



# A DATA MINING FRAMEWORK USING K-MEANS TO ANALYZE HIGHWAY ACCIDENT DATA IN MAHARASHTRA

**SD Chitnis**

Research Scholar, S & T Department, Vishwakarma University, Kondhwa, Pune, India

**P Gokhale**

Associate Professor, S & T Department, Vishwakarma University, Pune, India

## ABSTRACT

*Data mining has been a consistent technique to analyze road traffic accidents (RTA) for productive results. Sometimes, it is found that RTA occurrences are more frequent at certain road features. The accident analysis of these road features can help in identifying certain road accident characteristics that make a road accident to occur frequently in these road conditions. The objective of this work is to find out correlations of road features with other attributes that lead to an accident of a section of National Highway-4 NHDP Phase-V. This part of Highway traverses through a plain as well as hilly terrains. The study is for a six-lane road between chainage 725.000 (Anewadi) to 865.350 (Khed-shivapur) to identify some additional safety measures to curb RTA. Databases of NHAI, Pune regarding Road traffic Accidents (RTA) were explored to compile this article. A systematic investigation will provide dynamic understanding about the highway accidents, incidence and causes. The predictive ability is perceived using cluster analysis along with the Apriori algorithm and the Confusion matrix. The validation tools were applied to test the ability of models to predict accidents.*

**Key words:** Data mining; RTA; road features; accident analysis; cluster analysis; Apriori algorithm; Confusion Matrix.

**Cite this Article:** SD Chitnis and P Gokhale, A Data Mining Framework Using K-Means to Analyze Highway Accident Data in Maharashtra, *International Journal of Management (IJM)*, 11(8), 2020, pp. 2058-2072.

<http://www.iaeme.com/IJM/issues.asp?JType=IJM&VType=11&IType=8>

## 1. INTRODUCTION

Road traffic injury takes the lives of nearly 1.3 million people every year and at the same time injured 20-50 million people globally [1]. Most of the RTA data analysis use data mining techniques, focusing on identifying factors that affect the severity of an accident. For the mining of the data, the highway police are the main source for providing information in India, based on



**International Journal of Management Technology and Engineering**

**An ISO : 7021 - 2008 Certified Journal**

ISSN NO: 2249-7455 / web : [www.ijamtes.org](http://www.ijamtes.org) / e-mail : [submit@ijamtes.org](mailto:submit@ijamtes.org)

Address : A14/7- UA, Armament, Pune, India - 411021

## CERTIFICATE OF PUBLICATION

Certificate ID : IJMTE/3535

This is to certify that the paper entitled

**“A Study and Review of Analysis of Cases of Molestation against Women and Minor”**

Authored by

**Anjum A. Patel**

From

**Vishwakarma University, Pune Maharashtra, India**

Has been published in

**IJMTE JOURNAL, VOLUME X, ISSUE X, OCTOBER - 2020**



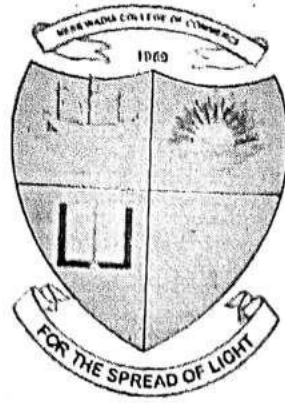
*M. Ashish Mehata*  
**M. ASHITOSH MEHATA**  
Editor-In-Chief  
IJMTE  
[www.ijamtes.org](http://www.ijamtes.org)



International  
Organization for  
Standardization

**7021-2008**





# **Bizz... Ness**

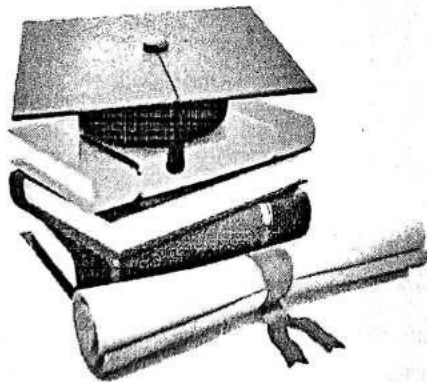
The Research Journal  
of

**Ness Wadia College of Commerce, Pune**

ISSN : 2277-4823

● Pune ● Vol I – Issue VII ● March 2021

## **Changing Paradigms in Commerce and Business Education**



Published by

**Ness Wadia College of Commerce, Pune-1.**

19, Prin. V.K.Joag Path, Pune-411001

15.	An overview of Indian government schemes promoting entrepreneurship in India	Mrs. Rita Kakade Dr. Vrishali Randhir	87
16.	"Education" A Prominent CSR Activity by the Banks In India	Mr. Suryakant V. Phalle Professor (Dr.) Girija Shankar	94
17.	Role Of Private / Autonomous Institutions / Universities	Ms. Poonam Amit Ghodekar	102
18.	"A Critical Analysis of Impact of Budget 2020 on personal taxation of salary Earners Income"	Dr. Rajesh Dattatraya Raut	106
19.	Comparative Study of Large, Mid and Small Cap Shares to Find Investment Opportunity for Retail Investor	Mrs. Jasmin Shikalgar	113
20.	DYNAMISM OF FORENSIC ACCOUNTING IN INDIA	Dr. Prakash N. Chaudhary Dr. Sheetal-M. Randhir	116
21.	"Role of New Education Policy in Resolving Unemployment"	Dr. Bharat Vitthal Rathod	124
22.	An Analytical Case Study on Ownership Management Needs & Challenges in an IT Sector Unit	Dr. Subhash Pawar Ms. Madhura Thite	128
23.	FDI its Impact and Growth in India	Dr. Meghana Madhukar Bhosale Ms. Rifat Memon	134
24.	"Impact of Goods & Services Tax on India's Gross Domestic Product"	Dr. Shubhangi S. Auti	138
25.	Review of Previous Tax Structure and Goods and Service Tax"	Dr. Vaishali M. Deshpande	143
26.	Origin Demand and Progression in Commerce Education in India	Dr. Vrishali Surendra Randhir Ms. Prachi Rohit Kotmire	149
27.	Online Education : Impact and Opportunities	Ms. Jayashree Vyankatesh Ms. Manasi Kakde Ms. Kareena Sukhija	158
२८.	राष्ट्रीय सेवा योजना सामाजिक शिक्षा का सशक्त माध्यम	डॉ. दीपक कुमार शर्मा	१६२

## 22. An Analytical Case Study on Ownership Management Needs & Challenges in an IT Sector Unit

Dr. Subhash Pawar

Maharshi Karve Stree Shikshan Samstha Shree Siddhivinayak MahilaMahavidyalay

Ms. Madhura Thite

### Abstract:

The ownership management will enhance the performance of the employee. The study revealed that in a small company what are the challenges for creating ownership attitude. The case study deals with the new recruits and old employees problems of Job Ownership and ownership management. Analysis of training needs is also done.

### Introduction:

In today's business environment there are number of challenges faced by the managers. Each and every industry is facing the issues regarding resource management. There are human and non human resources required for running the business successfully. It is the task of the manager to understand the needs of the organization and also individual's aspirations in the team or a group. The manager has to deal with managing people and motivating them to fulfill the desired goals in the expected time with quality. Herein the researcher is interested only in Human Resource Management.

HRM includes Recruitment and Selection, Orientation (Induction), maintaining Good Working Conditions, Managing Employee Relations and Training and Development. Recruiting Managers are very stringent about the technical qualifications of the employees Recruitment followed by Induction, Orientation and on the job trainings. Technical Skill trainings must be accompanied with the others skills which are important while performance evaluation.

The researcher in this case study tried to find out certain aspects of these other requirement of the team members for making the work contribution more fruitful. There are number of factors responsible for effective management and performance in an organization. Henry Fayol, the father of Modern Management, has devised the Managers with 14 principles of management. Most of the principles we are still applied as it is to many organizations directly or indirectly. The concept of Responsibility and Accountability is one of the most important factors in those principles.

### Owners and Renters.

An Owner naturally gives 110% to the job because an Owner feels a connection to the job. This connection translates into a sense of responsibility, pride, and satisfaction in his or her work (more productivity).

Renters, however, see themselves simply as cogs in the machine. They are convinced that they're there to -do-, not to -think-; (less productivity), work is work. Renters see it as a way to make a living.



e-ISSN : 2582 - 4376  
Open Access

**INTERNATIONAL RESEARCH JOURNAL ON  
ADVANCED SCIENCE HUB  
RSP SCIENCE HUB**


(The Hub of Research Ideas)  
E-mail : editor.irjash@rspsciencehub.com  
Available online at www.rspsciencehub.com

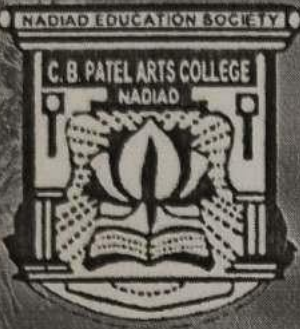
*IRJASH is hereby awarding this certificates to*

**Snehal H. Kulkarni**

*In Recognition the publication of the manuscript Entitled*  
**Machine learning amalgamation of Mathematics,  
Statistics and Electronics**

*Published in Volume 02 Issue 07 July 2020*

  
**Editor in Chief**  
Dr. R. RANJITH



## C.B.Patel Arts College, Nadiad.

Affiliated to Sardar Patel University, Vallabh Vidyanagar.

Department of Economics

EDITED BOOK ON

**ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL,  
EDUCATIONAL AND LITERARY IMPACT OF COVID-19  
& ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH**

### Certificate

This is to Certify that **SNEHAL H. KULKARNI** of Assistant Professor, Vishwakarma college of Arts, Commerce and Science, Pune has solemnly participated in the **Edited Review Book With ISBN No:978-93-89840-55-1** on **"ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL, EDUCATIONAL AND LITERARY IMPACT OF COVID-19 & ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH"** organized by the Economics Department, C.B.Patel Arts College, Nadiad. on July, 2020. We hope he/she will strive for humanity and national development. He/She Wrote a paper on **Covid-19, Online Education System, And Front End Challenges.**

*K.V. Trivedi*

**A/C Principal**  
**Dr. K.V. Trivedi**

*R.B. Saksena*

**Head of the Department**  
**Prof. R.B. Saksena**

*Girish D. Makwana*

**Ad-Hoc Professor**  
**Dr. Girish D. Makwana**

*Dilip A. Ode*

**Ad-Hoc Professor**  
**Dr. Dilipkumar A. Ode**

# Climate Change, India and Its Perspective

Ruta R. Vaidya, Snehal A. Jadhav,  
Snehal H. Kulkarni, Trupti S. Gaikwad

*Vishwakarma College of Arts,  
Commerce and Science, Pune*

## Abstract

The global climate system is made up of sun, earth and oceans, wind, rain and snow, forests, deserts and everything people do. The climate of a region takes into account its rainfall, changing temperatures during the year and so on. Climate change is the biggest concern to the world. As climate changes we observe rise in temperature, sometimes the destruction of forests, the warming of oceans as well as extreme weather events, the threat of extinction of a million species and the disruption of ecosystem. This paper commence with brief idea about climate change. We throw



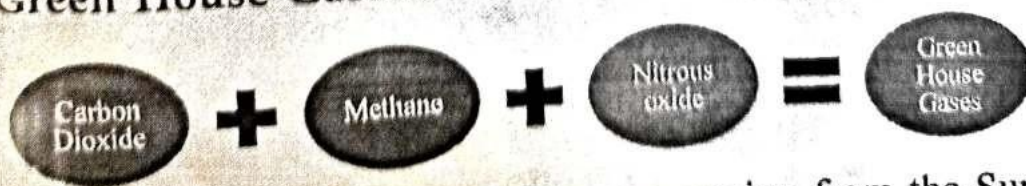
the focus on the impact of climate change on India through the help of recently occurred climate related events. Then we have mentioned the current action plans taken by Indian government. In the next section we described precautions to be taken by individual of our country to deal with climate change, followed by conclusion.

**Keywords:** Climate change, Temperature, Extreme weather, Global warming

### Introduction

Climate is very important aspect for all the living beings as well as agriculture related sector. Over a last decades earth's climate has been changed drastically. The earth's temperature is increasing day by day; it has long term effects on coastal areas, small islands, drought, increasing sea level, ice melting, desertization, floods, extreme weather, food security, health etc. These changes are the effects of direct or indirect human activities like urbanization and industrialization. Clean air, safe drinking water, sufficient food and secured shelter are the major factors affecting as results of climate change. The scientists all over the world are studying these changes and trying to find out evidences from tree rings, pollen samples, ice cores, and sea sediments, so that necessary actions can be taken. Climate change is affecting every country on the earth. Due to this national economy and lives, communities and countries get affected dearly today and even more tomorrow.

### Green House Gases:



Life on earth depends on energy coming from the Sun. The light reaching earth's atmosphere passes through the air



# IAEME PUBLICATION

Publishers of High Quality Peer Reviewed Refereed Scientific,  
Engineering & Technology, Medicine and Management International Journals

**INTERNATIONAL JOURNAL OF ADVANCED  
RESEARCH IN ENGINEERING AND TECHNOLOGY**



*Certificate of Publication*



This is to certify that the research paper entitled "DISTRIBUTED FIREWALL WITH DYNAMIC INTRUSION DETECTION MODULE" authored by "Dr.Zalte S.S. ; Patil P.N ; Deshmukh S.N." had been reviewed by the Editorial Board and published in "INTERNATIONAL JOURNAL OF ADVANCED RESEARCH IN ENGINEERING AND TECHNOLOGY, Volume 12, Issue 4, April 2021, pp. 484-491; ISSN Print: 0976-6480 and ISSN Online: 0976-6499; Journal Impact Factor (2020) : 10.9475 Calculated by GIS (www.jifactor.com)"

Article Id - IJARET\_12\_04\_046      Date of Publication - 30 April 2021

Article Link - [https://iaeme.com/Home/article\\_id/IJARET\\_12\\_04\\_046](https://iaeme.com/Home/article_id/IJARET_12_04_046)

Chief Editor

Plot: 03, Flat- S 1, PoomalaiSantosh Pearls Apartment, Plot No. 10, VaikoSalai 6th Street, Jai Shankar Nagar,  
Palavakkam, Chennai - 600 041, Tamilnadu,India. E-mail: editor@iaeme.com



e-ISSN : 2582 - 4376  
Open Access

**INTERNATIONAL RESEARCH JOURNAL ON  
ADVANCED SCIENCE HUB  
RSP SCIENCE HUB**


(The Hub of Research Ideas)  
E-mail : editor.irjash@rspsciencehub.com  
Available online at www.rspsciencehub.com

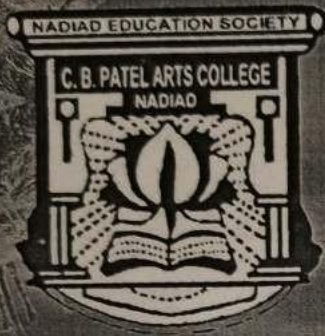
*IRJASH is hereby awarding this certificates to*

**Trupti S. Gaikwad**

*In Recognition the publication of the manuscript Entitled*  
**Machine learning amalgamation of Mathematics,  
Statistics and Electronics**

*Published in Volume 02 Issue 07 July 2020*

  
**Editor in Chief**  
Dr. R. RANJITH



## **C.B.Patel Arts College, Nadiad.**

*Affiliated to Sardar Patel University, Vallabh Vidyanagar.*

*Department of Economics*

*EDITED BOOK ON*

**ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL,  
EDUCATIONAL AND LITERARY IMPACT OF COVID-19  
& ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH**

### **Certificate**

This is to Certify that **TRUPTI S. GAIKWAD** of Assistant Professor, Vishwakarma college of Arts, Commerce and Science, Pune has solemnly participated in the **Edited Review Book With ISBN No:978-93-89840-55-1** on **“ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL, EDUCATIONAL AND LITERARY IMPACT OF COVID-19 & ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH”** organized by the Economics Department, C.B.Patel Arts College, Nadiad. on July, 2020. We hope he/she will strive for humanity and national development. He/She Wrote a paper on **Covid-19, Online Education System, And Front End Challenges.**

*K.V. Trivedi*

**A/C Principal  
Dr. K. V. Trivedi**

*R.B. Saksena*

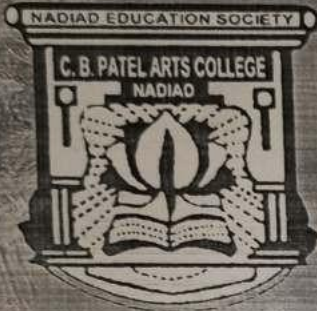
**Head of the Department  
Prof. R. B. Saksena**

*Girish D. Makwana*

**Ad-Hoc Professor  
Dr. Girish D. Makwana**

*Dilip A. Ode*

**Ad-Hoc Professor  
Dr. Dilipkumar A. Ode**



## **C.B.Patel Arts College, Nadiad.**

*Affiliated to Sardar Patel University, Vallabh Vidyanagar.*

### *Department of Economics*

*EDITED BOOK ON*

**ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL,  
EDUCATIONAL AND LITERARY IMPACT OF COVID-19  
& ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH**

## **Certificate**

This is to Certify that RUTA R. VAIDYA of Assistant Professor, Vishwakarma college of Arts, Commerce and Science, Pune has solemnly participated in the Edited Review Book With ISBN No:978-93-89840-55-1 on "ECONOMIC, SOCIAL, PSYCHOLOGICAL, POLITICAL, EDUCATIONAL AND LITERARY IMPACT OF COVID-19 & ALL MULTIDISCIPLINARY SUBJECTS FOR RESEARCH" organized by the Economics Department, C.B.Patel Arts College, Nadiad. on July, 2020. We hope he/she will strive for humanity and national development. He/She Wrote a paper on Covid-19, Online Education System, And Front End Challenges.

*K.V. Trivedi*

**A/C Principal  
Dr. K. V. Trivedi**

*R. B. Saksena*

**Head of the Department  
Prof. R. B. Saksena**

*Girish D. Makwana*

**Ad-Hoc Professor  
Dr. Girish D. Makwana**

*Dilip A. Ode*

**Ad-Hoc Professor  
Dr. Dilip Kumar A. Ode**