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# Growth of Financial Derivatives Market with Special Reference to National Stock Exchange –An Analysis

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## BUSINESS RESEARCH

### Abstract

*The Derivative Market in India, like its counterparts abroad, is increasingly gaining significance. Since the time derivatives were introduced in the year 2000, their popularity has grown manifold. This can be seen from the fact that the daily turnover in the derivatives segment on the National Stock Exchange currently stands at crores, much higher than the turnover clocked in the cash markets on the same exchange. In fiscal 2016-17, the total turnover in equity cash market stood at about Rs 60.5 lakh crore, whereas the same for equity derivatives was at a high of Rs 944 lakh crore. While the cash market has grown at an annual compounded growth rate of 11 per cent since 2004-05, the same for equity derivatives is over 35 per cent.*

*Managing Financial Risk is one of the most essential activities that every firm needs to consider. Various tools were and are used for managing financial risk and out of all, derivatives are the most widely used tool to manage financial risk. The present study focus on the evolution, business growth and trends of products which are trading at NSE in derivatives segment with the help of AAGR, CAGR, Standard Deviation, Correlation and ANOVA.*

**Keywords:** Derivatives, Risk, AAGR, CAGR, Correlation, NSE

## **1. Introduction**

Derivatives are financial contracts that derive their value from an underlying asset. These could be stocks, indices, commodities, currencies, exchange rates, or the rate of interest. These financial instruments help you make profits by betting on the future value of the underlying asset. So, their value is derived from that of the underlying asset. This is why they are called 'Derivatives'.

The National Stock Exchange of India Limited is the leading stock exchange of India, located in Mumbai. NSE was established in 1992 as the first demutualized electronic exchange in the country. NSE was the first exchange in the country to provide a modern, fully automated screen-based electronic trading system which offered easy trading facility to the investors spread across the length and breadth of the country.

National Stock Exchange has a total market capitalization of more than US\$1.41 trillion, making it the world's 12th-largest stock exchange as of March 2016. NSE's flagship index, the NIFTY 50, the 51 stock index (50 companies with 51 securities inclusive of DVR), is used extensively by investors in India and around the world as a barometer of the Indian capital markets. However, only about 4% of the Indian economy / GDP is actually derived from the stock exchanges in India.

## **2. Review of Literature**

1. Priyanka and Kavitha (2015), article titled "An Analysis of Financial Derivatives and its Growth rate in India", studied total Derivatives contracts and turnover with the help of compound annual growth rate of equity derivative segment with both the NSE and BSE comparatively.

2. Shalini and Raveendra (2014), article titled "A study of Derivatives Market in India and its Current Position in Global Financial Derivatives Market", studied the scope, history, types, growth, future prospects of Indian derivatives market.

3. Kamlesh and Meetu (2013), article titled "Derivatives Market in India: Evolution, Trading Mechanism and Future Prospects" pointed out about history, types and issues concerning the Derivatives market in India.

4. Dr. Daksha Pratapsinh Chauhan (2013), paper titled "Performance of Stock Exchanges in India" covered the financial performance of BSE and NSE in India.

5. Ashutosh and Satishkumar (2010), in their research paper titled "Development of Financial Derivatives

Market in India-A case study” studied historical roots of derivatives market in India, Derivative Products, Regulation of Derivatives Market in India.

### **3. Objectives of the Study**

With the view to the literature the following objectives are framed to;

1. To find out the Financial Derivatives Products at NSE.
2. To Analyze the Business Growth of Derivatives Products at NSE.
3. To study the Trends in Derivatives Market at NSE.
4. Hypothesis

$H_0$ : There is no significant difference among the mean turnover of different derivatives segments.

$H_1$ : There is a significant difference among the mean turnover of different derivatives segments

### **5. Methodology of the Study**

This study is based on the Descriptive Analysis and the required data collected through Secondary data Sources.

For the analysis the following statistical method are used

1. Compounded Annual Growth Rate (CAGR)
2. Average Annual Growth Rate (AAGR)
3. Standard Deviation
4. Correlation Coefficient
5. Analysis of Variance (ANOVA)

### **6. Analysis and Interpretation**

#### **6.1 Equity derivatives trading at NSE**

Since the launch of the Index Derivatives on the popular benchmark Nifty 50 Index in 2000, the National Stock Exchange of India Limited (NSE) has moved ahead with a varied product offering in equity derivatives. The Exchange currently provides trading in Futures and Options contracts on 9 major indices and 175 Securities. The National Stock Exchange of India Limited (NSE) commenced trading in derivatives with the launch of index futures on June 12, 2000. The futures contracts are based on the

popular benchmark Nifty 50 Index. The Exchange introduced trading in Index Options (also based on Nifty 50) on June 4, 2001. NSE also became the first exchange to launch trading in options on individual securities from July 2, 2001. Futures on individual securities were introduced on November 9, 2001. Futures and Options on individual securities are available on 175 securities stipulated by SEBI.

The Exchange has also introduced trading in Futures and Options contracts based on Nifty IT, Nifty Bank, and Nifty Midcap 50, Nifty Infrastructure, Nifty PSE, Nifty CPSE indices.

**Table 1: Products in equity derivatives segment trading at NSE**

S. no.	Product Type	Underlying	Instrument Type
1.	Index Futures	Concerned Index	FUTIDX
2.	Stock Futures	Concerned Stock	FUTSTK
3.	Index Options	Concerned Index	OPTIDX
4.	Stock Options	Concerned Stock	OPTSTK
5.	VIX Futures	INDIA VIX	FUTIVX

The above table indicates Product types, Underlying Asset and Instrument types of the Equity Derivatives, trading at NSE.

## 6.2 Currency Derivatives trading at NSE

NSE was the first exchange to have received an in-principle approval from SEBI for setting up currency derivative segment. The exchange launched its currency futures trading platform on 29<sup>th</sup> August, 2008. Currency futures on USD-INR were introduced for trading and subsequently the Indian rupee was allowed to trade against other currencies such as euro, pound sterling and the Japanese yen. Currency Options was introduced on October 29, 2010.

A currency future, also known as FX future, is a futures contract to exchange one currency for another at a specified date in the future at a price (exchange rate) that is fixed on the purchase date. On NSE the price of a future contract is in terms of INR per unit of other currency e.g. US Dollars. Currency future contracts allow investors to hedge against foreign exchange risk. Currency Derivatives are available on four currency pairs viz. US Dollars (USD), Euro (EUR), Great Britain Pound (GBP) and Japanese Yen (JPY). Currency options are currently available on US Dollars.

**Table 2: Products in Currency Derivatives segment trading at NSE**

<b>S. no</b>	<b>Product Type</b>	<b>Underlying</b>	<b>Instrument Type</b>
<b>1.</b>	Currency Futures	USD-INR	FUTCUR
<b>2.</b>	Currency Futures	EUR-INR	FUTCUR
<b>3.</b>	Currency Futures	GBP-INR	FUTCUR
<b>4.</b>	Currency Futures	JPY-INR	FUTCUR
<b>5.</b>	Currency Options	USD-INR	OPTCUR

The above table indicates Product types, Underlying Asset and Instrument types of the Currency Derivatives, trading at NSE.

### **6.3 Interest Rate Futures trading at NSE**

An Interest Rate Futures contract is “an agreement to buy or sell a debt instrument at a specified future date at a price that is fixed today.” The underlying security for Interest Rate Futures is either Government Bond or T-Bill. Exchange traded Interest Rate Futures on NSE are standardized contracts based on 6 year, 10 year and 13 year Government of India Security (NBF II) and 91-day Government of India Treasury Bill (91DTB). All futures contracts available for trading on NSE are cash settled. Currently, Interest Rate Futures segment of NSE offers two instruments i.e. Futures on 6 year, 10 year and 13 year Government of India Security (NBF II) and 91-day Government of India Treasury Bill (91DTB).

#### **91 Day Treasury bill**

The 91-Day Treasury bill (91DTB) futures contract is available on notional 91-day Government of India (GOI) Treasury bill.

#### **NSE Bond Futures II (NBF II)**

The NSE Bond Futures II (NBF II) contracts are available for trading based on Government of India (GOI) security of face value 100 with semi-annual coupon and residual maturity between 9 and 10 years on the day of expiry of IRF contract, as decided by stock exchanges in consultation with FIMMDA.

**Table 3: Global Indices Derivatives trading at NSE**

S. no	Product Type	Underlying
1.	Index Futures	S&P 500
2.	Index Options	S&P 500
3.	Index Futures	FTSE100
4.	Index Options	FTSE100
5.	Index Futures	DJIA

The above table indicates Product types and Underlying Asset of the Global Index Derivatives trading at NSE.

**Table 4: The Business Growth in Equity Derivatives at NSE (F&O) segment:**

Year	Total No. of Contracts	Total Turnover (Rs. Cr.)	AGR(%) of Turnover
2000-01	90580	2365	
2001-02	4196873	101926	4210
2002-03	16768909	439862	331
2003-04	56886776	2130610	384
2004-05	77017185	2546982	20
2005-06	157619271	4824174	89
2006-07	216883573	7356242	52
2007-08	425013200	13090477.75	78
2008-09	657390497	11010482.20	-16
2009-10	679293922	17663664.57	60
2010-11	1034212062	29248221.09	66
2011-12	1205045464	31349731.74	7
2012-13	1131467418	31533003.96	0.6
2013-14	1284424321	38211408.05	21
2014-15	1837041131	55606453.39	46
2015-16	2098610395	64825834.30	17
2016-17	1399746129	94370301.61	46
<b>Total</b>	12281707706	404311739.7	



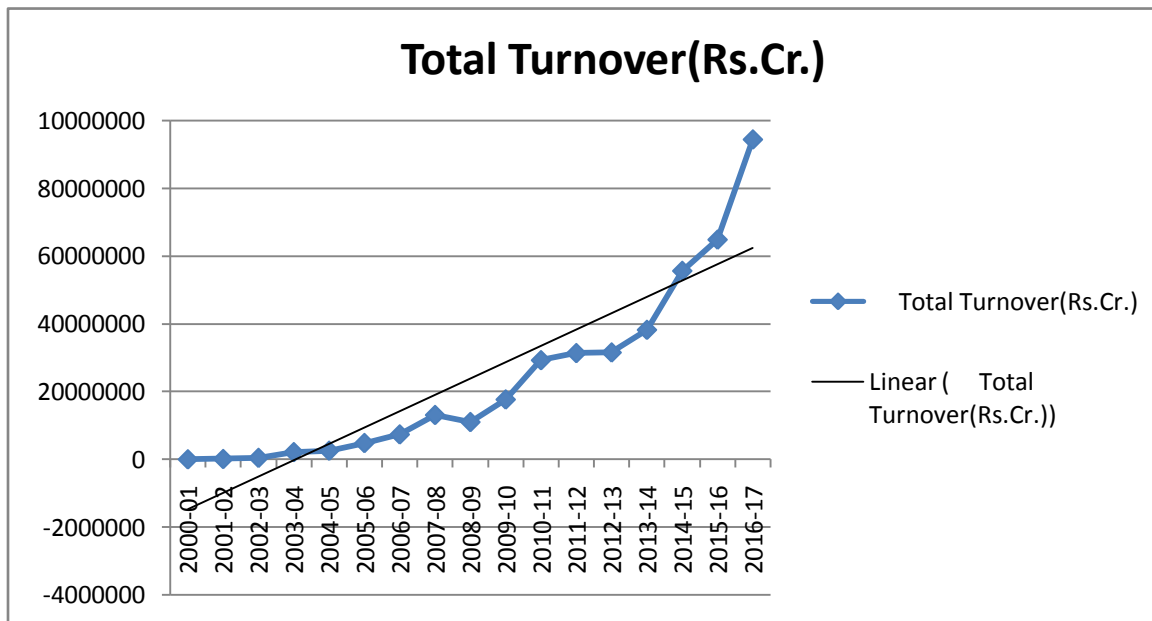
<b>Average</b>	722453394.5	23783043.51	
<b>Standard Deviation</b>	662992087.2	26088510.61	
<b>Correlation</b>	<b>0.878996329</b>		
<b>AAGR</b>		<b>338.2396381%</b>	
<b>CAGR</b>		<b>94%</b>	

(Source: [www.nseindia.com](http://www.nseindia.com))

Table 4 Shows that the Business Growth in Equity Derivatives at NSE during 2000-01 to 2016-17.

### Interpretation

The mean value of the total no of contracts is 722453394.5 and Total turnover is 44923526.63. The value of Standard Deviation for Contracts and Turnover is 662992087.2 and 26088510.61 respectively. The correlation between Total no of contracts and Total Turnover is 0.878996329, It indicates a positive strong relation between the above two variables. The CAGR of the total Turnover is 94%. The Average Annual Growth Rate of Total Turnover is 338.2396381.



**Figure 1: Trends in Equity Derivatives at NSE:**

### Interpretation

The value of turnover of the equity derivatives shows a rising trend over the years, except in the year 2008-09. In the year 2016-17 equity derivatives stands at highest turnover with Rs.94370301.61 crores. Only in the year 2008-09 the turnover was declined.

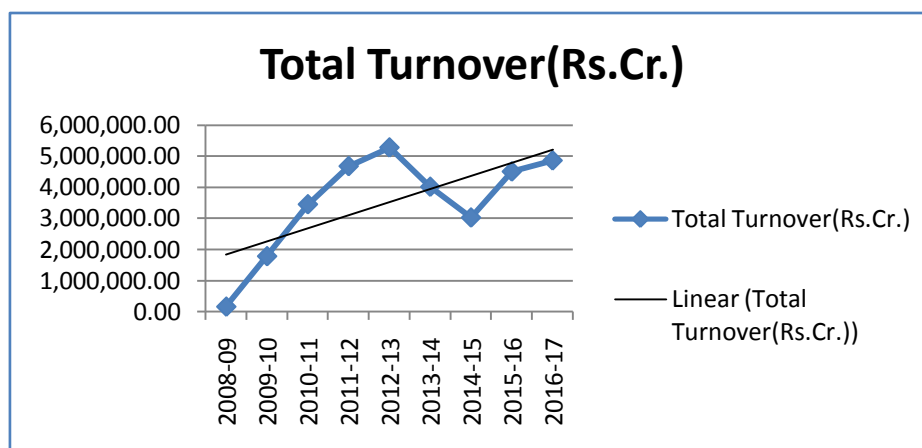
**Table 5: The Business Growth in Currency Derivatives at NSE**

<b>Year</b>	<b>Total No. of Contracts</b>	<b>Total Turnover (Rs. Cr.)</b>	<b>AGR (%) of Turnover</b>
2008-09	3,26,72,768	1,62,272.43	
2009-10	37,86,06,983	17,82,608.04	999
2010-11	74,96,02,075	34,49,787.72	94
2011-12	97,33,44,132	46,74,989.91	36
2012-13	95,92,43,448	52,74,464.65	13
2013-14	66,01,92,530	40,12,513.45	-24
2014-15	48,06,64,694	30,23,907.67	-25
2015-16	67,35,83,164	45,01,885.58	49
2016-17	71,24,51,439	48,57,075.85	8
<b>Total</b>	<b>5,62,03,61,233</b>	<b>3,17,39,505.30</b>	
<b>Average</b>	<b>624484581</b>	<b>3526611.70</b>	
<b>S.D</b>	<b>277333722.8</b>	<b>1561697.713</b>	
<b>Correlation</b>	<b>0.936520021</b>		
<b>AAGR</b>		<b>143.5742%</b>	
<b>CAGR</b>		<b>53%</b>	

(Source: [www.nseindia.com](http://www.nseindia.com))

**Interpretation:**

The mean value of the total no of contracts is 624484581 and Total turnover is Rs.3526611.70. The value of Standard Deviation for Contracts and Turnover is 277333722.8 and 1561697.713 respectively. The correlation between Total no of contracts and Total Turnover is 0.936520021, it indicates a positive strong relation between the above two variables. The CAGR of total turnover is 53%. The Average Annual Growth Rate is 143.5742%.



**Figure 2: Trends in Currency Derivatives at NSE:**

### Interpretation

The currency derivatives experienced the turnover with a rising trend from 2008-09 to 2012-13, thereafter it shows a small decline up to the year 2014-15 and then it raised with a highest turnover. In the year 2012-13 the turnover touches the highest point by relatively.

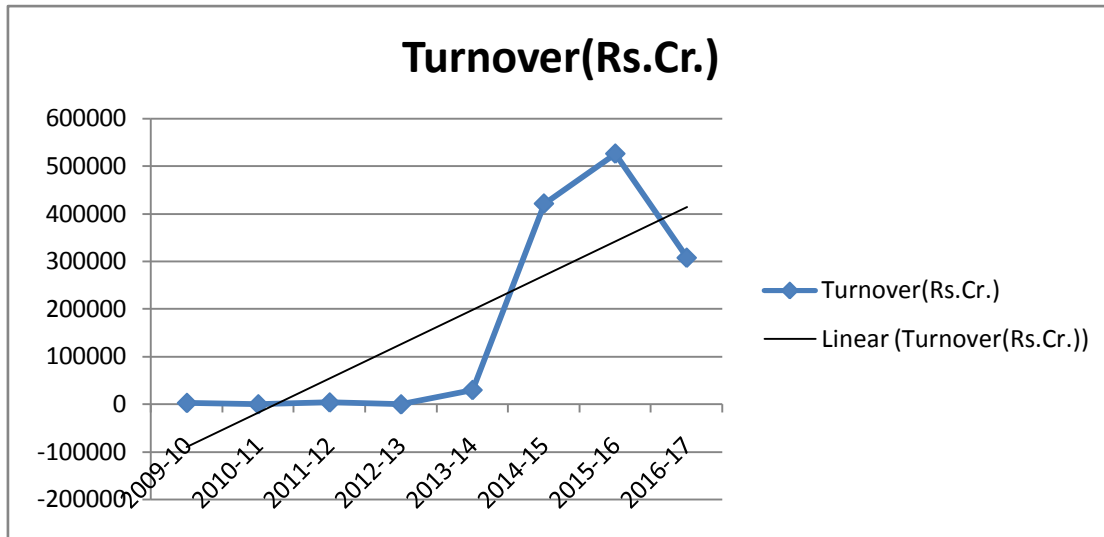
**Table 6: The Business Growth in NSE Bond Futures Segment**

Year	Total .no. Contracts	Turnover (Rs. Cr.)	AGR(% of Turnover)
2009-10	160894	2974.59	
2010-11	3348	61.90	-98
2011-12	215200	3959.21	6296
2012-13	12	0.22	-100
2013-14	1502148	30172.89	13714850
2014-15	20587036	421558.28	1297
2015-16	26056481	526424.57	25
2016-17	14807039	307809.32	-42
<b>Total</b>	63332158	1292960.98	
<b>Average</b>	7916519.75	161620.1225	
<b>S.D</b>	10142565.23	206623.815	
<b>Correlation</b>	<b>0.999910027</b>		
<b>AAGR</b>		<b>1960318.4%</b>	
<b>CAGR</b>		<b>94%</b>	

(Source: [www.nseindia.com](http://www.nseindia.com))

### Interpretation

The mean value of the total no of contracts is 7916519.75 and Total turnover is 161620.1225. The value of Standard Deviation for Contracts and Turnover is 10142565.23 and 206623.815 respectively. The correlation between Total no of contracts and Total Turnover is 0.999910027, It indicates a positive strong relation between the above two variables. The CAGR of Total Turnover is 94%.The Average Annual Growth Rate is 1960318.4.



**Figure 3: Trends in IRF at NSE**

### Interpretation

In the interest futures segment it shows a flat trend from the year 2009-2010 to 2012-2013. Thereafter it shows a rising trend and then declined in the year 206-17. In the year 2012-13 the turnover touches the highest lower point with Rs. 0.22 crores.

**Table 7: Comparative Analysis of Growth in Financial Derivatives Turnover at NSE**

Parameter	Equity Derivatives	Currency Derivatives	Interest Rate Futures
Mean	44923526.63	35,26,611.70	161620.1225
Standard Deviation	26088510.61	1561697.713	206623.815

Correlation	0.878996329	0.936520021	0.999910027
AAGR	338.2396381%	143.5742%	1960318.4%
CAGR	94%	53%	94%
F -test	For $v_1=2$ , $v_2 = 31$ the table value is 3.31 at 5% significance level. Computed value 5.49. Accept the alternate hypothesis		

### **Interpretation**

The Equity Derivatives Stands at highest mean value i.e., 44923526.63 when we compare with currency Derivatives and interest Rate futures. In the Correlation point of view the Interest Rate Futures stands at high with the value 0.999910027 by comparing equity and currency derivatives. Both the Equity Derivatives and Interest Rate Futures have the highest CAGR value 94% by comparing with currency derivatives. The AAGR of Interest Rate Futures is 1960318.4%, it is highest rate by comparing with Equity Derivatives and Currency Derivatives.

Further to test the hypothesis set to know whether there is a significant difference among the mean turnover of various derivative segment, F test ( One way ANOVA) is used. For  $v_1=2$ ,  $v_2 = 31$  the table value is 3.31 at 5% significance level. Computed value is 5.49. The calculated value is more than the critical value, so there is a significant difference between mean values of derivatives turnover in the segments trading at NSE. It indicates that investors are not participating in all the derivative segments equally. SEBI, NSE, BSE and other market players should educate the investors about the prospects of derivative trading.

## Conclusion

India is one of the most successful developing countries in the derivatives market trading. Derivatives market has experienced a rising trend in terms of total turnover since the inception of the derivative products. The NSE and BSE have been key sources in the trading of financial derivatives market. The overall Business growth in each and every product in derivatives at NSE signaling a positive trend. CAGR of equity derivatives and Interest rate futures stands at 94% and currency derivative segment with 53%. All the Derivative segments at NSE have a positive correlation between contracts and total turnover. In the coming years India will be one of the prominent derivative transaction destinations of the world.

## References

- Caroline Priyanka and S.Kavitha (2015), An analysis of Financial Derivatives and its growth rate in India, *EPRA International Journal of Economic and Business Review*; ISSN:2347-9671.
- Dr. Daksha Patapsinh Chauhan (2013) “Performance of Stock Exchanges in India”; *International Journal of Conceptions on Management and Social Sciences*; ISSN:2357-2787.
- Grinblatt and Titman, 2004. *Financial markets and corporate strategy*. McGraw Hill.
- Kamlesh and Meetu (2013), “Derivatives Market in India : “Evolution, Trading Mechanism and Future Prospects””: *International Journal of Marketing, Financial Services & Management Research*; ISSN-2277-3622.
- MacKenzie, D. and Millo, Y., 2003. Constructing a market, performing theory: The historical sociology of a financial derivatives exchange. *American journal of sociology*, 109(1), pp.107-145.
- National Stock Exchange Data Source Access from [www.nseindia.com](http://www.nseindia.com)
- SEBI : <http://www.sebi.gov.in>
- Shalini and Raveendra (2014), “A Study of Derivatives Market in India and its Current Position in Global Financial Derivatives Market”; *IOSR Journal of Economics and Finance*; ISSN 2321-5933.

# **A Study on Job Satisfaction of Employees in K.G. Denim at Karamadi Coimbatore**

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## **Abstract:**

Work satisfaction is defined as a pleasurable or positive emotional state resulting from the appraisal of one's job; and an affective reaction to one's job: and an attitude towards one's job. There are a variety of factors that can influence a person's level of satisfaction. Job satisfaction also includes the extra facilities that are provided to them, and the level of interaction among employees, and co-ordination among co-workers who are performing the same type of job. It is a personal opinion of employees that differs from employee to employee about their work designed to them in their working place; it is not just performing a task but performing a job according to their experience and area of interest and specialization.

## **Introduction**

Work satisfaction is defined as a pleasurable or positive emotional state resulting from the appraisal of one's job; and an affective reaction to one's job: and an attitude towards one's job. There are a variety of factors that can influence a person's level of satisfaction.

Work satisfaction is in regards to ones feeling or state-of-mind regarding the nature of their work. Work satisfaction can be influenced by several factors the quality of one's relationship with supervisor, the quality of physical environment in which they work, degree of fulfillment in their work.

One of the biggest preludes to the study of job satisfaction was the Hawthorne studies. This study primarily credited to Elton mayo of the Harvard business school sought to find the effects of various conditions (notably illumination) on worker's productivity. This study ultimately showed that novel changes in working conditions temporarily increase productivity this finding provided strong evidence that people work for purposes other than pay, which paved way researchers to investigate other factors in job satisfaction.

The goal of job satisfaction is to determine the level of stratification of employees working at KG denim. The study is made to analyze the effective working conditions provided for employees and their level of satisfaction for performing the job specified to them. Job satisfaction also includes the level of relationship of lower employees to their superior or management.

Job satisfaction refers to a level of satisfaction that derives the employees to work for organization without any discomfort or lag of environmental hazard. The employees deserve a perfect environment and suitable working conditions to perform their job designed to them.

## **Determinants of job satisfaction;**

The Various Influencing Job Satisfaction: May Be Classified Into Two Categories:

- Environmental factors
- Personal factors

## **Scope of the Study**

The scope of the study was extended to all departments and administrative officer of KG Denim Ltd. of company regarding employees, the scope of study was confined to all grades of employees.

- It provides opportunities for the employees to express their emotional tension.
- To assessing training needs.
- It tells the management how the employees feel about their job.
- To understand the level of morale and ensuring proper communication.

## **Objectives of the Study**

- ❖ To study the democratic factors among employees in the organization.
- ❖ To know the experience of employees in the organization.
- ❖ To measure the employees satisfied with the top management.
- ❖ To study the relationship between gender and level of satisfaction with their working hours.
- ❖ To find the relationship between marital status and level of satisfaction

with their salary.

## **Research Methodology**

Research is a way to scientific and systematic search for pertinent information on a specific topic and solves the research problem. Research is an art of scientific investigation. It may be understood as a science of studying how research is done scientifically.

## **Research Design**

The research design is descriptive in nature and for data collection simpler random sampling method is used.

## **Data sources:**

- Primary data
- Secondary data

## **Primary data:**

Primary data was collected through well structured questionnaires and informal talks during leisure. In addition to this, data also collected through observation method.



**Secondary data:**

The secondary was collected through well training records, personnel report of KG denim pvt.ltd, academic bodies, personnel department, internet etc.,

**Sampling design**

A sampling design is a convenient sampling

**Sampling size**

A sample size of the study is 100 employees. This includes workers supervisor and executives.

**Tools and techniques:**

- Simple Percentage Analysis
- Chi-square

**Profile of the Company****History of K G Denim Ltd**

KG Denim Ltd. (KGDL) was incorporated on June 25, 1992 under the Companies Act, 1956. KGDL has its registered office at Then Thirumalai, Mettupalayam, Coimbatore District, Tamil Nadu. The company was promoted by K. Govindaswamy Naidu and his sons including KG Baalakrishnan and went public in the year 1993.

KGDL is a premier denim and apparel fabric manufacturer, whose products are supplied to leading jeans wear makers, fashion brands and retailers worldwide. It sells its products under the trade mark Indigo Fabrics with various lines like Strength, Pride, Ecstasy, Fortune and Passion and Trigger for readymade jeans. KGDL has recently entered the home textiles market to provide innovative and specialized products for beds, blankets, pillow cases and duvet/ comforter covers.

The company has two wholly owned subsidiaries (a) Trigger Apparels Limited (b) K G Denim (USA) Inc. K G Denim (USA) Inc is yet to commence commercial operations. Trigger Apparels Limited markets Trigger branded garments in the domestic market. It commenced operations in the domestic marketing during 2005–06

The products are well sought after by leading Jeanswear makers, fashion brands and Retailers worldwide. KG Denim sells its products under the trade mark Indigo Fabrics, with various lines like Strength, Pride, Ecstasy, Fortune and Passion.

KG Denim now has entered the home textiles market to provide innovative and specialized products for Beds, Blankets, pillow cases and Duvet/comforter covers.

KG Denim is part of textile group having annual turnover of \$150 million and the company currently manufactures

- 24 million meters of denim fabrics
- 12 million meters of cotton fabrics
- 2 million equivalent sheetsets of made-ups
- 3 million jeans & trousers.

KG Denim has spinning equipments from Trutzchler& Lakshmi Rieter to produce some of the most demanding yarns required to weave fashion fabric for various applications.

Product range of the company includes:

- Denim fabric
- Apparel fabric
- Jeanswear
- Bed & Bath

Trigger, its jeans wear brand is the largest selling brand in the country in its segment.

Achievements/ recognition:

- ISO 9001:2000 certified
- ISO 14001:2004 certified.
- Oeko-Tex-tested for harmful substances
- Lycra Accredited Mill
- Organic Certification-GOTS
- Organic Exchange.
- The first textile processing company in India to achieve EMS 14001 during the year 1998 towards Environment Management System.

### **Analysis and Interpretation of the Data**

The data after collected has to be processed and analyzed in accordance with in the outline lays down for the purpose at time to develop the research plan.

It is measured with the help of tools and techniques

- **Simple percentage analysis**

It is commonly used tool to analysis the percentage of the data.

$$\text{Percentage} = (\text{No. of Respondents/ Sample size}) * 100$$

- **Chi square analysis**

$$X^2 = \sum \frac{(\text{observed frequency} - \text{expected frequency})^2}{\text{Expected frequency}}$$

### Limitation of Study

- The study requires only 100 employees inside the organization.
- The study on job satisfaction requires employees only; other persons are not surveyed.
- Cost factors also affect the study as limited.

**Table - 1**

### Age Group of the Employees

SL. NO.	Age	No. Of Respondents	Percentage
1	18Years-25 Years	50	50
2	25 Years -35 Years	32	32
3	35 Years -45 Years	14	14
4	45 Years & ABOVE	04	04
	TOTAL	100	100

### Interpretation

The above table shows that 50% of the respondents are 18-25 Years old, 32% of respondents are 25-35 Years old, 14% of the respondents are 35-45 Years old and only 4% of the respondents are 45 & above Years old.

- **Majority 50% of the respondents are only 18-25 Years old.**

**Table - 2**

### Total Experience Of The Employee In The Organization

SL. NO.	No. Of Years	No. Of Respondents	Percentage
1	0 Years -3 Years	50	50
2	3 Years -5 Years	32	32
3	5 Years -7 Years	10	10
4	More than 7 Years	08	8
	TOTAL	100	100

### Interpretation

The above table shows that 50% of the respondents are working in KG Company 0-3 years, 32% of the

respondents are working with KG Company 3-5 years, 10% of the respondents are working with KG Company 5-7 years and only 8 % of the respondents are working with KG Company more than 7 years.

- **Majority 50% of the respondents are working with KG Company 0-3 years.**

**Table - 3**

**Employees Satisfied With the Top Management**

Sl. No.	Particulars	No. Of Respondents	Percentage
1	Strongly Agree	34	34
2	Agree	44	44
3	Neutral	10	10
4	Disagree	12	12
	Total	100	100

**Interpretation**

The above table shows that 34% of the respondents are strongly agreed the satisfied with the top management, 44% of the respondents are agreed the satisfied with the top management, 10% of the respondents are to choose neutral satisfied with the top management and only 12 % of the respondents are disagreed.

- **Majority 44% of the respondents are agreed satisfied with the top management.**

**Table - 4 The Relationship between Gender and Level of Satisfaction with Their Working Hours**

**(H<sub>0</sub>): There is a significant relationship between the gender of the respondent and the frequency of the working hours provided to them**

Calculated value	0.330432
Table value	7.815
Level of significance	5%
Degree of freedom	3
Significant / not significant	Significant

**Interpretation:**

The table showing the result of chi square analysis for finding the significant association between the gender and satisfaction of working hours. The calculated value is lesser than the table value hence there is a relationship between the gender and working hours of the respondents.

**Table - 5 The Relationship between Marital Status and Level of Satisfaction with Their Salary**

**(H<sub>0</sub>): There is a significant relationship between the marital status of the respondent and the satisfaction on salary provided to them**

Calculated value	0.058928
Table value	7.815
Level of significance	5%
Degree of freedom	3
Significant / not significant	Significant

**Interpretation:**

The table showing the result of chi square analysis for finding the significant association between the gender and satisfaction on salary provided. The calculated value is lesser than the table value hence there is a relationship between the marital status and salary provided to them.

**Findings**

- Majority 50% of the respondents are only 18-25 Years old.
- Majority 50% of the respondents are working with KG Company 0-3 years.
- Majority 44% of the respondents are agreed satisfied with the top management.
- There is a relationship between the gender and working hours of the respondents.
- There is a relationship between the marital status and salary provided to them.

**Suggestions**

- ❖ To improve the salary for the workers of the organization
- ❖ The company shall focus on non-monetary measures like promotion, welfare facility to increase employee's satisfactions.
- ❖ Every employee should have smooth relationship with their supervisors.

Our standard employee should have maximum satisfactory level towards the following which may leads to increase their overall performance:

- ✓ Supervisor relations
- ✓ Pay and benefits
- ✓ Training
- ✓ Working environment
- ✓ Communications.

## Conclusion

The job satisfaction is one of the important role in the organization. It helps to improve the employees' needs in the company. Majority of the employees are fully satisfied with the facilities provided by the company. Thus the study concludes that the satisfaction facilities providing by the KG mills pvt.ltd. is highly effective to satisfying their employees. However the organization should proactively react to the changes in the environment, thus providing the better standard both at the work place and outside the work place. Finally thus we may conclude that the majority of employees are satisfied with their job.

## Bibliography

- Aswathappa, K.E.M.A.L., 2005. *Human resource and personnel management*. Tata McGraw-Hill Education.
- Bhattacharyay, B. and De, P., 2005. Promotion of Trade and Investment between People's Republic of China and India: Toward a Regional Perspective. *Asian Development Review*, 22(1), p.45.
- Danielsson, C.B. and Bodin, L., 2008. Office type in relation to health, well-being, and job satisfaction among employees. *Environment and Behavior*, 40(5), pp.636-668.
- Ilies, R., Wilson, K.S. and Wagner, D.T., 2009. The spillover of daily job satisfaction onto employees' family lives: The facilitating role of work-family integration. *Academy of Management Journal*, 52(1), pp.87-102.
- Koch, J.L. and Steers, R.M., 1978. Job attachment, satisfaction, and turnover among public sector employees. *Journal of vocational behavior*, 12(1), pp.119-128.
- Shilpa, V. and Gopal, R., 2011. The implications of implementing electronic-human resource management (e-HRM) systems in companies. *Journal of Information Systems and Communication*, 2(1), p.10.
- Yener, H. and Kurt, M., 2008. Factors affecting personnel performance in retail marketing: An application of Structural Equation Modeling. *Social Behavior and Personality: an international journal*, 36(3), pp.327-336.

# **Impact of B.Ed Curriculum to Change the Attitude towards Teaching Profession of Millennial Teacher Trainees**

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## **Abstract**

*The present paper is an attempt to study and compare the attitude towards teaching profession of millennial teacher trainees on the basis of their location of residence and Academic stream. The sample comprises 100 B.Ed students. A likert scale with five points was used, containing 90 items. Pretest – Posttest Design was adopted. The data obtained show that there is a significant difference between pre and post test of B.Ed students towards teaching profession.*

## **Introduction**

Millennial generation is a term coined by Neil Howe (2000) and represents children born after 1982. These children, according to Howe and Strauss (2000), are different from any of the previous generation children in their characteristics. The term was used primarily to describe American children but it has found acceptance in other countries including India. The millennial children are overprotected by their parents, better educated, more affluent, technologically savy and socially connected. The events and culture that have surrounded the millennium children are markedly different in their nature and scope from any in the previous decades. This has had a profound effect on the current generation of students and young adults.

Attitude is a personality trait which indicates towards individual's likes or dislikes. G.W. Allport defines "Attitude is a mental and neutral state of readiness, organized through experience, exerting a directive and dynamic influence upon an individual's response to the objects and situations with which it is related. It is clear that the attitude of a student is formed due to his/her experience and interaction with real situations. Attitudes provide the 'frame of reference' for a person's life; all that he thinks, feels sees and does is consistent with the reference.

## **Need and significance of the study**

Teaching being a dynamic activity requires a favourable attitude and certain specific competencies from its practitioners. Teachers' proficiency depends on the attitude she possesses for the profession. The positive attitude helps teacher to develop a conductive learner friendly environment in the classroom. This also casts a fruitful effect on learning of the students. Attitude being a social construct is influenced

by many factors like social strata, academic stream and previous experience of the job etc. Hence the study tries to bind technologically well equipped millennial generation learners to cope up with their teaching profession. So it is the need to know the impact of B.Ed programme to change the attitude towards teaching profession of millennial generation learners.

### **Review of related literature**

Sezer, Adema; Kara, Hasan; Pinar, Adnan had done “An Investigation of Non-Thesis Master’s Program Geography Teacher Candidates’ Attitudes towards Teaching Profession regarding several Socio-Cultural Features” online Submission, US-China Education Review v8 n5 p682 – 697 May 2011. Akbulut, Omer Engin; Karakus, Faith conducted a study on “The Investigation of Secondary School Science and Mathematics Pre – Service Teachers’ Attitudes towards Teaching Profession” Educational Research and Reviews, v6 n6 p489 – 496 Jun 2011. Onen, Aysem Seda conducted a study on “The Effect of Candidate Teachers’ Educational and Epistemological Beliefs on Professional Attitudes” Hacettepe University Journal of Education, v41 p293-301 2011. Tok, Turkey Nuri, conducted a study on “Teacher Candidates’ Attitudes towards the Teaching Profession in Turkey,” Alberta Journal of Educational Research, v58 n3 p381-403 Fall 2012. Bhargava, Anupama; Pathy, M.K. conducted a study on “Attitude of Student Teachers towards Teaching Profession” published in Turkish Online Journal of Distance Education, v15 n3 p27 – 36 Jul 2014.

### **Objectives of the study**

- To find out the significant difference between pretest and posttest scores of attitude towards teaching profession of millennial teacher trainees.
- To find out the significant difference between pretest and posttest scores of attitude towards teaching profession of millennial teacher trainees in relation to their locality
- To find out the significant difference between pretest and posttest scores of attitude towards teaching profession of millennial teacher trainees in relation to their academic stream.

### **Hypotheses**

The following research hypotheses were formulated

- H0: There is no significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees.
- H0: There is no significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees in relation to their locality



- H0: There is no significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees in relation to their academic stream.

### Sample used

The sample of the study consisted of 100 students studying in B.Ed colleges at karur district. The sample included Urban & Rural and Arts & Science students.

### Analysis of Data

#### Hypotheses 1

There is no significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees.

Table -1: Difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees.

Category	N	Mean	S.D	't' value	Level of significance at 0.05 level
Pretest	100	226.09	29.235	6.344	significant
Posttest	100	242.07	30.217		

From the above table (1) shows that the calculated 't' value (6.344) is greater than the table value (1.96). Hence the null hypothesis is rejected. It shows that, "There is significant difference between the pretest and posttest scores of attitude towards teaching profession of millennial teacher trainees".

#### Hypotheses 2

There is no significant difference between the pretest and posttest mean scores of attitude towards teaching profession among millennial teacher trainees in relation to their locality

Table 2: Difference between the pretest and posttest mean scores of attitude towards teaching profession among millennial teacher trainees in relation to their locality

Category	N	Mean	S.D	't' value	Level of significance at 0.05 level
Urban Pretest	50	225.54	29.935	5.551	significant
Urban Posttest	50	245.12	31.896		
Rural Pretest	50	224.90	30.496	3.072	significant
Rural Posttest	50	235.70	30.080		

From the above table (2) shows that the calculated 't' value (5.551),(3.072) are greater than the table value (1.96). Hence the null hypothesis is rejected. It shows that, "There is significant difference between the pretest and posttest mean scores of attitude towards teaching profession among millennial teacher trainees in relation to their urban and rural locality".

#### Hypotheses 3

There is no significant difference between the pretest and posttest mean scores of attitude towards

teaching profession among millennial teacher trainees in relation to their academic stream.

Table 3: Difference between the pretest and posttest mean scores of attitude towards teaching profession among millennial teacher trainees in relation to their academic stream.

Category	N	Mean	S.D	't' value	Level of significance at 0.05 level
Arts Pretest	56	223.62	32.019	3.826	Significant
Arts Posttest	56	237.14	31.864		
Science Pretest	44	228.61	25.004	5.947	Significant
Science Posttest	44	248.39	25.663		

From the above table (3) shows that the calculated 't' value (3.826), (5.947) are greater than the table value (1.96). Hence the null hypothesis is rejected. It shows that, "There is significant difference between the pretest and posttest mean scores of attitude towards teaching profession among millennial teacher trainees in relation to their academic stream arts and science.

### Findings

There is a significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees.

There is a significant difference between the pretest and posttest mean scores of attitude towards teaching profession of millennial teacher trainees in relation to their locality

There is a significant difference between the pretest and post test mean scores of attitude towards teaching profession of millennial teacher trainees in relation to their academic stream.

### Discussion

From the findings the study reveals that though the millennial generation well equipped with technology and other sophistication of life style their attitude towards teaching profession changed due to the impact of b.ed curriculum. Changes occurred invariably like urban and rural and arts & science that means overall changes taken place. This result obtained due to updated curriculum time to time revised by the university and well qualified faculty who were cope with the millennials' expectations, need and demands of the society and dedicated to their profession. So the study give us hope that teacher educator can be an updated one and not an outdated. None of the modern technology and sophistication replaces the teacher.

## Conclusion

The study place before us a challenge that the curriculum should revised time to time and the teachers too update their knowledge according to the signs of time. The quality of teacher can change the attitude of any kind of students at any kind of profession at any time of the society.

## Reference

- Ananiadou, K. and Claro, M., 2009. 21st century skills and competences for new millennium learners in OECD countries.
- Best and Khan (1995). *Research in Education*, 7<sup>th</sup> Edition, V.K. *Bapra Pearl offset Press, New Delhi*.
- Dr. Piyush Swami (2013). *Millennial (Y Generation) Students: Their characteristics and Educational Challenges. Monograph of the First International Conference of Tamilnadu Teachers Education University 21 – 23 June; Chennai, edited by Prof. Dr. G. Visvanathan PP 1-3.*
- Gofton, W. and Regehr, G., 2006. What we don't know we are teaching: unveiling the hidden curriculum. *Clinical Orthopaedics and Related Research*®, 449, pp.20-27.
- Goldie, J., Dowie, A., Cotton, P. and Morrison, J., 2007. Teaching professionalism in the early years of a medical curriculum: a qualitative study. *Medical education*, 41(6), pp.610-617.
- Hargreaves, D.J., Purves, R.M., Welch, G.F. and Marshall, N.A., 2007. Developing identities and attitudes in musicians and classroom music teachers. *British Journal of Educational Psychology*, 77(3), pp.665-682.
- Mangal S. K (2010). *Essentials of Educational Psychology*, 4<sup>th</sup> Edition, *PHI Learning Private Limited, Delhi*.
- Rajni Gupta & Dr. Smarila Bhargava (2015). *Scientific Attitude : The Most Important Outcome of Science Education, Edutracks vol. 14 No. 6. 15 – 17.*

# Impact of Climate Change on Maize Yield in Cuddalore District

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## **Abstract**

*The present study is to analyze the impact of climate change on maize yield in Cuddalore district based on ten years data (2005-2006 to 2014-2015). The study conducted with the objectives to study the relationship between area, production, actual rainfall, and maize yield in the study area.*

**Key words:** Climate changes, area, rainfall, temperature, yield.

## **Introduction**

Climate is the main factor that influences any agricultural operation starting from field preparation to harvesting. Agriculture which relays on the climatic condition contributes to 10 per cent of Gross Domestic Product and provides employment for about 60 percent of the rural work force in Tamil Nadu. Temperature, humidity, rainfall, wind, atmospheric pressure, precipitation and other metrological condition decides the climatic condition of a particular place. Since the past few years the cropping pattern is experiencing a change due to the weather prevailing in the area. The effects of climate change have been found to have implications for dry land and irrigated crop yields as well as irrigation water use (Rosenzweig and Iglesias, 1994). Except rainfall, all other climatic factors are uniform and have little influence on crop yield. The drastic changes in the rainfall pattern of Tamil Nadu affect the significant area under cultivation.

Tamil Nadu is the eleventh largest and the seventh most populous state (6%) in the country. The cultivated area of the state is 4.7 million ha, comprising 36% of the total geographical area. The irrigated area covering 2.15 million ha is 46% of the cultivated area. The cropping intensity is around 113%. The red and black soils are deficient in nitrogen, phosphorus and zinc. The major crops are rice, jowar, bajra, maize, cotton, groundnut, mungbean, urdbean, banana and sugarcane. A clear knowledge on rainfall of a particular area, it would be possible to plan the production strategies suitable to that area in a better way. The major amount of rainfall is obtained through northeast monsoon followed by southwest monsoon. The table below shows the rainfall, production and productivity of major categories of food crops for the past four years.

The 20th century bears testimony to the indubitable fact of climate change as evidenced by increases in

global temperatures and changes in rainfall patterns and rates (IPCC, 2001; Jung et al., 2002). In India, mean temperature, based on data from 73 meteorological stations, has shown a significant increase in warming amounting to 0.4°C over the last 100-year period (Hingane et al., 1985). IPCC has projected that by the end of the 21st century, rainfall over India will increase by 10-12 percent with more frequent and heavy rainfall days while the mean annual temperature will rise by 3-6°C (IPCC, 2014). These changes may culminate in adverse impacts on agriculture in terms of productivity loss, pest and disease increases and labor migration that will threaten food security and agricultural employment. The impact of climate change on agriculture is generally estimated using two broad approaches – agronomic (or crop simulation) and economic modeling, particularly Ricardian approaches (World Bank Report, 2010).

Agronomic methods are based on controlled experiments where crops are grown in field or laboratory settings, simulating different climate and CO<sub>2</sub> effects (Aggarwal and Mall, 2002, Saseendran et al., 2000; Hebbar et al., 2008; Geethalakshmi et al., 2011). However, these models do not include farmers' adaptation to changing climate conditions and can overstate the damage caused by climate change (Mendelsohn and Dinar, 1999). The Ricardian models, on the other hand, use cross-sectional data to measure the impact of climate variables on land values or net revenues (Mendelsohn et al., 1994 & 1996; Mendelsohn and Dinar, 1999 & 2003; Kavikumar, 2009). Numerous studies using the Ricardian approach suggest that changes in temperature and rainfall in India could reduce average rice yield by 15 to 25 percent, average wheat yield by 30 to 35 percent (Kavikumar and Parikh, 1998) and farm net income by 8 percent (Mendelsohn et al., 1994). However, a shortcoming of this approach is the failure to account for time-independent location-specific factors such as the unobservable skills of farmers and soil quality. In addition to these models, researchers have also used panel data to analyze the sensitivity of yield to weather variables (Chen et al. 2004; Isik and Devadoss, 2006; McCarl et al., 2008). Panel data models with fixed effects address the problems of estimation bias due to the omission of time-independent location-specific variables. Thus, in our study, we use a panel data approach to (i) to measure the impact of climate variables on the yield of major food crops; and (ii) to project the impact of climate change on yield sensitivities using the Regional Climate Model (RegCM4). Researchers often rely on Feasible Generalized Least Squares (FGLS) models for capturing the impact of climate variables, given heteroscedastic panel data (see e.g., McCarl et al., 2008; Kim and Pang, 2009; Barnwal and Kotani, 2010).

This poses another estimation challenge because the FGLS formula for standard errors assumes that the error process is known and not estimated (Beck and Katz, 1995). But, in panel data models, the error process has a large number of unknown parameters, resulting in unreliable FGLS estimates of the

standard errors of estimated coefficients. In this context, Beck and Katz (1995) propose using Panel Corrected Standard Errors (PCSE) models with Monte Carlo analysis. These models perform well and produce accurate estimates of sampling variability even in the presence of complicated panel error structures. Following Beck and Katz (1995), this study employs the PCSE model to measure the impact of climate change on the yield of major food crops in Tamil Nadu, India. An important feature of climate impact modeling is how future climate projections are made. Many impact studies either assume certain changes in climate variables from the baseline or use projections based on coarse resolution 2 South Asian Network for Development and Environmental Economics climate models such as Global Circulation Models (GCMs) (Chen et al., 2004). In this study, we use projections from a Regional Climate Model (RegCM4), which leads to better estimations of future climate conditions since its horizontal resolutions are finer than those of GCMs (IPCC, 2007)

### **Review of literature**

**Bhatta (2009)** analyses the rainfall and temperature pattern for the past 50 years in India. In India, rising average wind speed is responsible for the increase in temperature. Due to high evaporation, rising sea surface temperature and air temperature, high intensity rain occurs. The occurrence of extreme rainfall is increasing and moderate rainfall is decreasing. But moderate rainfall is needed for crop growth. Extreme rainfall above 150 mm per day has increased by 10 per cent per decade for the past 50 years. Besides, after 1980, the temperature in the winter is more than that is in the summer. The maximum winter temperature is 1.25° Celsius, summer temperature is 0.7° Celsius and the minimum temperature is 0.7° Celsius in winter and 0.3° Celsius in summer across the country. Winter season temperature in North India is more than in

South India. North India was affected by cold wave in 2002-03 but heat wave in 2003-04.

**Swaminathan (2009)** points out that, not only the rainfall, but also the distribution of rainfall is very important for the survival of crops, cattle and to maintain food security. Temperature variation, frequent droughts and floods are caused by climate changes. Climate is not consistent in India. Regions facing drought during the month of June and July face floods in August and September. Moreover most of the rainfall occurs within 100 hours of a year. This rainfall situation is not good for production and productivity of many crops and affects the poor's livelihood adversely.

**Parsai (2009)** depicts that climate change and its threat to the world is real in the recent days. It is estimated that by 2025, in some parts of Asia and Africa and in India, the crop yields will decline by 20 to 40 per cent as a result of rise in temperature. Moreover climate change will make the land unfit for cultivation and many crops will be affected by pests and diseases. Ultimately, with water shortage and

low food production, it is difficult to feed the world population.

**Panda (2009)** enunciates that, developing countries are more vulnerable to climate change than developed countries. Agriculture and allied activities are the most affected sector by climate change than other sectors. Indian agriculture basically depends upon temperature and rainfall, and variation in any one of these affects the production and productivity of crops. Ultimately it leads to decline in the GDP growth rate and creates adverse impact on the food security of rural poor and farmers. It is expected that, by 2100, the global mean temperature may increase between 1.4° Celsius and 5.8° Celsius and create much damages to the agricultural sector.

**Mathi (2011)** elucidates that, globally the production of wheat and maize declined by 5.5 per cent and 3.8 per cent respectively from 1980 to 2008. During this period, in Russia, wheat production declined by 15 per cent due to unfavourable weather. As a result of the unfavorable weather the prices of crops like maize, wheat, rice and soyabean have gone up by 20 per cent. If preventive measures are not taken, by the end of the 21<sup>st</sup> century the temperature will reach 2° Celsius. The author forecasts that in Tamil Nadu there will be a 15 to 20 per cent decline in crop production

### **Study Area**

Cuddalore district consists of Nine taluks viz. Cuddalore, Panruti, Kurinjipadi, Chidambaram, Kattumannarkoil, Virudhachalam, Bhuvanagiri, Veppur and Tittagudi of which Cuddalore, Kurinjipadi and Chidambaram are coastal taluks lying in the heavy wind and cyclone zone while other five taluks lie in the flood prone zone. Cuddalore is in the highly cyclone prone zone of the East coast and its neighborhood falls under rainfall surplus category with an annual precipitation of 1200 mm and the temperatures vary between 190 C to 260 C in winter and 310 C to 420 C in summer. The district gets rainfall mostly in the months of October to December from the Northeast monsoon recording which accounts for 72 per cent of the total rainfall. 60 per cent of land in Cuddalore district is used for crop cultivation with respect to agriculture crops like rice, maize, ragi. Black gram, green gram, horse gram, sugarcane, turmeric, groundnut, cotton. In Cuddalore district rice is majorly cultivated. So the present study considers the maize yield alone.

### **Statement of the problem**

This study is to determine the impact of climate change on maize yield and factors (area, production, rainfall and yield). This study is to find out the major problem and issue for maize yield affected by climate change.

### **Objective of the study**

- To study the relationship between maize area, production, yield and actual rainfall.

## Methodology

This study is descriptive in nature and Secondary data (2005-06 to 2014-2015) for this study were collected from agriculture department, Economics and statistics department and meteorological department in Cuddalore district.

## Analysis

### Correlations

		Maize area	Maize yield	Maize production	Rainfall
Maize Area	Pearson Correlation			*	
Maize yield	Pearson Correlation	-.681*			
Maize production	Pearson Correlation	.744*	-.250		
Rainfall	Pearson Correlation	-.043	.434	-.084	

\*. Correlation is significant at the 0.05 level (2-tailed).

## Findings

The above table reveals the correlation between maize yield with respected to area, production and annual rainfall in Cuddalore district during 2005-06 to 2014-15. Maize yield ( $r=-.681$ ), are negatively correlated and there is no significant relationship with maize area. Maize production ( $r=.744$ ) positively correlated and there is significant relationship with maize area. Annual rainfall ( $r=-.043$ ) are negatively correlated and there is no significant relationship with maize area. Maize production ( $r=-.250$ ) are negatively correlated and there is significant relationship with maize yield. Maize yield ( $r=.434$ ) positively correlated and there is significant relationship with annual rainfall. Annual rainfall ( $r=-.084$ ) are negatively correlated and there is no significant relationship with maize production. Due to instable rainfall in Cuddalore district during the year 2005-2015 the yield is negatively correlated. Climate change is mostly affected to the crop yield.

## Conclusion

The impact of climate change is expected to be negative overall for a district like Cuddalore district, Rainfall decides the food grains production and productivity in the significant area in both rain fed and irrigation agriculture. It is identified that the monsoon rainfall are very useful to agriculture production.



Predicting the monsoon and deciding the crops as per the monsoon will increase the production of food grains. The catchment reservoirs could be cleaned before the raining season to increase the water holding capacity of the dams which serves as a major irrigation source for the agricultural lands. The government should take the action of national level river linking system/Project soon to save or preserve the agricultural land.

## References

- Adams, R.M., Rosenzweig, C., Peart, R.M., Ritchie, J.T., McCarl, B.A., Glycer, J.D., Curry, R.B., Jones, J.W., Boote, K.J. and Allen Jr, L.H., 1990. Global climate change and US agriculture. *Nature*, 345(6272), p.219.
- Bhatta.(2009).” *Rain Shocked*”, *Down to Earth*, 17(20), March 1, pp: 24 - 31.
- Jones, P.G. and Thornton, P.K., 2003. The potential impacts of climate change on maize production in Africa and Latin America in 2055. *Global environmental change*, 13(1), pp.51-59.
- Kapetanaki, G. and Rosenzweig, C., 1997. Impact of climate change on maize yield in central and northern Greece: A simulation study with CERES-Maize. *Mitigation and Adaptation Strategies for Global Change*, 1(3), pp.251-271.
- Mathi, S. (2011). “*Climate Change Hits Food Production*”, *Down to Earth*, 20(3) June 16, P: 50
- Panda. (2009). “*Assessing Vulnerability to Climate Change in India*”, *Economic and Political Weekly*, April 18, pp: 105-107.
- Parsai. (2009).” *Climatic Change will hit Small Farmers mos*”, *The Hindu*, November 24, P: 11s
- Swaminathan, M.S. (2009). “*Monsoon Management in Era of Climate Change*”, *The Hindu*, P: 10.
- Wolf, J. and Van Diepen, C.A., 1995. Effects of climate change on grain maize yield potential in the European Community. *Climatic Change*, 29(3), pp.299-331.