



## Criterion - 3

### Research, Innovations and Extension

#### Key Indicator – 3.3


#### Research Publication and Awards

#### 3.3.1 $Q_nM$

*Number of research papers published per teacher in the Journals as notified on UGC CARE list during the last five years*

*3.3.1.1. Number of research papers in the Journals notified on UGC CARE list year wise during the last five years - 26*

Year	2022-23	2021-22	2020-21	2019-20	2018-19
Number	9	3	4	5	5

  
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### 3.3.1 Number of research papers published per teacher in the Journals notified on UGC CARE list during the last five years

S. No	Name of Faculty	Title of paper	Department	Name of journal	Year of Publication	ISSN number
1	Dr. Vrijesh Kumar Pandey	INTERMOLECULAR INTERACTIONS IN BINARY MIXTURES OF 2-DIETHYLETHANOLAMINE WITH 1-PROPANOL AND 1-BUTANOL AT DIFFERENT TEMPERATURES	SCIENCE	J. CHEM. THERMODYNAMICS	2018	0021-9614
2	Dr Vinay Kumar Gupta	SYNTHESIS AND SPECTROSCOPIC PROPERTIES OF TRIVALENT CHROMIUM, MANGANESE, IRON AND COBALT COMPLEXES WITH SCHIFF BASES DERIVED FROM 2-HYDROXY-1-NAPHTHALDEHYDE BENZOIC ACID HYDRAZONES	SCIENCE	JOURNAL OF APPLIED BIOSCIENCE	2018	0975-685X (P) 0975-864X (O)
3	Dr Vinay Kumar Gupta	SYNTHESIS AND SPECTROSCOPIC AND BIOLOGICAL STUDIES OF IRON(III) AND COBALT(III) COMPLEXES WITH SCHIFF BASES DERIVED FROM 5-SUBSTITUTED ISATIN AND VARIOUS 4-SUBSTITUTED THIOSEMICARBAZONES	SCIENCE	JOURNAL OF APPLIED BIOSCIENCE	2018	0975-685X (P) 0975-864X (O)
4	Anita Nigam	TWO NEW DIGENETIC TREMATODE OF THE GENUS LECITHOCHIRIUM LUHE1901 FROM MARINE FISHES AT PURI, ODISHA (INDIA)	SCIENCE	INTERNATIONAL JOURNAL OF RESEARCH APPLIED, NATURAL AND SOCIAL SCIENCE	2018	P: 2347-4580 E:2321-8851
5	Mr. Nikhil Verma	INITIATIVES OF GOVERNMENT OF INDIA TO BOOST UP INDIAN ECONOMY	MANAGEMENT	JOURNAL OF MANAGEMENT	2018	2347-3959
6	Dr. Vrijesh Kumar Pandey	INTERNAL PRESSURE AND OPTICAL PROPERTIES OF BINARY MIXTURE OF FORMAMIDE WITH DIMETHYLAMINOETHANOL AND DIETHYLAMINOETHANOL AT DIFFERENT TEMPERATURES	SCIENCE	INDIAN JOURNAL OF PURE & APPLIED PHYSICS	2019	0975-1041
7	Dr Vinay Kumar Gupta	SYNTHESIS AND CHARACTERIZATION OF SOME NEW CR(III), MN (III), FE(III) AND CO(III) COMPLEXES WITH 2-HYDROXY-1-NAPHTHALDEHYDE THIOSEMICARBAZONES DERIVED LIGANDS	SCIENCE	JOURNAL OF BIOLOGICAL AND CHEMICAL RESEARCH	2019	0970-4973(P) 2319-3077(O)
8	Sadiya Siddiqui	STUDY OF INDO-CHINA TRADE WITH SPECIAL REFERENCE TO CHINESE TOYS IN INDIAN MARKET	MANAGEMENT		2019	2348-1269

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9	Dr. Rajesh Kumar Srivastava	COMPARISON OF PERFORMANCE OF PUBLIC & PRIVATE SECTOR IN MUTUAL FUNDS	MANAGEMENT	INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR)	2019	2349-5138
10	Dr. Vrijesh Kumar Pandey	VOLUMETRIC PROPERTIES OF BINARY MIXTURES OF 2-DIMETHYLAMINOETHANOL AND 20DIETHYLAMINOETHANOL WITH DIMETHYLSULFOXIDE	SCIENCE	PHYSICS AND CHEMISTRY OF LIQUID	2019	0031-9104
11	Dr. Kahkasha Safi	ISSUES AND CHALLENGES FACED BY THE SUGAR INDUSTRIES IN INDIA	COMMERCE	JOURNALS OF ART, HUMANITIES AND SOCIAL SCIENCE	2020	2229-3620
12	Dr. Kahkasha Safi	PROBLEMS OF SUGAR INDUSTRY IN INDIA -WITH SPECIAL REFERENCE TO UP	COMMERCE	REMARKING ANALISATION AN	2020	2455-0817
13	Dr. Rajesh Kumar Srivastava	THE PERFORMANCE OF INDIAN MUTUAL FUND INDUSTRY	MANAGEMENT	TEST ENGINEERING & MANAGEMENT	2020	0193-4120
14	Dr. Rajesh Kumar Srivastava	SEBI REGULATIONS AND THE GROWTH OF INDIAN MUTUAL FUNDS INDUSTRY	MANAGEMENT	STUDIES IN INDIAN PLACE NAMES	2020	0193-4120
15	Dr Sadiya Siddiqui	BRANDING CHINA? THE CONGRUITY BETWEEN COUNTRY-OF ORIGIN AND BRAND ORIGIN	MANAGEMENT	GIS SCIENCE JOURNAL	2021	2582-9378
16	Rukaiya Naz	PUBLIC SERVICE ADVERTISEMENTS, MUSLIMS AND CONCEPT OF FAMILY PLANNING	JOURNALISM & MASS COMMUNICATION	SHODH SNACHAR BULLETIN	2021	2229-3620
17	Nidhi Singh	COMPARATIVE ANALYSIS OF CUSTOMER SATISFACTION REGARDING FESTIVE OFFERS IN AMAZON AND FLIPCHART	COMMERCE	KALA SAROVAR	2021	0975-4520
18	Dr. Pankaj Awasthi	STRUCTURE AND FUNCTIONING OF CORIARIA NEPALENSIS WALL DOMINATED SCRUBLANDS IN DEGRADED HILLS OF KUMAUN HIMALAYA. I. DRY MATTER DYNAMICS	SCIENCE	LAND DEGRADATION AND DEVELOPMENT	2022	(O) 1099-145X (P) 1085-3278
19	Dr. Pankaj Awasthi	NUTRIENT PARTITIONING AND DYNAMICS IN CORIARIA NEPALENSIS WALL DOMINATED SHRUB LANDS OF DEGRADED HILLS OF KUMAUN HIMALAYA	SCIENCE	FRONTIERS IN FORESTS AND GLOBAL CHANGE	2022	2624-893X
20	Dr. Pankaj Awasthi	RELATIVE PERFORMANCE OF WOODY VEGETATION IN RESPONSE TO FACILITATION BY CORIARIA NEPALENSIS IN CENTRAL HIMALAYA, INDIA	SCIENCE	RUSSIAN JOURNAL OF ECOLOGY	2022	(O) 1608-3334 (P) 1067-4136

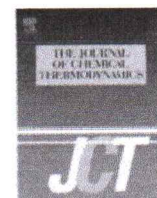
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21	Dr. Pankaj Awasthi	NUTRIENT RETURN THROUGH DECOMPOSING CORIARIA NEPALENSIS LITTER IN DEGRADED HILLS OF KUMAUN HIMALAYA, INDIA	SCIENCE	FRONTIERS IN FORESTS AND GLOBAL CHANGE	2022	2624-893X
22	Mr. Arun Sharma	IMPACT OF BEHAVIORAL BIASES ON INVESTMENT DECISION MAKING	MANAGEMENT	MADHYA PRADESH JOURNAL OF SOCIAL SCIENCES	2022	0025-0422
23	Dr. Rajesh Kumar Srivastava	FACTORS RESPONSIBLE FOR THE GROWTH OF PUBLIC AND PRIVATE SECTOR MUTUAL FUNDS	MANAGEMENT	STOCHASTING MODELING & APPLICATIONS	2022	0972-3641
24	Dr. Rajesh Kumar Srivastava	INVESTORS ATTITUDE TOWARDS MUTUAL FUNDS	MANAGEMENT	JOURNAL OF KAVI KULAGURU KALIDAS SANSKRIT UNIVERSITY, RAMTEK	2022	2277-7067
25	Mr. Amit Kumar Singh	IEC CAMPAIGN FOR COVID-19 AWARENESS AND BEHAVIOURAL CHANGE AMONG THE YOUTH OF LUCKNOW IN UP	JOURNALISM & MASS COMMUNICATION	SANCHAR SROKAR	2022	2583-1453
26	Ms. Prasoon Gupta	AN ASSESSMENT OF SOCIO-ECONOMIC IMPACT ON DIFFERENT SECTORS DURING COVID-19	COMMERCE	ICONIC RESEARCH AND ENGINEERING JOURNALS	2022	2456-8880

  
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# Intermolecular interactions in binary mixtures of 2-diethylethanolamine with 1-propanol and 1-butanol at different temperatures

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## ABSTRACT

The densities,  $\rho$  and ultrasonic speeds,  $u$  of binary mixtures of 2-diethylethanolamine (2-DEEA) with 1-propanol and 1-butanol, including those of pure liquids, are measured at 293.15, 303.15 and 313.15 K, over the entire composition range. From the experimental values of  $\rho$  and  $u$ , molar volume,  $V_m$ , isentropic compressibility,  $\kappa_s$ , acoustic impedance,  $Z$ , excess molar volume,  $V_m^E$ , excess ultrasonic velocity,  $u^E$ , excess acoustic impedance,  $Z^E$ , excess isentropic compressibility,  $\kappa_s^E$  and excess molar isentropic compressibility,  $K_{s,m}^E$  are calculated. Further, the partial molar isentropic compressibility  $K_{s,m,1}^E$  and  $K_{s,m,2}^E$ , and excess partial molar isentropic compressibility  $K_{s,m,1}^{E,ex}$  and  $K_{s,m,2}^{E,ex}$  over the entire composition range, the partial molar isentropic compressibility  $K_{s,m,1}^0$  and  $K_{s,m,2}^0$ , and excess partial molar isentropic compressibility  $K_{s,m,1}^{0E}$  and  $K_{s,m,2}^{0E}$  of the individual components at infinite dilution are also deduced. The variations of the consequent parameters indicate the presence of specific intermolecular interactions between the binary liquid systems. The infrared spectra are also recorded at room temperature (293.15 K).

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## 1. Introduction

The physicochemical properties of binary liquid mixtures have significance in the field of theoretical modeling, applied research and recurrently used in the design procedures such as heat or mass transfer, in several chemical and industrial processes [1,2]. The experimental thermophysical quantity encourages formulation of new analytical models which can be used in obtaining information about the intermolecular interactions existing within the liquid mixtures [3–5]. Intermolecular interactions help in understanding the structural configuration and orientation of the molecules leading to the formation of complexes and macroscopic properties of the fluids [6,7]. The present work is focused on the study of intermolecular interaction in binary mixtures of 2-DEEA with 1-propanol/1-butanol over entire composition range at various temperatures.

2-diethylethanolamine is a bi-functional organic compound having two polar groups namely hydroxyl (–OH) and amino (–NH<sub>2</sub>) groups, leading to complicated intermolecular interactions with alkanols. 2-DEEA molecules form self-associates through extensive hydrogen bonding of their amino groups and also

cross-associates with various polar molecules. 2-DEEA are extensively used as an absorbents for scavenging carbon dioxide and hydrogen sulphide from industrial wastes, helps in the synthesis of drugs at the pharmaceutical industry, acts as a catalyst for the synthesis of polymers in the chemical industry and also works as a pH stabilizer [8,9]. Alkanols are polar molecules with high dielectric constant and high dipole moment ( $\mu_{1\text{-propanol}} = 1.68D$  and  $\mu_{1\text{-butanol}} = 1.66D$ ). Self association of alkanols occur through hydrogen bonding of their hydroxyl groups and are likely to interact strongly with other solvents through hydrogen bond forming polymeric chains of different lengths [10]. Thus, the thermophysical properties for solvent blends of 2-DEEA with alkanol shows non-ideal behaviour depicting the possibility of intermolecular interactions. The literature survey indicated that there is a lack of experimental data on the physicochemical behaviour of binary mixtures of 2-DEEA with 1-propanol/1-butanol at different temperatures. Henceforth, an experimental study on several physicochemical properties of 2-DEEA + 1-propanol and 2-DEEA + 1-butanol mixtures are studied at atmospheric pressure and temperatures ranging from 293.15 to 313.15 K, over the entire composition range. The experimental values of density,  $\rho$  and ultrasonic speeds,  $u$  are used to estimate the molar volume,  $V_m$ , isentropic compressibility,  $\kappa_s$ , acoustic impedance,  $Z$ , excess molar volume,  $V_m^E$ , excess ultrasonic velocity,  $u^E$ , excess acoustic impedance,  $Z^E$ ,

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## SYNTHESIS AND SPECTROSCOPIC PROPERTIES OF TRIVALENT CHROMIUM, MANGANESE, IRON AND COBALT COMPLEXES WITH SCHIFF BASES DERIVED FROM 2-HYDROXY-1-NAPHTHALDEHYDE BENZOIC ACID HYDRAZONE

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### ABSTRACT

A series of several new chromium (III), manganese (III), iron (III) and cobalt (III) complexes with hydrazones of general formula  $[M(LH)_2] \cdot Cl \cdot nH_2O$  were synthesized. Hydrazones were formed by condensation of 2-hydroxy-1-naphthaldehyde and various hydrazides like benzoic acid hydrazide, 2-chlorobenzoic acid hydrazide, 4-nitrobenzoic acid hydrazide and 4-methoxybenzoic acid hydrazide. The characterization of compounds have been carried out by elemental analysis, spectroscopic (IR,  $^1H$  NMR and UV-vis spectra) and magnetic studies. All the studies revealed octahedral nature of the complexes with azomethine nitrogen, phenolic oxygen and carbonyl group as binding sites and hasmonobasic tridentate donor ligands. Co (III) complexes were found diamagnetic and show intense absorptions while Cr (III), Mn (III) and Fe (III) complexes show paramagnetic behaviour. Both ligands and complexes have been screened for their antibacterial activity against *Bacillus pumilus* and *Staphylococcus aureus* and antifungal activity against *A. niger* and *C. albicans*. Most of the complexes show higher biocidal activity for the above microorganisms than that of the free ligand.

**KEY WORDS:** Hydrazones, 3d metal complexes, spectral studies, antimicrobial

### INTRODUCTION

With long history, present society and future prospects, heterocyclic chemistry has now become one of the prominent and separate field of chemistry (Vigato & Tamburini, 2004; Krishnakumar & Xavier, 2004). Hydrazones plays an important key role in heterocyclic chemistry and they occupy special place because transition metal complexes of these ligands developed due to their structural flexibility, chelating capability, interesting electrical as well as magnetic properties. Hydrazones contain azomethine group (-HN-N=CH-), which are responsible for their different pharmaceutical applications such as antimicrobial, anticonvulsant, anticancer, analgesic, anti-inflammatory properties (Chang *et al.*, 2010; Da Silva *et al.*, 2001; El-Masry *et al.*, 2000; Claire *et al.*, 2003; Shrivastava *et al.*, 2010; Raman *et al.*, 2009; Nazareth & Narayana, 2003; Sharaby, 2007). Heteroaromatic moiety on combination with a positive charged metal centre leads

to complexes that show well defined geometries, which can easily interact with biomolecules. Metal like chromium (III), manganese (III), iron (III) and cobalt (III) have great affinity for coordination because of their smaller size and higher nuclear charge. Keeping in view the above facts and continuation of our research on biologically potent molecules, we report here the synthesis and spectroscopic properties of trivalent chromium, manganese, iron, and cobalt complexes with Schiff bases derived from 2-hydroxy-1-naphthaldehyde benzoic acid hydrazone, prepared by condensation with 2-hydroxy-1-naphthaldehyde and different types of hydrazide like benzoic acid hydrazide, 2-chlorobenzoic acid hydrazide, 4-nitrobenzoic acid hydrazide and 4-methoxybenzoic acid hydrazide (Iskander *et al.*, 2003; Nazareth & Narayana, 2003; Clark *et al.*, 1999).

### EXPERIMENTAL WORK

All the used chemicals and solvents were of reagent

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## TWO NEW DIGENETIC TREMATODE OF THE GENUS *LECITHOCHIRIUM* LUHE, 1901 FROM MARINE FISHES AT PURI, ODISHA (INDIA)

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### ABSTRACT

**Backgrounds:** Genus *Lecithochirium* Luhe, 1901 (Trematoda: Hemiuridae Luhe, 1901) is one of the most important digenetic trematode parasites with wide geographic distribution in the world. The purpose of the present study was to describe morphometrical characteristics of *Lecithochirium* species, currently prevalent in marine fish *Mugil cephalus* (Russell) and *Tetraodon lineatus* (Bl. and Schn.) of Puri, Odisha with Geographical Coordinates 19°48'17"N 85°49'6"E.

**Methods:** Gastro-intestinal organs of *Mugil cephalus* (Russell) and *Tetraodon lineatus* (Bl. and Schn.) at Puri, Odisha (India), were examined for infectivity with marine fish digenetic trematode species. For examination and measurements of digenetic, acetoalumamine staining was performed, followed by camera Lucida drawings of morphological characters and measurements of morphometrical criteria with a calibrated microscope. Using valid trematode systematic keys, almost all the parasites were identified at the level of species.

**Results:** Total 45 marine fishes were found infected with at least two species of *Lecithochirium*. Considering morphological characteristics of *Lecithochirium*, two species were identified as new species including *Lecithochirium mugilensis* sp. nov. and *Lecithochirium deeghai* sp. nov.

**Conclusion:** During the survey of marine digenetic trematode parasites, collected two different species of the genus *Lecithochirium*, out of these two are new species, another are red scribed to show certain variation, the new parasites were obtained from the stomach of the marine fish *Mugil cephalus* (Russell) and *Tetraodon lineatus* (Bl. and Schn.).

**KEYWORDS:** Digenea, Fresh Water Fishes, *Mystus vittatus*, Parasite, India

### INTRODUCTION

Digenetics are an important group of helminth parasites, usually invade the gastro-intestinal tract of marine piscian hosts (Mishra et al, 2013). Fishes are important due to its high nutritional value, medicinal value and economic value, thus we can call it the gold coin of the aquatic environment. Marine fishes are the common host for various species of digenetic trematode parasites in Puri (Odisha). Majority of freshwater fishes carry heavy infection of digenetic parasites which cause deterioration in the food value of fish and may even result in their mortality (Yadav et al, 2010). Besides these, there are a number of helminth parasites, which are transmitted to human beings only through fishes due to the weak association of host and parasites called zoonotic parasites. These parasites use the fish for their shelter and food and

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## INITIATIVES OF GOVERNMENT OF INDIA TO BOOST UP INDIAN ECONOMY

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### ABSTRACT

*The present research paper is focusing towards various government initiatives taken for developing new India and their impact on Indian economy. India is a country having diversifying culture along with a distinctive demographical advantage. On the other hand India is capable of delivering huge potential to create entrepreneurs, building innovation and generation of jobs to help in growth of the nation and its economy. Government of India in the recent years has created the broad range of newer initiatives such as make in India, digital India, skill India and smart cities mission for nurturing the innovation across the number of sectors by connecting entrepreneurs, non-government organisations, investors, businesses and academic circles to the underprivileged part of country. These revolutionary initiatives of the Indian government will be playing a vital role in economic growth of the country and providing added advantage to the businesses and industrial sector. The major outcomes of the research paper will be intended to the role of governments' new initiatives in boosting up the Indian economy.*

**Keyword:** initiatives, Economy, Make in India, Digital India, Skill India, Smart cities.

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### 1. INTRODUCTION

Government of India is having main focus on its new initiatives for entrepreneurship development. India is a country with population over 1.2 billion, 379 million of which are lying in the age range of 18-35 years<sup>(1)</sup>. Among these young people there are many persons falling under the job seekers category. So the main focus of government is to launching such new initiatives which can help in boosting Indian economy as well as developing entrepreneurial skill among the youths to curb with unemployment.

Our Hon'ble Prime Minister Narendra Modi has introduced several new initiatives of make in India, Digital India, Skill India, Smart city mission and many more to boost up the Indian economy. Every new initiative started by Government of India is their top priority



## Internal pressure and optical properties of binary mixture of formamide with dimethylaminoethanol and diethylaminoethanol at different temperatures

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The density ( $\rho$ ) and refractive indices ( $n_D$ ) of binary mixtures of formamide (FA) with dimethylethanolamine (DMEA) and diethylethanolamine (DEEA) have been recorded at different temperatures for the whole composition ranges. The experimental values of density data and refractive index are used to estimate the molar refraction ( $R_m$ ), reduced molar free volume ( $V_m/R_m$ ), molecular radii ( $r$ ) and internal pressure ( $P_{int}$ ). The deviations of refractive index ( $\Delta n_D$ ), molar refractions ( $\Delta R_m$ ), reduced molar free volumes  $\Delta (V_m/R_m)$  and internal pressures ( $\Delta P_{int}$ ) have been also calculated. The variations of these parameters with composition and temperature of the mixtures are discussed in terms of molecular interactions due to physical, chemical and structural effects between the unlike molecules. The applicability of different refractive index mixing rules is tested against the experimentally measured values and good agreement has been obtained.

**Keywords:** DMAE, Refractive index, Molar refractions, Internal pressures, Formamide

### 1 Introduction

In chemical and engineering processes, physicochemical properties of pure amino alcohols and their mixtures with formamide are needed different operations for the design process. Amino alcohols are used as agricultural products, surfactants and additives in detergents. It is used for removal of sour gases from natural gas and petroleum streams. This paper is a continuation of our earlier work related to the study of thermodynamic properties of binary mixtures<sup>1-7</sup>. Mass and heat transfer processes and flow operations are evident examples of the importance of the knowledge for these properties<sup>8,9</sup>. Experimental thermo-physical properties are used to obtain information about the molecular level structures of liquid mixtures, as well as about the intermolecular interactions and structural features leading to the behavior and macroscopic properties of fluids<sup>10</sup>. Intermolecular interactions are a very complex subject, and thus, experimental results and theoretical models have to be combined to elucidate the fluid structure<sup>11</sup>. Prediction of  $n_D$  of liquid mixtures is essential for many physicochemical calculations, which include correlation of  $n_D$  with density<sup>12</sup> excess molar volume<sup>13,14</sup> and surface tension<sup>14</sup>. Literature survey<sup>15-21</sup> indicates that

refractive index and related properties have been used to study the solute-solvent interactions in the liquid mixtures. FA molecules are highly polar and are strongly self-associated through extensive three-dimensional network of hydrogen bonds, through its three hydrogen bond donors (3 H-atoms) and three acceptors (two lone pairs of electrons at oxygen and one at nitrogen atom). FA is the simplest molecule containing a peptide linkage ( $-\text{NH}-\text{CO}-$ ) and a study of their hydrogen bonding yields into the nature of protein structure. The binary systems of FA with DMEA and DEEA are of considerable interest for investigating the intra- and inter-molecular behavior of amino-alcoholic solvent systems. To the best of our knowledge, there has been no temperature-dependent study on these systems from the view point of their refractive index behavior. This fact allows us to plan some extensive studies in this research field in order to investigate the closest interactions between the unlike molecules by examining the optical and thermodynamic parameters.

In this study, we have reported a detailed investigation on the refractive indices ( $n_D$ ) of binary mixtures of FA with DMEA and DEEA at 303.15, 313.15 and 323.15 K covering the entire miscibility range ( $0 \leq x \leq 1$ ). The experimental values of density and refractive index are used to calculate the molar refractions ( $R_m$ ), reduced molar free volumes

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**Synthesis and Characterization of Some new Cr(III), Mn(III), Fe(III) and Co(III) Complexes with 2-Hydroxy-1-Naphthaldehyde Thiosemicarbazones Derived Ligands**

**By**

**Vinay Kumar Gupta, Shabana Bano and V. K. Sharma**

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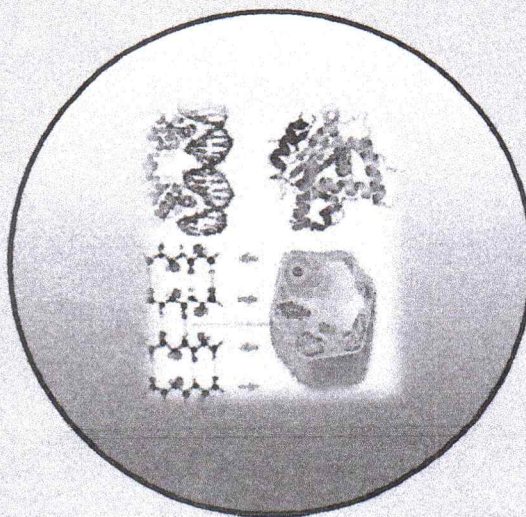
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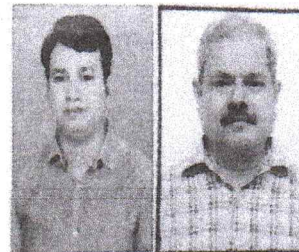
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## Synthesis and Characterization of Some new Cr(III), Mn(III), Fe(III) and Co(III) Complexes with 2-Hydroxy-1-Naphthaldehyde Thiosemicarbazones Derived Ligands

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### ABSTRACT

A Series of Schiff bases derived Cr(III), Mn(III), Fe(III) and Co(III) complexes with thiosemicarbazones of general formula  $[M(TSC)_2]Cl$  were synthesized. Thiosemicarbazones were formed by condensation of 2-hydroxy-1-naphthaldehyde and various thiosemicarbazides like N-methyl thiosemicarbazide, N-phenyl thiosemicarbazide, 4-chloro-N-phenyl thiosemicarbazide and 4-methoxy-N-phenyl thiosemicarbazide. Physicochemical characterization of compounds has been carried out by elemental analysis, spectroscopic (IR, electronic,  $^1H$  NMR) and magnetic studies. On the basis of above studies complexes have octahedral nature with phenolic oxygen, azomethine nitrogen and thione sulphur group as coordinating sites and exhibited monomeric nature of complexes. Co(III) complexes were diamagnetic and show high absorption while Cr(III), Mn(III) and Fe(III) complexes show paramagnetic nature. In addition, antifungal and antibacterial studies have been carried out *in vitro* for investigated compounds against fungus (*A. niger* and *C. albicans*) and bacteria (*Bacillus pumilus*, *Escherichia coli* and *Staphylococcus aureus*). Number of metals chelate show high biocidal activity for the above micro-organisms than that of their ligands.

**Key words:** Thiosemicarbazone, 3d-Transition Metals, Spectral Analysis and Biological Activity.

### INTRODUCTION

The centre of attention of synthesis and structural investigations of thiosemicarbazones and their metal complexes because of it have pharmacological and chemotherapeutic properties such as anticancer, antitumour, antibacterial, antifungal, antiulcer, antiviral, antiplasmodial, cytotoxic and enzymatic inhibition (Candido-Bacani P de M. et al., 2011; Siddiqui, N. et al., 2011; G. Krishnegowda et al., 2011; N. Karali et al., 2010; Chang et al., 2010; Shrivastava et al., 2010; Agarwal et al., 2006; Shaabani, B. et al., 2017). Thiosemicarbazone ligands have ability to form chelate with transition metals with N, S and O as a donor atom (El-Gammal, O. A. et al., 2014; Mishra, D., et al., 2006; Jayabalakrishnan, C., et al., 2002; Afrasiabi, Z., et al., 2004). Most of the transition metals have medicinally important, coordinating with different ligands. Cr, Mn, Fe and Co metals are very essential for biological system and small amount performing enzymatic functions such as urease (Raza, K., et al., 2014; Sharma et al., 2006; Sharma et al; 2005).

## Study of Indo-China Trade with special reference to (Chinese Toys in Indian Market)

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**ABSTRACT:** India and China, the two Asian giants are changing the face of the global economy. World Bank estimates they are the fastest growing economies in the world. They play a dominant role in today's world economic affairs with a GDP growth rate of 7.4% in India and 6.3% in China in the year 2016. Bilateral trade relation with China, the world's two most populous countries, has expanded substantially in recent years. They are the fastest growing economies in Asia as well as in the world scenario. They have achieved tremendous progress in multi-sector co-operation. China has gained a large footprint in international trade and investment flows: today it is the world largest exporting nation while India's export has grown over the years. However challenges still exist in the bilateral relationship.

This paper is an attempt to examine and compare bilateral trade between these two economies, compares the export and import performances and the nature of product differentiation between these two labour abundant nations. This paper also focussed on the Indian toy manufacturing industries, the problem and the challenges faced by these industries from the products (toys and games) imported from China in abundance.

**Key Words:** Bilateral Trade, India-China trade, GDP, Chinese toys

### OBJECTIVE

- To find out trading pattern between India and China from 2005-2016.
- To examine the percentage of Chinese electronic toys in India.
- To draw suggestion based on findings.

### RESEARCH METHODOLOGY

The study is purely based on secondary data and it is collected from RBI bulletin, economic survey, journals, articles, paper etc.

### INTRODUCTION

China-India relations also called Sino-Indian relations or Indo-China relations refer to the bilateral relationship between People Republic of China and the Republic Of India. The history of bilateral relation between India and China dates back in the year 1950s. India became the first non-socialist bloc country to establish diplomatic relations with People Republic of China. In 1954 Prime Minister Jawaharlal Nehru visited China to strengthen the ties between the two nations. But the year 1962 gave a serious setback to their ties on the outbreak of war (border disputes) between the two nations. In the year 1984 India and China entered into Trade Agreement which provided them with a status of Most Favoured Nation (MFN). Since 1991 reforms the engagement has evolved more in terms of economic aspects. It was in 1992 when both India and China involved in a full-fledged bilateral Trade Relations. The year 1994 which marked the beginning in India and China economic relations and in the same year they both entered into an agreement which avoided double taxation between two nations. The government of both the countries also took initiatives to become partners in Associations of South East Asian Nations (ASEAN). China joining WTO in the year 2001 proved to be a landmark event in the global economy. This event has completely changed its economic structure. Most importantly China joining WTO led to a positive shift in its trading environment its trading relation with most of its trading partner changed especially with that of India. India and China bilateral trade sets a new record in 2001 with trade volume reaching \$3.6 billion (according to the statistics revealed by China's general administration of customs).

# COMPARISON OF PERFORMANCE OF PUBLIC AND PRIVATE SECTOR MUTUAL FUNDS

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## Abstract

An ordinary man gets the chance of investment in share capital market by means of Mutual Fund. Mutual fund industry provides a variety of options of investment irrespective of the age, sex, financial position, qualification & risk tolerance capacity of the investor's. In the previous year's tremendous growth has been seen in Public and Private sector mutual funds. Being part of the financial market Mutual Fund Industry is growing very fastly providing investor's better returns. Therefore, it has become necessary to analyse the people's attitude towards public and private sector mutual fund. To analyse the people's attitude towards the public and private sector mutual fund, some investors have been selected from these sectors. Major factors affecting the growth of mutual fund industry have been identified. Some important factors are liquidity, security, flexibility, management fee, Returns, Tax benefits, transparency etc.

Key Words: Mutual Fund, capital market, Financial market, Mutual fund industry

## 1. Introduction:

Many investors have earned billions of rupees across the India by means of investment in capital market. But many of them have lost their capital in the year 1992, 2001 & 2008 many investors have lost their wealth, due to which some of them have committed suicide. An investors have various options of investment like debentures, bank deposit, shares, real estate etc. Because of higher returns and low risk involved most of the investors prefer mutual fund as their investment. Mutual fund is managed through well professional team of Management; therefore, it gives high rate of return. Money collected Mutual Fund is invested in Share Capital market.

Objective: The following are the main objectives of the study.

1. Investment in Public and Private sector mutual fund is independent of age, qualifications, income.
2. To find out factors affecting growth of Mutual funds.

3. Equity Index Fund: It is a fund where investment is made in equity market index like Sensex & Nifty. For the purpose of study to index funds are taken different AMC's. HDFC India Sensex Plans & ICICI Prudential India Nifty Plans have given 37.9% and 26.73% respectively which shows the efficiency of the fund LIC mutual funds Sensex & HDFC Index Sensex plans have given negative regression for the same.

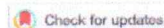
The correlation of Mutual Funds with NAV is approximately 1 the return of the Mutual Fund is higher. Therefore, the investment in Mutual fund is Quiet useful. The investment in Capital Market, because of risk diversification and professional management.

## 4. Finding and Importance:

Due to strict norms of SEBI regulations, Mutual fund industry has grown rapidly in previous years. People's growth towards investment in mutual funds has increased because of transparency and better returns. The greater challenge towards mutual fund industry is to make the people living in semi urban and village's aware regarding investment in Mutual Fund. There is greater responsibility of Regulator to build up the investors' confidence towards investment in Mutual Fund. The need of the study is to analyse the people's perception towards investment in Public and private sector Mutual Fund. It has been observed that Mutual Fund Industry has shown better return in comparison to Market

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## ARTICLE

## Volumetric properties of binary mixtures of 2-dimethylaminoethanol and 2-diethylaminoethanol with dimethylsulfoxide

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### ABSTRACT

This work reports the volumetric properties of binary mixtures of 2-dimethylaminoethanol (DMAE) and 2-diethylaminoethanol (DEAE) with dimethylsulfoxide (DMSO) as a function of composition in the temperature range 298.15–318.15 K at atmospheric pressure. The excess molar volumes, apparent molar volumes, and excess partial molar volumes of both the components were determined in order to reflect several aggregation patterns present in the binary solvent system. The excess molar volumes show positive deviations from ideality. The excess partial molar volumes show complex dependence on composition and temperature. The results were used to investigate intermolecular interaction and structural configuration in these mixtures.

### ARTICLE HISTORY

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### KEYWORDS

2-Dimethylaminoethanol;  
2-diethylaminoethanol;  
excess molar volume; partial  
molar properties; apparent  
molar volume


## 1. Introduction


Volumetric properties of a system with composition and temperature serve as an important tool to characterise solute-solvent, solute-solute, and structural effects [1–3]. In binary solvent systems, volume-based analysis interprets changes in the molecular aggregation of both the components and has wide application in the chemical industry for developing separation process [4–6].

Alkanolamines have been readily used as an industrial important organic solvent and absorbent for separating acid gases. Among the alkanolamines, tertiary amines like 2-dimethylaminoethanol (DMAE) and 2-diethylaminoethanol (DEAE) are reported as tremendous absorbents due to good chemical stability, good degradation resistance, high CO<sub>2</sub> level loading capacity, and low regeneration energy requirement [7–11]. Dimethylsulfoxide (DMSO) is a highly polar solvent with polyfunctional molecules (two hydrophobic CH<sub>3</sub> groups and a high polar S=O group). DMSO is an aprotic liquid which is able to dissolve many products such as protein, polysaccharides, biodegradable polymers, and also helps in evacuating CO<sub>2</sub> from flue gases [12–14]. However, low rates of CO<sub>2</sub> absorption make tertiary amines difficult to use for CO<sub>2</sub> gas removal. If the absorption rate of tertiary amines could be increased, then it is very useful for CO<sub>2</sub> gas separation. This prompted us to choose the mixture of DMSO with DMAE and DEAE, which maybe a good choice for CO<sub>2</sub> flue gas separation. Thus, it is essential to investigate the volumetric properties of DMSO + DMAE/DEAE and the dependence on composition and temperatures of the binary blends of DMSO + DMAE/DEAE.

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## ISSUES AND CHALLENGES FACED BY THE SUGAR INDUSTRY IN INDIA.

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### ABSTRACT

Sugarcane is such a one crop which is affecting Indian Economy, supply of water and also promotes nepotism. In this whole world India is the first country where sugarcane cultivation farming is done with first refined sugar was taken place more than 2000 years ago. The sugarcane growers who were engaged by the political masters were also facing an existential of crisis.

**Keywords :** Issues and controversy.

#### Introduction

The several thousand BC years ago back the history of sugar and sugarcane was started. Since the dispatching the origin of the sugarcane, the Indian Mythology vouches out for this. In the 4/6<sup>th</sup> century the art of making sugar was discovered. If we imagine the method was quite crude.

The sugarcane was grown cut into the pieces, with the help of heavy weight the crushing of sugar cane done, juice was obtained for boiling and then turn into crystallization. Therefore it can be concluded that the original home for sugar and sugarcane manufacturing is in India.

The plantation of sugar and white sugar in this whole world is to be found in the country India. Others countries were producing only the raw sugar or the refined sugar or both of the above. After the Brazil India comes in second position with the total accounted figure of 6.0 percent for the agricultural products in India. In all over the country the sugarcane produced for the utilization of various purposes like production of white sugar, production of traditional sweetness like Khandasri or Gur, seeds, feed for the direct consumption that is for chewing.

#### Issues Faced by the sugar Industry :

1. The lack of rotation of crop in some areas which leads to deletions in soil and leads to adversely affect on productivity of sugarcane.
2. Account of stalling and delaying of crushing of sugarcane which contribute to low recovery of sugarcane which is called as post harvest deterioration of sugarcane quality.
3. Non-availability and irregular of water is the main issues for the sugarcane cultivation of crop. The states like south Indian have sufficient irrigation facility with regular season of rain while the state Uttar Pradesh have irregular and uneven facility of raining seasons.
4. Inadequate availability of quality new sugarcane seeds variety and the poor replacement of seed rate which adversely affect the realization of potential cane yield.
5. Due to rise in high temperature it leads to reduction in yield of sugarcane.
6. Due to internal and external political issues in the cooperative sugar mills causes payment delays to the farmers.

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*Remarking An Analisation*

# Problems of Sugar Industries in India – with Special Reference to U.P.

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## Abstract

The second largest producer of the sugar and sugarcane is India, which comes after the country Brazil. The sugar based industry is the agro based industry which comes after the textiles industry and also plays an important role for the Economy of India. Before 2013 the problems of sugar industry were divided into two parts that is policy issues and natural issues. The study was conducted to analyze the policy issues before 2013 and post 2013. This research paper includes all the problems related to the sugar industries in India with special reference to U.P. and to study the future prospects of sugar in U.P.

**Keywords:** Problems and Status, Industrial Problems, Policy and their Controversy

## Introduction

In India sugarcane is known as widely crop grown by the grimmer family. This sugar based industry provides employment to the millions of people directly and indirectly besides contributing significantly national exchequer. In India the sugar cane cultivation was done on the date backs of the Vedic period. The sugarcane cultivation was found earliest in the Indian writings under the period of 1400 to 1000 B.C. Important regions / zones for the sugar cane cultivation in India - It is being observed that in India sugarcane cultivation is done on agro-climatic regions of the India which includes tropical and subtropical.

## Tropical Sugarcane Regions

The tropical regions include the states of Maharashtra, Andhra Pradesh, Tamil Nadu, Karnataka, Gujarat, Madhya Pradesh Goa and Kerala.

## The Subtropical Regions

This subtropical sugarcane region includes U.P., Bihar, Haryana and Punjab comes under this region.

## Production Area and Yield of Sugarcane in Major Growing States

In tropical zones the states Maharashtra is the largest sugarcane growing about 9.4 lakh ha area with the total production of 61.32 Million ton, whereas the productivity of Tamil Nadu is the second highest in the zone of tropical regions.

U.P. is the largest producing state in the subtropical zones with the area 22.77 lakh with the production of 135.64 million ton cane were as Haryana is the largest state for the production of sugarcane in subtropical zones.

## Review of Literature

P.Chellaswamy & S.V. Revathi (2019): the title of the research paper is "A Study on problems, growth and productivity of Indian Sugar industries". In this paper he studied the process of sugar industry; analyze the growth and trends of selected sugar companies in India. According to his study he has given the suggestions according to his findings.

Nisha Machulika (2017): she carried out the study in which she defines the term "protection" for the sugar. She said that earlier the sugar based industries were traditionally called as "child of Protection". During the first five year plan the number of factories was 143 and again afterwards it keeps on increasing with 571 sugar factories in another five year plan. For the protection of child the Indian government provides incentives for the higher production and output of the sugar. The study shows the journey of the average producer with lots of fluctuations in the price, frequent control and decontrol by the government, mainly from the out of political controversy.

D.K. Pant (2005): in his study he analyzed the various economic process of sugar production followed by the Indian sugar industries which tries to explain the efficient manner By-Products of sugarcane for the



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# The Performance of Indian Mutual Fund Industry

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**Abstract:**

The problem of risk in the capital market exists globally. The main sufferer of the capital markets around the world are the small and medium investors. To protect the interest of investors of this segment, the Mutual Funds have emerged as an important financial tools at international level. It collects the funds from different investors to a common pool of investible funds and then invest these funds in various investment opportunities. Mutual Funds protect the interest of the small investors by the diversification of risk. Mutual funds also provides capital to the financial markets. The present paper analyses the performance of Indian mutual funds industry.

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**Keywords:** Financial Tools, diversification of risk, investible funds, investment opportunities.

## 1. INTRODUCTION

Due to flexibility of economic policies, there has a fast growth of capital market, money market and financial services. To all types of investors mutual funds provide a means of investment in equity capital markets for which they do not have any expertise. Investors get the services of professionals and experts at a nominal cost. The investors are not required to devote their time for investment analysis. This work is done by the mutual funds on their behalf. The investors also have the choice of liquidity.

## 2. OBJECTIVES OF THE STUDY

1. To explore the concept and performance of Mutual Funds
2. To analyse the growth pattern of Indian Mutual funds Industry

3. To study the previous performance of Mutual Funds in India.

## 3. RESEARCH METHODOLOGY

The data for the study has been collected from secondary sources. The secondary sources include internets, journals, magazines, books & publications of various research agencies. For conclusions the data has been properly analysed.

## 4. MEANING OF MUTUAL FUNDS

A mutual fund acts as a financial tool of investments. It collects funds from different investors to a common pool of funds and invest these funds to a varieties of investment opportunities. According to Securities and Exchange Board of India Regulations, 1996 a mutual fund means.

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## SEBI Regulations and the Growth of Indian Mutual Funds Industry

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### Abstract

This paper helps to understand the growth of Indian Mutual Fund under SEBI guidelines. Various schemes offered by public and private sector mutual funds started to meet small investor's needs. Mutual fund is one of the growing financial instruments keeping in view of interest of small investors. This Paper also explains the growth aspects of the mutual fund industry along with some guidelines of SEBI that provide the safe investment along with reasonable return. After investing in mutual fund schemes, the investor need not bother about anything because mutual fund is a professionally managed investment option and also having the professional fund management teams that takes the responsibility of investing in stocks and shares after due analysis and research. The objective of the study is to highlight the growth of mutual fund industry. Secondary data has been used for purpose of this study.

**Keywords:** Mutual fund industry, SEBI guidelines, growth, financial instruments.

### Introduction

Over the past decades there has been a tremendous growth in mutual fund industry. Investors invest their monetary resources in mutual funds in order to make their investment free of risk. As the mutual funds have professional team of management. The responsibility of management is to make investment in stocks and shares after thorough analysis and research. Mutual fund has various types of investment plans such as growth option, index funds, tax saving schemes, open-ended investment etc.

# Branding China? The Congruity between Country-of-Origin and Brand Origin

Sadiva Siddiqui, M.K. Agarwal

**Abstract:** Every nation is a brand in itself. The nation brand could be developed either by default or deliberately through advertising, trade relations, history, word-of-mouth, mass, media travel or dealing with its people. The strong image of a nation enhances the goodwill of the brands. The “Go Global” strategy introduced by Chinese Government has shaped the image of viewing its brand for Electronic products in the international arena. China has always been criticized for its poor quality and low cost products in the recent past. This paper discusses how China has transformed its negative image into a positive one and the way China has progressed from “country of Manufacturing” to “Country of Branding”. This paper also pinpoints the importance of “Country-of-Origin” (COO) which helps in shaping the consumer purchase decision making process. This paper addresses the relationship between Country-of-Origin and the Brand Origin and its impact on the purchase intention of the Indian consumers. To study in depth five product categories are taken that are ‘Made in China’. It also discusses the strategy adopted by various Chinese firms to lead the market.

**Keywords:** Brand Image, Country-of-Origin, China, Strategy, Consumer Behaviour.

## I. INTRODUCTION

“Made in China” has given a huge competition to various marketers and firms globally. The products labeled as ‘made in China’ affected the worldwide products (Becken, 2007). After the toy recall crisis in the year 2007 countries like Hongkong and Taiwan decline their purchase of Chinese made toys. US consumers also become reluctant and reduced the Chinese made products. (Becken, 2007). China the world largest toy industry hit hard by the crisis (Smith, 2007) due to the design flaws and dangerous lead levels creating a impact on both sales and profits of the Chinese company. Because of its major effect the parents and the grandparents of the children started asking about whether the products are ‘made in China’.

This was one of the incidents that affected China’s image as a country creating negative impact in the minds of the people. There has been extensive research on the Country-of-Origin effect (Schooler, 1974), because of its importance as per many researcher and scholars COO effect act as an important indicator for the quality of the product. The other external cues can be brand name, store reputation (Ehrenson, 1993, Nebenzahl and Jaffe, 1996) and consumer awareness or expertise towards a product (Eroglu and Machleit, 1987).

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However, recently researcher started debating towards the little importance towards COO effect. Many believe that consumers pay less importance to where the products are manufactured. In fact it is been stated that due to products being bi-national and global branding and decline of labelling as per WTO rules very little importance (2010), is attached to the products main origin. But according to some researchers like Heslop et al., Papadopoulos (1992) argues that due to the increasing globalization the importance of product country image is also increasing. According to Jossissen et al (2008), there is very evidence that consumers pays less attention to COO. As a result COO remains highly significant for marketing practise.

## II. LITERATURE REVIEW

### Country of Origin (COO)

The literature review on COO suggest that consumers evaluate the quality of the product based on its nation (Han and Terpstra, 1988) especially when consumers are unaware of the product their buying intention is highly based on the “made in....” label. There is positive relation between product brands and nation brand (Roth and Romano, 1992). For instance France as a nation has a positive image in the minds of the people with respect to its language, cuisine, Eiffel tower, French perfumes. The main challenge for any nation is how its country image is perceived by individuals. The stronger the image of the nation the better it is perceived by people. The image of a nation to a great extent also depends on its political stability, trade relations with the other nations, historical events, traditions, technology advancement, industrialization etc.

According to Papadopoulos and Heslop, 1993 and Nebenzahl, 2001 Consumers tends to evaluate the quality of the product based on the product nation and they are willing to pay more or a product of a country that is having strong image in the minds of the consumers such as German cars, French perfumes, American touristier and Swiss timepieces. People perception towards a particular nation based on stereotype image (Kotler et al, 1993). Stereotype images are based on the information they received through education, media, business dealings etc. Study shows that Canadian goods are perceived as of superior quality worldwide even when the people have very low or less knowledge about the product (Papadopoulos and Heslop’s (2000)).

When it comes to the country like China different people have different image towards that country. China is able to maintain its reputation of low cost manufacturer globally due to its low cost production.

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**PUBLIC SERVICE ADVERTISEMENTS, MUSLIMS AND CONCEPT OF FAMILY PLANNING**

Rukalya Naz  
 Dr. Meraj Ahmed Mubarkj\*\*

**ABSTRACT**

This study examines the levels of awareness and access of media among Muslims of Jaunpur district, Uttar Pradesh. The media habit differentials provide information about inequalities among both genders. Muslim men have more access to media than women. Trivariate analyses shows that access to media increases the awareness about family planning in Muslims. The result shows the co-relation between exposure of the public service advertisement of family planning and belief in the practice of family planning. This outcome breaks several stereotypes in respect of Muslim's partake of family planning.

**Keywords :** Public service advertisements, Muslims, Family planning, Socio-culture.

**Background**

The family planning program is one of the biggest programs in India. In 1952, as a developing country, India became first country to organize a family planning program 'National Family Planning Program'. The government set the goal to lower fertility rates and slow down the population growth. According to the WHO, "214 million women of reproductive age in developing regions have an unmet need for contraception" (WHO, 2018). According to National Family Health Survey 2015-16 (IIPS, 2016) report, 53.5 percent female use any method of family planning, 36.0 percent female use sterilization while only 0.3 percent male use sterilization. Data from National Family Health Survey 2015-16 (IIPS, 2016) shows that the fertility rate in India (children per woman) is 2.2 percent. But the rate is different for different states. For instance, in Uttar Pradesh its 2.7 percent, in Bihar its 3.4 percent, in Karnataka it stands at 1.8 percent, and in Rajasthan its 2.4 percent.

The study intends to find out how effective the government campaign have been among the Muslims, the second largest community in India. Muslims, constitute

14.23 per cent of the total population in India. But according to Sachar Committee report (2006, p. 2), "the Muslims are seriously lagging behind in terms of most of the human development indicators. While the perception of deprivation is widespread among Muslims, there has been no systematic effort since Independence to analyze the condition of religious minorities in the country" (p. 2). For this particular study, a very backward district Jaunpur, of Uttar Pradesh was selected.

**Previous Studies**

Some previous studies show the direct relation between media access and awareness about family planning. For example, a study in Indonesia on married women, showed that television had a strong association with married women's contraceptive behaviors. (Ardiansyah, 2016). It is fallaciously believed that Islam opposes family planning. A study of integrated multimedia campaign in Bamako, Mali found that men and women did not stand against family planning. Results show that contraceptive knowledge, use and favorable attitudes towards family planning were significantly associated with exposure of campaign (Kane, Gueye,

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# Comparative Analysis of Customer Satisfaction Regarding Festive Offers in Amazon and Flipkart : with Special Reference to Lucknow District

<sup>97</sup> ★ Dr. Geetika Tandon Kapoor ★★ Nidhi Singh

### Abstract

*As we are seeing that every trader is engaged in competing with other traders, all of them are engaged in the race to increase their customers. They are engaged in this war, who is better than whom and who is better in what. If we talk about e-commerce, then there are two companies that are Amazon and Flipkart which are competing. These companies are doing everything to attract customers whether from advertising or by introducing new sales scheme. In this research paper, we will do a Comparative analysis of young customer satisfaction from Lucknow regarding festive offers in Amazon and Flipkart to know how they are different from each other and in which part they are better than each other. To know this, we will study customer satisfaction about these two companies.*

**Keywords:** e-commerce, Flipkart, Amazon, Customer Satisfaction

### Introduction:

Flipkart is an electronic commerce website, which is touching new dimensions of success today. The headquarters of this company is in Bangalore city of Karnataka state. With the help of this website, many people have been buying and selling various kinds of items sitting at home. Its company was founded in October 2007 by Sachin Bansal and Binny Bansal. Like Amazon, Flipkart initially started operating in books and later ventured into other products. Walmart bought India's largest e-commerce company Flipkart in 2018. Walmart bought 77% of Flipkart's shares for 16 Billion Dollars (1,07,200 crore).

Amazon started its Indian operations in 2012. It started its Indian operations under Junglee.com, a website that allowed retailers in India to advertise their products to millions of Indian buyers. Although, Flipkart focuses most of its sales on mobile, sales of Amazon products range from books to DVDs, CDs, etc. Amazon has also launched its products like Kindle. Amazon has recently been in the news for investment to develop drones, which would be helpful in distributing them. The two companies are giving tough competition to each other. Amazon outperformed Flipkart in user experience, which was found in a survey conducted based on the responses of 7,500 online shoppers in 30 cities. Flipkart and Amazon are rivaling in a fierce battle for market dominance in India. In addition, Amazon coupons offer huge discounts on some products that Flipkart does not. Flipkart was at the top in India until Amazon arrived, and now Amazon and Flipkart have a tough fight and are growing at a very fast rate in India in terms of popularity and sales. Both brands intend to enter the hyper-local market, which is currently occupied by companies such as Swiggy, Grofers and BigBasket, so that it can reach 2<sup>nd</sup> and 3<sup>rd</sup> tier cities and beyond. In addition, Amazon has bought a part of Future Coupons of Future Group, which operates supermarket chains such as Big Bazaar and Easy Day, making it clear that the company intends to reach offline customers who live in 2<sup>nd</sup> and 3<sup>rd</sup> tier cities. The advantage is that the brand will remain in a unique safety net that it has built – if it fails to capture Tier II and Tier III consumers through its E-commerce venture, it will certainly be a part of the digital supermarket chains associated with the brand.

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# Structure and functioning of *Coriaria nepalensis* dominated shrublands in degraded hills of Kumaun Himalaya. I. Dry matter dynamics

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## Abstract

In Kumaun Himalaya, the shrublands dominated by *Coriaria nepalensis* are present in patches and due to their facilitative nature enhance the restoration of degraded hills. This study deals with the dry matter dynamics of *C. nepalensis* shrublands. The equation for *C. nepalensis* was developed to measure the biomass and to understand the dry matter dynamics through compartmental models. Total biomass of tree, shrub and herb varied from 71.66 to 217.40 t ha<sup>-1</sup>, 43.65 to 77.55 t ha<sup>-1</sup> and 11.11 to 64.55 t ha<sup>-1</sup>, respectively. The biomass of herbs was higher during monsoon and lowest during the summer season. Litter fall varied from 1.02–1.70 t ha<sup>-1</sup> yr<sup>-1</sup> and the highest value of litter fall was recorded during winter (52%) followed by rainy (29%) and summer season (19%). Order of contribution of different components to total litter fall was: foliage (45.32%–50.33%) > twigs (36.80%–42.22%) > miscellaneous litter (4.62%–6.97%) > Bark (3.56%–5.47%) > reproductive parts (2.13%–3.57%). Shrub floor biomass was recorded maximum during the rainy season (11.32–37.55 t ha<sup>-1</sup>) followed by the winter season (13.03–25.36 t ha<sup>-1</sup>) and minimum in the summer season (6.83–12.80 t ha<sup>-1</sup>). Net primary productivity in trees, shrubs and sapling was ranged from 0.94 to 11.01, 1.83 to 4.88 and 0.55 to 0.87, respectively. Due to less canopy cover, the litter fall was less than from the majority of the forest types of the region. Thus, proper conservation and management measures must be designed to improve the structural components and functional traits of the shrubland ecosystem to enhance the ecological services on sustained basis.

## KEYWORDS

allometric equations, biomass, compartment model, dry matter dynamics, net primary productivity

## 1 | INTRODUCTION

Shrubland is a kind of terrestrial ecosystem mainly comprises of shrubs or short statured trees generally reflecting vertical stratification of below 5 m with single canopy. Shrubs are a common component of the forest ecosystem and its distribution varied from fairly open to patchy or even very dense depending upon the natural

regeneration of tree species as well as site condition and disturbance regimes (Dixon et al., 2014; Jhariya, 2017a). Among the shrub species, which mitigate the frequency of perilous natural events or natural calamities by its power or ability, *Coriaria* spp. is a frequently spotted one. Species delimitation in *Coriaria* is controversial, and 5–20 species have been recognised, depending on the authors (5 species: Skog, 1972; Cronquist, 1981; Thorne, 1983; 10 species: Scholz, 1964;



# Nutrient Partitioning and Dynamics in *Coriaria nepalensis* Wall Dominated Shrublands of Degraded Hills of Kumaun Himalaya

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*Coriaria nepalensis* is one of the shrubs which have the ability to mitigate the frequency of perilous natural events or natural calamities. This paper elucidates the nutrient dynamics of *C. nepalensis* shrublands in degraded hills of Kumaun Himalaya. The average nutrient concentration (N, P, and K) in aboveground components of *C. nepalensis* was in the following order: Foliage > Twigs > Branches > Bole wood, whereas in belowground components the order was: Fine roots > Lateral roots > Stump root. The order of contribution to total nutrient storage in vegetation was: Tree > Herbs > Shrubs. The proportion of nutrients stored in the shrub layer was in the order: N > K > P. The soil stored a maximum proportion of nutrients at each site (79.48–87.54% N, 70.47–87.88% P, 74.33–88.27% K). Maximum nutrient storage in soil and vegetation was recorded for site 3 (Barapatthar) and minimum for site 1 (Pines). The uptake of N, P, and K by vegetation ranged from 428 to 1,353 kg ha<sup>-1</sup> yr<sup>-1</sup>, 32–102 kg ha<sup>-1</sup> yr<sup>-1</sup>, and 109–479 kg ha<sup>-1</sup> yr<sup>-1</sup>, respectively. In the present study, the turnover time was 1.06–1.33 years for N, 1.03–1.15 years for P, and 1.02–1.13 years for K. Compartment models reflect the distribution of nutrients and net annual flux that will help to develop the management plan to maintain the fertility and productiveness of the degraded sites.

**Keywords:** compartment model, nutrient dynamics, nutrient content, retranslocation, turnover of nutrients

## INTRODUCTION

The forest ecosystem production depends on the site condition and concentration of nutrients in the vegetation (trees, shrubs, and herbs) and soil pool, which are available in different amounts and play a major role in every plant's physiological activity. The functional and natural balance in the intra-system cycling of the given ecosystem determines the net flux and budget of the nutrients and affects the sustainability of the ecosystem (Bargali and Singh, 1997; Gautam and Mandal, 2018; Pang et al., 2020).

The status of the nutrients in the plant and soil pools are the key indicator of site quality in terms of potential productiveness and offers the best growing environment to the regenerative crops in the forest ecosystem (Raha et al., 2020; Ray et al., 2020). The nutrient budgeting and flux in the forest

पंकज अवास्थी

## Relative Performance of Woody Vegetation in Response to Facilitation by *Coriaria nepalensis* in Central Himalaya, India

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**Abstract**—A comparative study of four *Coriaria nepalensis* (hereafter *Coriaria*) dominated sites has been conducted to evaluate the facilitation effects on tree and shrub characteristics and soil nutrients. A gradient of *Coriaria* abundance (level 1–4) has been established and the sites have been arranged in order of increasing abundance of *Coriaria*. In this study, compared to the lowest abundance level, the tree species richness has increased by 43% and the shrub species richness has increased by 25% at the highest abundance level of *Coriaria*, indicating that the effects of *Coriaria* have been consistent and strongly positive on the species richness. The tree and the shrub density have also increased along with increasing abundance of *Coriaria* while the tree and the shrub basal area have decreased. The population structure and the regeneration status have suggested that regeneration of tree species has been facilitated by *Coriaria* in low abundance sites and inhibited in high abundance sites. These findings suggest that changes in soil characteristics that occur after the *Coriaria* colonization facilitate growth and regeneration of the associated woody vegetation. However, with increasing abundance of *Coriaria*, there is a shift from facilitation to inhibition, thus the changes in dominance of species and species composition of the vegetation.

**Keywords:** Indian Central Himalaya, *Coriaria nepalensis*, facilitation, woody vegetation, regeneration status, soil characteristics

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In natural ecosystems, certain plant species facilitate growth and establishment of other plant species which has been recognized as an important driving force [1]. The stress gradient hypothesis has suggested that in a high stress environment the facilitation plants or nurse plants play an important role in structuring plant communities [2] while in low stress environments competition between species dominates. The balance between positive and negative interactions is governed by the ecosystem productivity and varies in time and space [3]. In studies on succession, both positive and negative interactions among species have been frequently reported by earlier ecologists [4]. Although facilitation, or positive interactions, play an important role in Clement's [5] theory of plant succession, they have generally not been recognized in Ecology.

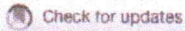
In harsh environments, nitrogen fixing species ameliorate soil condition through biological nitrogen fixation and create favorable conditions for neighbouring species. At the same time these species also compete with associated plant species for light and other resources; as a result, the interactions that take place in stressful environments are net positive due to alleviating nutrient limitations and moderating environmental stresses. However, in less stressful situations the greater availability favours competitive inter-

actions [6] indicating that dominance of competition and dominance of facilitation occur within a very small spatial scale [7].

In Indian Central Himalaya, an actinorhizal nitrogen-fixing native shrub *Coriaria nepalensis* (Family-Coriariaceae) forms thickets in elevations between 1200 and 1500 m. This species has extensively colonized open areas with high light availability including degraded forest areas [8]. Because of nodulation by the actinorhizal species *Frankia*, this species significantly increases the soil's N availability [9]. The behaviour of the *Coriaria* has suggested that it facilitates the growth of nearby growing species [9, 10]. Controlled experiments have lent further insight into facilitative role of *Coriaria* [11]. While *Coriaria* can facilitate other species, it is also a strong competitor that can inhibit seedling establishment and the growth of associated plants. This study has tested two hypotheses: i. That *Coriaria* affect floristic composition and structure by exerting facilitative effect; ii. That establishment of tree seedlings in the same habitat differs in response to change in *Coriaria* abundance.

The main aim of this study has been to analyze the importance of facilitation brought about by *Coriaria* for determining long term changes in forest structure and composition.





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# Nutrient return through decomposing *Coriaria nepalensis* litter in degraded hills of Kumaun Himalaya, India

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*Coriaria nepalensis*, a nitrogen-fixing actinorhizal shrub, is a prominent and successful colonizer of bare rocks and landslide affected degraded lands. Field experiments were conducted to determine the differences in biomass decomposition and nutrient release pattern of different plant parts of *C. nepalensis* using litter bag technique. Results showed that the leaves decomposed completely within 6 months while only 46.55% of the lateral roots were decomposed with slowest decomposition rate of 0.14% day<sup>-1</sup>. The decomposition rate was in the order: Leaves > Reproductive parts > Twigs (< 5 mm) > Twigs (> 5 mm) > Bark > Fine roots > Lateral roots. The decay rate coefficient was highest (0.003–0.014) for leaves and lowest (0.001–0.002) for lateral roots. During the decomposition cycle (364 days), overall increase was reported in nitrogen and phosphorus concentration, while potassium concentration decreased continuously in residual litters. The nutrient mobility was in the order: K > P > N. Climatic factors like temperature, relative humidity and rainfall significantly affected the decomposition process and among these factors, rainfall pattern emerged as a most effective environmental driver. Thus, taking into account initial nutrient content, nutrient release and decay rates, the leaves and reproductive parts of *C. nepalensis* proved to be more important as nutrient source than other components.

## KEYWORDS

decomposition, decay coefficient, degraded lands, litter bags, litter types, nutrient dynamics

## Introduction

Decomposition of plant litter is a fundamental biogeochemical process and plays vital role in soil organic matter accumulation and nutrient cycling (Bargali et al., 2015a; Li et al., 2022). It plays major role in regeneration, conserving biological diversity, ensuring plant nutrition, maintaining air and water quality, and preserving

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**IMPACT OF BEHAVIORAL BIASES ON INVESTMENT DECISION MAKING****Arun Sharma**Research Scholar, Department of Commerce & Business Management  
Integral University, Lucknow, UP, India**Dr. Rizwana Atiq**Assistant Professor, Department of Commerce & Business Management  
Integral University, Lucknow, UP, India**ABSTRACT**

The analysis in this research focuses on the respondent investors' thoughts and opinions regarding the investing pattern in general, as well as their perspectives on the relevant issues. The key topics explored in this section of the research study are the investors' investing preferences and the influence of friends and others on their investment decisions. The information gathered from the questionnaire-assisted interviews has been processed and evaluated in this study.

*Keywords: Financial market, Behavioural Biases, Decision Making, Stock Market, Investors.*

**INTRODUCTION**

In recent years, equities markets have experienced increased volatility and changes. Financial markets are becoming increasingly vulnerable to macroeconomic shocks that affect markets on a worldwide scale. From an investor's perspective, market vulnerability has resulted in increased uncertainty and unpredictability. When making financial decisions, market players have traditionally relied on the concept of efficient markets and rational investor behaviour. However, the concept of totally rational investors who constantly maximise their utility and exercise perfect self-control is proving insufficient.

Market inefficiency in the form of anomalies and illogical conduct has been documented regularly in recent years. The current economic slump in the United States shows a scenario characterised by both unpredictability and unreasonable behaviour. In recent years, the Indian stock market has been volatile. It had a steep drop from its peak in 2006 in 2008, followed by a sequence of ups and downs in the years afterwards till 2013. This was the time when markets saw dramatic shifts in sentiment in a short period of time. [1]

Researchers have repeatedly stated that investor irrationality is an unavoidable truth. [2] A real investor cannot accept the mainstream finance theories' 'rational' assumptions. Traditional ideas hold that investors are not the calculative utility maximising robots that they are. Investors are influenced by their emotions and are prone to making cognitive mistakes. They may lack self-control, be overconfident in their talents, miscalculate facts, overreact, or blindly follow the crowd. These investment mistakes might manifest as market oddities such as speculative bubbles such as the 2006 real estate boom. These occurrences necessitate an understanding of investor behaviour. Behavioral

  
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FACTORS RESPONSIBLE FOR THE GROWTH OF PUBLIC AND PRIVATE SECTOR MUTUAL FUNDS

RAJESH KUMAR SRIVASTAVA, DR SHOBHIT, ANIL SHARMA AND RESHABH DEV

ABSTRACT

This paper helps to understand the factors responsible for growth of public and private sector mutual funds. Public and private sector mutual funds have launched various schemes to meet the small investor's needs. Mutual fund is one of the most growing financial intermediaries for the interest of small investors. This Paper also explains the growth aspects of the public and private sector mutual fund industry along with some guidelines of SEBI that provide reasonable and safe return. As the mutual fund is managed by professionally managed team of experts, the investors are not required to bother about any risk regarding the investment in mutual funds. These professionally managed teams take the responsibility of investing in Indian Capital Market after through research and analysis. The objective of the study is to identify the factors responsible for the growth of public and private sector mutual funds. Under this study the secondary data has been used.

Keywords: Mutual fund industry, SEBI guidelines, growth, financial intermediaries.

I. INTRODUCTION

Mutual Fund is one of the most preferred investment alternatives for the small investors as it offers an opportunity to invest in a diversified, professionally managed portfolio at a relatively low cost. The public and private sector mutual funds is growing rapidly and this is reflected in the increase in Assets under management of various fund schemes. The public and private sector mutual funds have witnessed considerable growth due to important amendments in SEBI Regulation 1996 in 2012 regarding advertisement cost, entry load, exit load and expense ratio. Apart from these tax benefits, return potential, liquidity, low cost and transparency played a vital role in the growth of public and private sector mutual funds.

The driving force of mutual fund is the safety of principal, plus the additional advantage of capital enhancement and also the income earned in the form of interest or dividend. This attracts the people towards mutual funds than the bank deposits, life insurance, and even bonds.

II. LITERATURE REVIEW

A large number of studies have been conducted in India and abroad regarding the different aspects of Mutual fund.

Raju (2006) in his paper analysed the mutual fund investments on the basis of investment priorities, factors considered before investing, investment objectives, expected returns, awareness level of mutual funds, sources of awareness and willingness of investors to invest in mutual funds. The study was based on a sample size of 200 respondents and covered the period from April 2005 to August 2005.

Vijayakumar, Muruganandan and Rao (2012) in their study examined the relationship between fund performance and fund characteristics using 14 open-ended funds of fund from 2004 to 2008. The fund performance was measured by fund returns computed on the basis of daily NAV. The fund characteristics variables employed as explanatory variable in the estimation included standard deviation as a measure of risk, turnover ratio and income ratio, fund size measured by average net assets and expenses ratio.

V. Rathnamani (2013) concluded that many investors are chosen to invest in mutual fund in order to have high gain at low level of risk, safety liquidity. It can be said that the Mutual Fund as an investment vehicle is capturing the attention of various segments of the society, like academicians, industrialists, financial intermediaries, investors and regulators for varied reasons and deserves an in depth study.

Sundar and Prakash (2014) in their study examined the awareness among the investor community in choosing the best mutual fund scheme as it conducted a comparative analysis of the mutual funds of three AMCs. This study also showed that much information about mutual funds is not available publicly. There is no information on fund styles or comprehensive league tables to allow the comparison of mutual funds in the market. This study introduced a method which examines the relation between fund returns and fund asset size, cash holding, loads, expense ratio, and turnover.

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## INVESTORS ATTITUDE TOWARDS MUTUAL FUNDS

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### ABSTRACT

Various demographic factors responsible for the investment in mutual funds have been described in this research paper. Keeping the small investors need different investment schemes have been started by the Mutual funds. Mutual fund acts as an important financial instrument for the protection of small investors. Chi-square test has been used to analyse the factors which affect the investment in mutual funds. The investors are not required to bother about any risk regarding the investment in mutual funds, as the mutual fund is managed by professionally managed team. These professionally managed teams take the responsibility of investing in Indian Capital Market after through research and analysis. The purpose of this research paper is to identify the factors which mostly affect the investor's interest for making investment in mutual funds. The secondary data has been used.

**Keywords:** Capital Market, Demographic Factors, financial instrument.

### Introduction

For the small investors Mutual Fund is best means of investment option because it provides an opportunity for the secured and good return at a very low cost of investment. The investment is managed through a qualified and expert team of managers.

The fund collected from people is invested in capital market. Generally the investments are made in the shares of blue chips companies. The principle of diversification is adopted as it reduces the risk. The investors share the profits or losses in proportion to their investment.

Before collecting funds from the public, it is mandatory for a mutual fund to be registered under the provisions of the Securities and Exchange Board of India (SEBI), which is also the regulator of the capital markets. Thus a Mutual Fund opens the door for a common man, to obtain a secured return by investing at comparatively minimum cost.

Most mutual funds investments are under the close monitoring of professional managers who select the investments that provide maximum return. The income derived from the Mutual funds is exempted from tax.

A mutual fund is setup as a trust, under the Indian Trusts Act, 1882. Its prime function is to protect the investor's interest. The sponsor has to fulfil the basic norms laid down by the Securities and Exchange Board of India regulations, 1996 relating to the mutual funds. The trustee appoints AMC with the approval SEBI.

### NET ASSET VALUE

Net asset value can be calculated as:

NAV =

$$\frac{\text{(Market value of all assets + cash - Fund Liabilities)}}{\text{Total number of outstanding shares}}$$

Total number of outstanding shares

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**IEC campaign for COVID-19  
awareness and behavioural change  
among the youth of Lucknow in  
U.P.**

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communication.**Abstract**

The entire world is in the grip of novel corona virus. The spread of the virus is so colossal that it compelled the World Health Organisation (WHO) to declare it a pandemic on March 11, 2020. The WHO has also expressed a deep concern over the alarming levels of its spread and severity. In view of rising number of confirmed COVID-19 cases in different parts of the state, the Uttar Pradesh government has been delivering health information relating to this dreadful virus via Information education communication (IEC) materials in

order to bring awareness about prevention and control of COVID-19 among general public.

The objectives of the study are to find out the role and importance of IEC campaign through digital media, finding the most reliable medium for disseminating information among youth, to identify the potential of behavioural change through information education communication campaigns. In addition, the study also aims to check the efficacy of the coronavirus public service announcement (PSA) among youth of Lucknow as well as to find out which social media platform provide the most rumors/fake news relating to Covid-19.

The descriptive design followed by cross sectional survey method is used for data collection, only primary data will be collected. Triangulation method i.e. quantitative and qualitative method of research followed by mixed questionnaire (i.e. open-ended and close-ended) is also used in the study.

**KEYWORDS:** Covid-19, Behaviour changing communication (BCC), Information Education communication campaign (IEC), Uttar Pradesh government, IEC Posters, Fake news .

## An Assessment of Socio-Economic Impact on Different Sectors During COVID 19 in India

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**Abstract-** *The global pandemic of the Corona virus (COVID19) has resulted in extraordinary losses and disruptions. No country has been spared the brunt of it, from developed to developing. We have examined the impact of COVID19 on India's economy and society so far in this study. On the basis of available literature, an effect assessment is made on all three sectors—primary, secondary, and service—as well as the influence on migrants, health, poverty, job losses, the informal sector, the environment, and so on. Every sector of the economy has been disproportionately impacted, and even within each sector, there has been a disproportionate loss. Job losses, mental illness, increased domestic violence, and other societal consequences are all severe. Some significant benefits can be seen in terms of enhanced air quality, water quality, and wildlife, but the long-term viability of such effects is dependent on post-COVID and people's habits, as well as future environmental regulations.*

**Indexed Terms-** *Unemployment, corona-virus, Indian Economy, socio-economic, sectors.*

### I. INTRODUCTION

The worldwide spread of the novel coronavirus disease (COVID-19) is severely affecting the global economy, and almost one-third to half of the global population was under some form of a lockdown by July 2020 (Kaplan et al 2020). This threatened an economic bloodbath, wherein all economic activities around the world witnessed a closure. The International Labour Organization's initial prediction was that nearly 25 million jobs would be lost worldwide due to the pandemic and would mean income losses for workers between \$860 billion and \$3.4 trillion by the end of 2020. But by the end of

2020, the organisation reported a loss of 81 million jobs in the Asia Pacific region. This would translate into a fall in consumption of goods and services and disruptions in backward and forward linkages in supply chains impacting businesses and in turn viciously affecting national economies.

As on June 24, 2020, there are around 9,129,146 cases globally out of which 4,73,797 lost their lives. India is on the fourth place in the number of confirmed cases and first in Asia. Total confirmed cases in India are 4,56,183 out of which 14,476 lost their lives mainly in the states Maharashtra and Delhi (Ministry of Health and Family Welfare, GOI). Most of the countries including even developed nations like United States, Italy, and United Kingdom are not prepared enough to deal with this pandemic. Presently, the worry is not for just human well-being besides for the worldwide economy which is most noticeably awful hit in each viewpoint. Economic disturbances are probably going to be more extreme and extended in developing and emerging countries with bigger domestic outbreaks and the more fragile and weak healthcare system; with larger exposure to international spillovers through various channels like trade, tourism, and commodity and financial markets; weaker macroeconomic frameworks; and more pervasive informality and poverty (Global Economic Prospects, World Bank, 2020). It is not just a health crisis; it is the economic and humanitarian crisis and called a black swan by many economists. As a result of its infectious nature, almost all nations favored lockdown to limit its spread. Following this, India initially proclaimed a one-day "Janata Curfew" on March 22, 2020. From there on, a total lockdown was reported in India at first for 21 days which was extended to an additional 19 days, and thereafter it got broadened further with minor relaxations. After June 1, many relaxations are given to proceed with the economic activities but borders of

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## INVESTOR'S BEHAVIOR IN INVESTMENT DECISION MAKING IN TERMS OF BEHAVIORAL FINANCE

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### ABSTRACT

This study aims to investigate the impact of numerous behavioral elements on investors' investing decision-making behavior. An endeavor was made to include as many players as possible in order to achieve sustainable growth and improved advancement for the Indian economy. The Indian government had undertaken creative and specialized financial inclusion efforts. Many studies have shown that the development of the securities market has a distinct impact on economic growth and development. In comparison to banks deposits, securities market instruments carry a larger risk as well as a higher return. The growth of the financial markets, with high risk and high return assets, has aided in the diversification of people' portfolios, as well as providing social and individual advantages.

**KEYWORDS:-** Investor behavior, investment decision making, behavioral finance, heuristics and biases are all topics covered in this course.


### INTRODUCTION


The impact of the global crisis was felt in India, prompting policymakers to examine changes in investment behavior. Aside from their supervisory role, securities market regulators work to enhance infrastructure and increase participation in the securities market. Financial inclusion becomes critical for the country's major economic growth. Aside from traditional investment routes such as real estate, gold, and bank savings, securities market instruments dominate in terms of risk adjusted return. To mobilize latent household funds, the government must educate the public about the financial markets' available possibilities. The smooth operation of the securities markets greatly aids economic progress. According to several polls, a very tiny fraction of the Indian population invests in the stocks market, but in industrialized nations, more than half of the population participates.

According to the SEBI Investor Survey 2015 (SIS 2015), there were 3.37 crore investor households in India. 70% (2.37 crore) are urban families, while the remaining 1 crore are rural households. Mutual funds were the most popular investment product among them, with roughly 66 percent (or 2.2 crore households) investing. An estimated 1.9 crore people invested in shares, while 77 lakh households invested in bonds (public, private and PSU). There were 30 lakh investors in equities and currency derivatives, and 21 lakh investors in commodities futures. Approximately 18% (or 33 lakh) of equity investors had invested in the primary (IPO) markets.

Investor sentiment does not occur in isolation. They are intimately tied to and influenced by

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