . In Fig.3 (b) the dashed line shows the ideal response  $90v$ .

FIG. 3: THE DESIGNED RESULTS OF THE WINDOWED DST-II BASED DIGITAL FRACTIONAL ORDER DIFFERENTIATOR  $H(z)$  FOR  $\nu = 0.5$ . (a) MAGNITUDE RESPONSE. (b) PHASE RESPONSE. THE DASHED LINE SHOW IDEAL RESPONSE



**COMPARISON AND DISCUSSION**

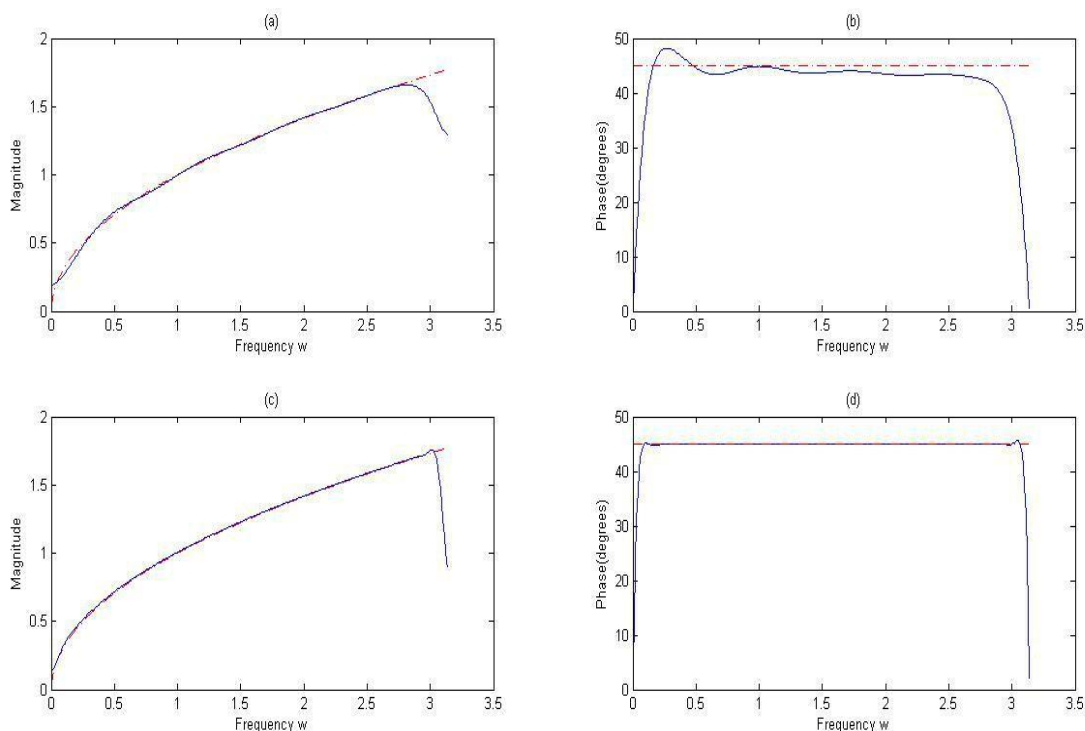
In this section, we will compare the result of DCT-IV with the Radial Basis Function [9] and Fractional Sample Method [8].

**A. Comparison with Conventional Method**

Here, let us compare the proposed method DST-II with the conventional method (Radial Basis Function in [8]).

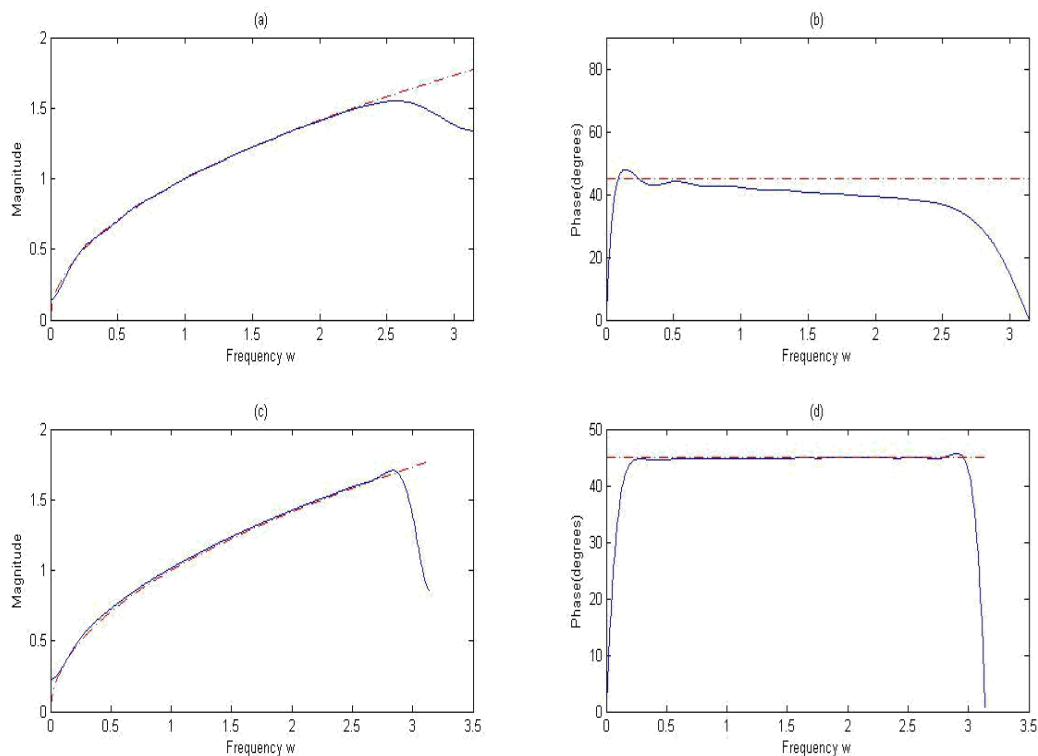
The parameters values are chosen as  $N = 100$ ,  $I = 50$  and  $\nu = 0.5$ . Fig. 4(a) and 4(b) show the magnitude and phase response of Radial Basis Function. 4(c) and 4(d) show the magnitude and phase response of Discrete Sine Transform (DST-II) using windowed. if  $\lambda = 0.9$  is chosen then the error  $E$  of the RBF method is 0.0356 and using the the DST-II method comes 0.012. Thus the proposed method has smaller design error as compare with the conventional method.

FIG. 4: THE DESIGNED RESULTS (SOLID LINE) OF THE RADIAL BASIS FUNCTION METHOD IN [9]. (a), (b) THE RESULTS OF THE RADIAL BASIS FUNCTION (RBF) METHOD IN [9].(c),(d) THE RESULTS OF THE PROPOSED METHOD (DST-II). THE DASHED LINE SHOW THE IDEAL RESPONSE



B. Here, let us compare the proposed method DCT-IV with the conventional method (Radial Basis Function in [8]). The parameters values are chosen as  $N = 40$ ,  $l = 20$  and  $v = 0.5$ . Fig. 5(a) and 5(b) show the magnitude and phase response of Radial Basis Function. 5(c) and 5(d) show the magnitude and phase response of Discrete Sine Transform (DST-II) using windowed. if  $\alpha = 0.9$  is chosen then the error  $E$  of the RBF method is 0.287 and using the the DST-II method comes 0.012. Thus the proposed method has smaller design error as compare with the conventional method.

**FIG. 5: THE DESIGNED RESULTS (SOLID LINE) OF THE FRACTIONAL ORDER FIR DIFFERENTIATOR. (a), (b) THE RESULTS OF THE FRACTIONAL DELAY METHOD IN [8].(c),(d) THE RESULTS OF THE PROPOSED METHOD (DST-II). THE DASHED LINE SHOW THE IDEAL RESPONSE**



## 5. CONCLUSION

In this article, discrete sine transforms interpolation approach are presented for designing a digital fractional order differentiator i.e. (DST-II). Then DST-II is applied to compute the fractional differentiation of a given digital signal to obtain the transfer function of proposed method i.e. fractional order digital differentiator by using index mapping method. Finally, some numerical problems show their effectiveness of the proposed DST-II method as compared to Radial Basis function and Improved design of digital fractional-order differentiators using fractional sample delay. However, 1-D has been studied in this paper. Thus, it is interesting to extend the proposed DST-II method to design the 2-D fractional order differentiator, Hilbert transform and other Optimization method in the future.

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## CHALLENGES AND OPPORTUNITIES OF GREEN MARKETING

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## ABSTRACT

*Green Marketing is a phenomenon which has developed particular important in the modern market. In the emerging world the concept of pollution free activity is given more importance in all the sectors and in all stages. Consumers are also aware of the environmental issues like; global warming and the impact of environmental pollution. In this research paper, main emphasis has been made of concept, need and importance of green marketing. Data has to be collected from multiple sources of evidence, in addition to books, journals, websites, and newspapers. It explores the main issues in adoption of green marketing practices. The paper describes the current scenario of Indian market and explores the challenges and opportunities businesses have with green marketing. Why companies are adopting it and future of green marketing and concludes that green marketing is something that will continuously grow in both practice and demand.*


## KEYWORDS

environmental pollution, eco-friendly, green consumer, green product, global warming.

## JEL CODES

M30, M31.

## INTRODUCTION

 Green marketing products that are presumed to be environmentally safe. It incorporates a broad range of activities including product modification, changes to the production process, sustainable packaging, as well as modifying advertising. Yet defining **Green marketing** is not a simple task where several meanings intersect and contradict each other; an example of this will be the existence of varying social, environmental and retail definitions attached to this term. Other similar terms used are environmental marketing and ecological marketing.

Green, environmental and eco-marketing are part of the new marketing approaches which do not just refocus, adjust or enhance existing marketing thinking and practice, but seek to challenge those approaches and provide a substantially different perspective. In more detail green, environmental and eco-marketing belong to the group of approaches which seek to address the lack of fit between marketing as it is currently practiced and the ecological and social realities of the wider marketing environment.

Green Marketing refers to holistic marketing concepts. Green marketing incorporates a broad range of activities including, product modification, change, to the production process, packaging changes, as well as modification of advertising. There are some organizations implementing strategies which aim to solve ecological issues and build up the long term interest towards consumers. Some business has been quick to accept concepts like environmental management systems and waste minimization have integrated environmental issues into all organizational activities. Many governments around the globe have become so concerned about green marketing activities and they have attempted to regulate them.

The term "**Green marketing**" refers to the planning, development and promotion of products or services that satisfy the needs of consumers for quality, output, accessible prices and service, without however a negative affect on the environment, with regard to the use of raw material, the consumption of energy etc. (Davis, 1991; Kangis, 1992; Meffert and Kirchgorg, 1994; Jain and Kaur, 2004; Peattie and Crane, 2005; Grant, 2008; Pride and Ferrell, 2008).

**According to Kangis (1992)**, green marketing must be more than either a green way of marketing, or the marketing of so-called green products. Green has to refer both to the method and to the product. This is why the very idea of green marketing needs considerable development and analysis, with rules and integrity in economic, scientific, academic and ethical terms.

**According to the literature**, the environmental parameter has been included in the strategy of marketing from the beginning of 1990s (Herbig and Butler, 1993; Lampe and Gazda, 1995; Peattie, 1999). Notwithstanding the existing obstacles, "green marketing" progressively gains continuously more supporters, specifically in sectors that concern the climatic change and forest protection.

## EVOLUTION OF GREEN MARKETING

The green marketing has evolved over a period of time. **According to Peattie (2001)**, the evolution of green marketing has three phases. First phase was termed as "**Ecological**" green marketing, and during this period all marketing activities were concerned to help environment problems and provide remedies for environmental problems. Second phase was "**Environmental**" green marketing and the focus shifted on clean technology that involved designing of innovative new products, which take care of pollution and waste issues. Third phase was "**Sustainable**" green marketing. It came into prominence in the late 1990s and early 2000.

## OBJECTIVE AND METHODOLOGY

One of the biggest problems with the green marketing area is that there has been little attempt to academically examine environmental or green marketing. While some literature does exist, it comes from divergent perspectives. This paper attempts to throw light on the conceptual issues associated with green marketing. The present study is exploratory in nature to provide a clear guidance for empirical research. It is also descriptive where the focus is on fact finding investigation with adequate interpretation. For this purpose, secondary data were collected. The secondary data were collected through newspapers, magazines, books, journals, conference proceedings, Government reports and websites.

## REVIEW OF LITERATURE

**Sanjay K. Jain & Gurmeet Kaur (2004)** "Green Marketing: An Indian Perspective" highlights environmentalism have fast emerged as a worldwide phenomenon. Business firms too have risen to the occasion and have started responding to environmental challenges by practicing green marketing strategies. Green consumerism has played a catalytic role in ushering corporate environmentalism and making business firms green marketing oriented.

**Prothero, A. (1998)** introduces several papers discussed in the July 1998 issue of 'Journal of Marketing Management' focusing on green marketing. This includes; a citation of the need to review existing literature on green marketing, an empirical study of United States and Australian marketing managers, a description of what a green alliance look like in practice in Great Britain, ecotourism and definitions of green marketing.

**Brahma, M. & Dande, R. (2008)**, The Economic Times, Mumbai, had an article which stated that, Green Ventures India is a subsidiary of New York based asset management firm Green Ventures International. The latter announced a \$300 million India focused fund aimed at renewable energy products and supporting trading in carbon credits.

Karna, J., Hansen, E. & Juslin, H. (2003) interpret that proactive marketers are the most genuine group in implementing environmental marketing voluntarily and seeking competitive advantage through environmental friendliness. The results also give evidence that green values, environmental marketing strategies, structures and functions are logically connected to each other as hypothesized according to the model of environmental marketing used to guide this study. Based on the data collected through a field survey, the paper makes an assessment of the extent of environmental awareness, attitudes and behavior prevalent among consumers in India.

### GOLDEN RULES OF GREEN MARKETING

- 1. Know Your Customer:** Make sure that the customer is aware of and concerned about the issues that your products attempts to address.
- 2. Educating Your Customer:** It is the duty of marketer to educate the customer regarding green products that it protects our environment how and in what ways. If it is the case of so what then green marketing campaign goes nowhere.
- 3. Being Genuine and Transparent:** being genuine means marketers are actually doing what they claimed to doing in their green marketing campaign.
- 4. Eco-Innovate:** Inventing new products, materials and technologies rather than changes in existing ones.
- 5. Promote Responsible Consumption:** Protection, Preservation and Conservation of natural resources is the motto.
- 6. Reassure The Buyer:** Customer must be made assure that product performs the job w.r.t. environment. Difference between Traditional Marketing and Green Marketing

### FOUR P'S OF GREEN MARKETING

**Product:** A firm needs to develop environmentally safe products to have more impact on consumers than competitors. For this, it needs to identify customer's environmental needs and develop products to address these needs.

**Price:** Usually environmental benefit is an added bonus but will often be the deciding factor between products of equal value and quality. Most customers will only be prepared to pay a premium if there is a perception of additional product value.

**Place:** Green products, in most cases, positioned broadly in the market place but very few customers will go out of their way to buy green products merely for the sake of it. For this, In-store promotions and visually appealing displays or using recycled materials to emphasize the environmental and other benefits.

**Promotion:** Promotion includes paid advertising, public relations, sales promotions, direct marketing and on-site promotions. Green marketers will be able to reinforce environmental credibility by using sustainable marketing and communications tools and practices.

### IMPORTANCE OF GREEN MARKETING

Green marketing affects positively the health of people and the ecological environment. People are aware of pure products and pure methods of producing, using, and disposing the products. It encourages integrated efforts for purity in production and consumption as well.

1. Organizations perceive environmental marketing to be an opportunity that can be used to achieve its objectives.
2. Organizations believe they have a moral obligation to be more socially responsible.
3. Governmental bodies are forcing firms to become more responsible.
4. Competitors' environmental activities pressure firms to change their environmental marketing activities.
5. Cost factors associated with waste disposal, or reductions in material usage forces firms to modify their behavior.

### CHALLENGES IN GREEN MARKETING

#### NEED FOR STANDARDIZATION

It is found that only 5% of the marketing messages from —Green|| campaigns are entirely true and there is a lack of standardization to authenticate these claims. There is no standardization to authenticate these claims. There is no standardization currently in place to certify a product as organic. Unless some regulatory bodies are involved in providing the certifications there will not be any verifiable means. A standard quality control board needs to be in place for such labeling and licensing.

#### NEW CONCEPT

Indian literate and urban consumer is getting more aware about the merits of Green products. But it is still a new concept for the masses. The consumer needs to be educated and made aware of the environmental threats. The new green movements need to reach the masses and that will take a lot of time and effort. By India's ayurvedic heritage, Indian consumers do appreciate the importance of using natural and herbal beauty products. Indian consumer is exposed to healthy living lifestyles such as yoga and natural food consumption. In those aspects the consumer is already aware and will be inclined to accept the green products.

#### PATIENCE AND PERSEVERANCE

The investors and corporate need to view the environment as a major long-term investment opportunity, the marketers need to look at the long-term benefits from this new green movement. It will require a lot of patience and no immediate results. Since it is a new concept and idea, it will have its own acceptance period.

#### COST FACTOR

Green showcasing includes advertising of green items/administrations, green innovation, green influence/vitality for which a ton of cash must be spent on R&D programs for their advancement and resulting special projects which at last may prompt expanded expenses.

#### CONVINCING CLIENTS

The clients may not put stock in the association's system of Green promoting, the firm accordingly ought to guarantee that they embrace every single conceivable measure to persuade the client about their green item, the most ideal choice is by executing Eco-marking plans. Once in a while the clients may likewise not will to pay the additional cost for the items.

#### SUSTAINABILITY

Initially the benefits are low since renewable and recyclable items and green advances are more costly. Green showcasing will be fruitful just in long run. Consequently, the business needs to anticipate long haul instead of transient methodology and plan for the same, in the meantime it ought to abstain from falling into bait of deceptive practices to make benefits in short term.

#### AVOIDING GREEN MYOPIA

The first rule of green marketing is focusing on customer benefits i.e. the primary reason why consumers buy certain products in the first place. Do this right, and motivate consumers to switch brands or even pay a premium for the greener alternative. It is not going to help if a product is developed which is absolutely green in various aspects but does not pass the customer satisfaction criteria. This will lead to green myopia. Also if the green products are priced very high then again it will lose its market acceptability. IRJC International Journal of Marketing, Financial Services & Management Research.

#### CURRENT STATUS

Many firms are beginning to realize that they are members of the wider community and therefore they must behave in an environmentally responsible fashion. But firms face limited natural resources and that's why they developed new or alternative ways of satisfying these unlimited wants. Finally green marketing looks at how marketing activities utilize these limited resources, while satisfying consumer wants, both of individuals and industry as well as achieving the selling of organisation's objectives. Conventional marketing is out. Green marketing and sustainable branding is in. According to new results of green marketing, effectively addressing the needs of consumers with a heightened environmental and social consciousness cannot be achieved with the same assumptions and formulate that guided consumer marketing since past war era. Time has changed. A new paradigm has emerged, requiring new strategies with a holistic point of view and eco-innovative product and service offering

**OPPORTUNITIES**

As demands change, many firms see these changes as an opportunity to be exploited and have a competitive advantage over firms marketing non-environmentally responsible alternatives. Some examples of firms who have strived to come more environmentally responsible, in an attempt to better satisfy their consumer needs are:

- McDonald's replaced its clam shell packaging with waxed paper because of increased consumer concern relating to polystyrene production and Ozone depletion.
- The Surf Excel detergent which saves water (advertised with the message—"do bucket paani roz bachana").
- The energy-saving LG consumer's durables are examples of green marketing.
- We also have green buildings which are efficient in their use of energy, water and construction materials, and which reduce the impact on human health and the environment through better design, construction, operation, maintenance and waste disposal. In India, the green building movement, spearheaded by the Confederation of Indian industry (CII) -Godrej Green Business Center, has gained tremendous impetus over the last few years. From 20,000 sq ft in 2003, India's green building footprint is now over 25 million sq ft.
- Xerox introduced a "high quality" recycled photocopier paper in an attempt to satisfy the demands of firms for less environmentally harmful products.

**SUGGESTIONS**

Though majority respondents claim to be aware of green products, but the awareness seems superficial and over-claimed. The deeper analysis reveals clearly that majority respondents, who claimed to be aware of green products, actually did not know as to what green products constitutes, exactly. The respondents did not understand that buying green products also contributes towards environment protection. The study also shows that people in general have lot of concern and strong desire to do something towards environment but they did not know how they can contribute. Hence marketers and Government cannot be individually held responsible but environmental protection agencies, media, must create awareness about green products as a mean to save the environment.

Marketer should take initiative keeping in the mind that consumer is concerned and willing to do their bit towards environment protection. Marketers should plan effective promotional strategies to educate them about green products, their usage and resultant impact on the environment protection that will help in long run and will enhance their goodwill and building strong brand image in the eyes of consumers. Similarly, the study points towards the need for an active role on the part of government and various stakeholders in educating the consumers towards being a green consumer.

Marketers should make use of environmental product and consumer benefit claims that are specific and meaningful. Marketers should acquire product endorsements or eco-certifications from reliable third parties and educate consumers about the meaning behind those endorsements and eco-certifications.

**CONCLUSION**

Now this is the right time to select "Green Marketing" globally. It will come with drastic change in the world of business if all nations will make strict roles because green marketing is essential to save world from pollution. From the business point of view because a clever marketer is one who not only convinces the consumer, but also involves the consumer in marketing his product. Green marketing should not be considered as just one more approach to marketing, but has to be pursued with much greater vigor, as it has an environmental and social dimension to it. With the threat of global warming looming large, it is extremely important that green marketing becomes the norm rather than an exception or just a fad. Recycling of paper, metals, plastics, etc., in a safe and environmentally harmless manner should become much more systematized and universal. It has to become the general norm to use energy-efficient lamps and other electrical goods.

Finally, consumers, industrial buyers and suppliers need to pressurize effects on minimize the negative effects on the environment-friendly. Green marketing assumes even more importance and relevance in developing countries like India. Live a green life and let the greenery of nature live for ever

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## TO STUDY THE HEALTH AND SAFETY MEASURES OF EMPLOYEES WITH REFERENCE TO PRIVATE TEXTILE COMPANY

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### ABSTRACT

*The project is entitled on "To study the health and safety measures of employees in Private Textile organization." The research purpose is to determine to study the health and safety measures of employees in Private Textile organization. As growth of industrialization, industrial workers are exposed to several types of hazards and accidents. In organization, for smooth functioning, the employer must ensure safety and security of his employees. Objective is to study the health and safety measures of employees. The study focus on awareness of the employees about health and safety in the working area, identify factors affecting on the health and safety of employees. Training, working environment and first aid activities are important factors. The study reveals that there are proper amount of health and safety measures provided by the organization. Research design used is descriptive in nature. The data collection instrument is a primary data that collected through questionnaire. In the research 100 respondents were taken on the basis of random sampling.*

### KEYWORDS

employees training, working accidents, first aid.

### JEL CODES

J28, J81.

### INTRODUCTION

**D**ue to swift in the industrial development, industrial workers are exposed to several types of injuries and threats. Every year lakhs of workers are injured due to electrical and radiation hazards, chemical, mechanical, and it leads to total or partial disablement. So, in recent years, greater attention is given to health and safety due to pressure from labour law and awareness of employees, trade unions, government.

The activities of labour health, safety and welfare in India are urgently needed because India is an industrial underdeveloped country and the conditions of working are not satisfactory in Indian industries. All workers are authorized to do work in the environment where risks of the workers' health and safety are properly controlled. Working environment consist of all the factors which act and react on the body and the mind of the employees. To create an environment where the primary aim is to ensure the greater of work and removes all the causes of problems.

Favourable outcomes of health and safety practice required the combination and involvement of both workers and employees in health and safety programs, and involve the consideration of issues relating to psychology, engineering safety, education, toxicology, industrial hygiene, etc.

Health issues are often given less attention than safety issues because the former are generally more difficult to confront. However, when health is addressed, so is safety, because a healthy workplace is by definition also a safe workplace. The converse, though, may not be true- a so called safe workplace is not necessarily also a health workplace. The essential point is that issues of both health and safety must be addressed in every place of work.

Work plays a control role in people's lives, since most workers spend at least eight hours a day in the workplace, whether it is on a plantation, in an office, factory, etc. therefore, work environments should be safe and healthy. Unfortunately, some employers assume little relationship for the protection of worker's health and safety. In fact, some employers do not even know that they have the often-legal responsibility and moral for the protection of workers.

Health and safety are an authority with a large scope demand many specialized fields. In its largest sense, it should aim at: The promotion and maintenance of the highest degree of social, physical and mental well-being of workers in all occupations. The prevention among workers of harmful effects on health is caused by their working conditions of the workers.

### LITERATURE REVIEW

**AishwaryaJaju, Jikku Susan Kurian, P. Ravikanth (2018)**

The study is undertaken on Health, safety & welfare measures for employees at Hindustan Coca Cola Pvt. Ltd: An empirical study. Objective is to examine & analyze various safety, health & welfare measure adopted in an organization and to know the employees opinion regarding the safety programs & practices. The data has been used primary and as well secondary data. The study indicates that, the health, safety & welfare measures adopted in Hindustan Coca-Cola beverages Pvt. Ltd. are extended to the workers according to the provisions of the factories Act. It discloses that the awareness of the workers about health and safety in the workplace is poor.

**J B Colla, A C Bracken, L M Kinney, W B Weeks (2018)**

The research has been done on measuring patient safety climate: a review of surveys. The aim of the study is to identify and review surveys used to measure patient safety climate in healthcare settings; abstracts were reviewed, papers selected, references searched, websites visited, and authors contacted. Primary data has been used as a data collection method. The study concludes that patient safety climate surveys vary considerably. Achievement of a culture conducive to patient safety may be an admirable goal in its own right, but more effort should be expended on understanding the relationship between measures of patient safety climate and patient outcomes.

**Patrick Gbadago, Sedem N. Amedome & Ben Q. Honyenuga (2017)**

The study has made an attempt on the impact of occupational health & safety measures on employee performance at the south tongu district hospital. The purpose of this study is to determine whether the occupational health & safety policy has been implemented in the organizational setup of the hospital and to identify the challenges that management faces in the implementation of occupational health & safety measures. The data has been collected through primary as well as secondary method. It can be concluded that occupational health and safety measures exist in the organizational setup of the south tongu district hospital. This is because all workers attested to this & the observation carried out in the hospital environment supports what the respondents attested to.

**Grace Katunge Jonathan, Rosemary WahuMbogo (2016)**

The study has been undertaken on Maintaining health & safety at workplace: Employee & employer's role in ensuring a safe working environment. The objective of the study is to examine the health and safety of teachers in secondary schools in the region. The source of data collection is primary method. The study conclude that it is worth noting that the staff are policy implementers & implementation cannot be complete without full knowledge of the policies to be implemented. Therefore, the Government should look into ways of address this issue at schools, so that implementation of such safety policies is made possible.

**KassuJilcha, Daniel Kitaw (2016)**

The study emphasis on a literature review on global occupational safety & health practice & accidents severity. The aim of the study is to identify existing gaps; a systematic literature review approach has been used. Primary method has been used as a data collection method. The study reveals that Workplace design and hazard interventions have also been seen as barriers in research findings. Barriers identified in manufacturing industries which need innovation.

**IMPORTANCE OF THE STUDY**

The study reveals important aspects regarding health and safety of employees. It provides useful insights to employer for safety and security of his employees. It helps organization to improve the concern area. Study is helpful to identify the weaker area of health and safety in a company. Therefore, it is essential to investigate about health and safety measures to improve worker’s morale and provide safe working zone where, they comfortably work.

**OBJECTIVES**

1. To study the health and safety measures of employees.
2. To study awareness of the employees about health and safety in the working area.
3. To identify Training factor affecting on the health and safety of employees.
4. To make awareness about the first aid kits how useful it is to employees.

**RESEARCH METHODOLOGY**

**RESEARCH DESIGN**

In this research Descriptive Research Design is used.

**SOURCE OF DATA COLLECTION**

**PRIMARY DATA COLLECTION**

In this data collection method, the data are collected at hand information on any happening or event (Questionnaire).

**SAMPLING SIZE**

The sample size will be 100 respondents.

**RESULTS AND DISCUSSION**

**A) GENDER**

**TABLE 1**

		Frequency	Percent	Valid Percent	Cumulative Percent
	Male	71	71.0	71.0	71.0
Valid	Female	29	29.0	29.0	100.0
	Total	100	100.0	100.0	

It is interpreting that there are 100 respondents out that 71 males and 29 were female. So we can say that the company hiring more males compare to female

**B) AGE**

**TABLE 2**

		Frequency	Percent	Valid Percent	Cumulative Percent
	Below 25	51	51.0	51.0	51.0
	26-30	38	38.0	38.0	89.0
Valid	31-35	10	10.0	10.0	99.0
	36-40	1	1.0	1.0	100.0
	Total	100	100.0	100.0	

It is interpreting that the total respondents are divided according to the age, as 51% respondents falls under the age (below 25), 38% respondents fall under the age (26-30), 10% respondents fall under the age (31-35), 1% respondents fall under the age (36-40).

**C) EXPERIENCE**

**TABLE 3**

		Frequency	Percent	Valid Percent	Cumulative Percent
	below 5	56	56.0	56.0	56.0
	6-10	37	37.0	37.0	93.0
Valid	11-15	5	5.0	5.0	98.0
	16-20	2	2.0	2.0	100.0
	Total	100	100.0	100.0	

it is interpreted that 56% respondents have below 5 years’ experience, 37% respondents have 6-10 years of experience, 5% respondents have 11to 15 years of experience, and 2.00% respondents have experience of16-20.

**D) EDUCATION**

**TABLE 4**

		Frequency	Percent	Valid Percent	Cumulative Percent
	pos. graduate	31	31.0	31.0	31.0
	master Degree	36	36.0	36.0	67.0
Valid	Bachelor Degree	23	23.0	23.0	90.0
	Other	10	10.0	10.0	100.0
	Total	100	100.0	100.0	

It is interpreting that 31% of respondents are pos. graduate, 36% of respondents are master degree, 23% of respondents are having bachelor degree and 10% are having other degrees.

**TABLE 5**

Sr. No	PARAMETERS	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Do you have the first aid activities and contents of the first aid kit?	34%	37 %	2 7%	2 %	0 %
2	Does company implement effective disciplinary procedure to maintain health and Safety.	17%	38%	43%	1%	1 %
3	Is the working temperature reasonable to work.	19%	28%	45%	7%	1%
4	Do you have enough space to work.	10%	39%	38%	11%	12%
5	Do you think that your working environment is safe to work.	18%	28%	39%	12%	13%
6	Is enough training given to workers before handling Equipment’s.	14%	40%	37%	5%	4%

TABLE 6

Sr. No.	Statement	Yes	No
1.	Are you aware of the health and safety measures adopted in the company?	85%	15%
2.	Do you have effective arrangements for communicating the health and safety matters?	72%	28%
3.	Does your company provide following safety tools:	72%	28%
	a. Mask	78%	22%
	b. Hand gloves	84%	16%
	c. Shoes	80%	20%
4.	Do you have suitable and sufficient fire extinguishing equipment and is this equipment is maintained in a serviceable condition?	75%	25%

## FINDINGS

- In this research majority of the population (79%) is male and (29%) is female.
- In this research majority of the population (51%) falls below 25 and (1%) falls under 36-40.
- In this research majority of the population (56%) below 5 years of experience and (2%) of population have 16-20 years of experience.
- In this research majority of the population (36%) of them have done their master's degree and (10%) of the population falls under other category.
- In this research majority of the population (85%) are aware of the health and safety measures adopted in the company, whereas (15%) are not aware of the health and safety measures adopted in the company.
- In this research majority of the population (72%) have effective arrangements for communicating the health and safety matters whereas (28%) don't have effective arrangements for communicating health and safety measures.
- In this research majority of the population (78%) said yes that they are provided with mask in the company whereas 22% of population said no that they are not provided with mask in the company.
- In this research majority of the population (84%) said yes that they are provided with hand gloves in the company, whereas (16%) of population said no that they are not provided with hand gloves in the company.
- In this research majority of the population (80%) said yes that they are provided with shoes in the company, whereas (20%) of population said no that they are not provided with shoes in the company.
- In this research majority of the population (75%) is suitable and sufficient fire extinguishing equipment and is this equipment maintained in a serviceable condition, whereas (25%) of population is not suitable and sufficient fire extinguishing equipment and is this equipment maintained in a serviceable condition.
- In this research majority of the population (46%) said that daily the company perform cleaning in the organization and (15%) of population said quarterly the company perform cleaning in the organization.
- In this research majority of the population (31%) said that training programs are conducted in the company for once in 5 years and (1%) of population said that training programs are conducted in the company rarely.
- In this research majority of the population (31%) said that always having proper drinking water facility in the company and (4%) of population said that they not get proper drinking facility in the company.
- In this research majority of the population (37%) is agreed with having the first aid activity and (2%) of population is disagreed with having first aid activity in the company.
- In this research majority of the population (43%) is neutral and 1% of population is strongly disagree with disciplinary procedure to maintain health and safety.
- In this research majority of the population (45%) is neutral with working temperature reasonable to work and (1%) of population is disagree with working temperature reasonable to work.
- In this research majority of the population (39%) agree with enough space to work and (2%) of population strongly disagree with the enough space to work in the company.
- In this research majority of the population (39%) is neutral and (3%) of population is strongly disagree with working environment is safety to work in the company.
- In this research majority of the population (40%) is agree with training given to workers before handling equipments and (4%) of population is strongly disagree with training given to workers before handling equipments.

## RECOMMENDATIONS

1. To provide sufficient information regarding to health and safety.
2. Provide uniform to employee.
3. Provide more training to the employees regarding the health and safety measures and to be taken care while working with harmful chemical.

## CONCLUSIONS

The survey was designed to find health and safety measures of employees in chemical based organization because organization is based on manpower. From the research it can be conclude that there is a good health and safety measure provided to employees in the organization. All employees are satisfied and they have positive views for their organization. Despite, training is one of the important factor, where organization should improve and adopt some strategies for increase effectiveness of training.

## LIMITATIONS

1. The study focus on limited area and time.
2. As a student, there is a lack of finance in research.
3. The study may be the subject to personal biasness of the respondents while answering the questionnaire.

## SCOPE OF THE STUDY

Health and safety is essential element for every organization. It leads to frame health and safety policies on concern of area. This study shows that if the industries will provide better health and safety policies then there is less chance of dangerous occurrence in the organization. It is most important to give health and safety measures to employees. It leads to increase employees' productivity and reduce the risk of workplace hazards.

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**APPENDIX**

- 1) Gender:  
 Male                      Female
- 2) Age:  
**A) Below 25 B) 26-30 C) 31-35 D) 36-40 E) Above 40**
- 3) Experience (in years):  
**A) Below 5 B) 6-10 C) 11-15 D) 16-20 E) Above 20**
- 4) Education:  
 Post. Graduate                      master’s degree                      Bachelor’s degree                      other
- 5) Are you aware of the health and safety measures adopted in the company?  
 Yes No
- 6) Do you have effective arrangements for communicating the health and safety matters?  
 Yes No
- 7) Does your company provide following safety tools?

Instruments	Yes	No
Mask		
Hand gloves		
Shoes		

- 8) Do you have suitable and sufficient fire extinguishing equipment and is this equipment maintained in a service able condition?  
 Yes No
- 9) How frequently does your company perform cleaning in the organization?  
 Daily Twice in a week Monthly Quarterly
- 10) How frequently training programs are conducted in the company?  
**(A) Once in 5 years (B) Once in 3 years (C) Yearly once (D) Monthly (E) Rarely**
- 11) Do you have proper drinking water facility inside your workplace?  
**(A) Always(B) Sometimes (C) Often (D) Rarely (E) Not at all**

Q. No.	PARAMETERS	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
12)	Do you have the first aid activities and contents of the first aid kit.					
13)	Does company implement effective disciplinary procedure to maintain health and Safety.					
14)	Is the working temperature reasonable to work.					
15)	Do you have enough space to work.					
16)	Do you think that your working environment is safe to work.					
17)	Is enough training given to workers before handling Equipments.					

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