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Comprehensive Trust Based Service Selection Model in Federated Cloud

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ABSTRACT

Service selection is a challenging task in federated cloud because the exponential growth of service providers.Also it provides extended similar services by more than one service providers. Each provider has varying level of quality, experience of service and responsiveness. Most of the existing approaches are based on the calculation of weights of the attributes, behaviors and operations. **Objective:**The proposed TSS model integrates the Weightand Optimal Gray Correlation Analysis (OGCA). Recommendation Trust (RT), Direct Trust (DT) and Reputation, when combined at an early stage, generate a complete trust that leads to precise overall trust. **Methods:**For the direct trust services, Analytic Hierarchy Process (AHP)&a crude set theory simulation method is used. **Findings:**A revolutionary dynamic trust upgrading technique has been devised to assure the correctness of direct trust.**Novelty:**The experiments can be analyzed and compare the result with existing methods.
Keywords: Federated Cloud, Quality of Service, Direct Trust, Recommendation Trust, Comprehensive Trust

1. INTRODUCTION

Cloud computing is a new advancing technology in some kind of a distributed environment that uses Virtual Machine (VM) technology to dynamically provide cloud services.Due to the increase cloud user, a single user is not able to satisfy the request of the cloud user within a peak time .Hence, multiple cloud providers are interconnected to form federated cloud. The multi-cloud environment of cloud federation is in nature is distributive and heterogeneous consisting of different cloud infrastructures by aggregating the resources of other service providers[1].

Various number of cloud providers supports for different types of services along with diverse Quality of Services (QoS). Hence, service selection model is required for selecting optimized provider in an automated manner and resolves the main features like flexibility, scalability, reliability, response time, usability and throughput along with variable number of users and requests.

This paper is arranged as follows. Section 1introduces federated cloud,Section 2 gives related work to service selection model in federated cloud, Section 3 discusses a new Trust Service Selection (TSS) model to develop an efficient trust model, improves user satisfaction as well as interaction success rate. Section 4 explains about dynamic trust computing mechanism, the results of the suggested model's simulation are shown in Section 5. Finally, Section 6 outlines future work and a conclusion.

Following are the literatures applied for trust based service selection model in federated cloud. Researchers [2] have suggested multi-attribute trusted service selection framework that evaluates the trust in providers, based on the scores of providers, providers are shortlisted, the concept of ranking is applied and optimal provider is selected. [3] established a cloud service assessment model based on the service preferences of the requester. Different account choice similarity is recommended to compute the needed trust when calculating the trust directly using the entropy value allocated technique and the AHP approach to generate combining weights.

[4] developed the Cloud Service Trust Evaluation Model (CSTEM), this is based on weights & grey correlation analysis as well as aims to increase user satisfaction and interactions performance level, direct trust, reputations for comprehensive trust, and recommended trust. Rough set theory is used to get the objective weight, whereas AHP is used to

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Research article

Conformational analysis, molecular structure, spectroscopic, NBO, reactivity descriptors, wavefunction and molecular docking investigations of 5,6-dimethoxy-1-indanone: A potential anti Alzheimer's agent

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ABSTRACT

The objective of the present study is focused to elucidate the structure of potential anti-Alzheimer's compound 5,6-Dimethoxy-1-indanone (5,6-DMI) and study its binding interaction towards the active site by molecular docking studies. The structural and various spectroscopic tools are used to understand the various interaction behaviors of the title compound. The theoretical calculation of 5,6-DMI molecule is computed by Gaussian 09W software with Density functional B3LYP and CAM-B3LYP method utilizing 6-311G(d,p) as basis set. The Natural Bond Orbital (NBO) analysis has been performed to find all possible transition was correlate with electronic transition. The Non covalent interaction of 5,6-DMI molecule was examined by adopt Reduced Density Gradient (RDG) analysis and colour filled ELF diagram. Molecular docking results suggest that 5,6-DMI may exhibit inhibitory activity against apoE protein and may act as potential against Alzheimer's disease.

1. Introduction

Alzheimer's disease (AD) is a social threat and progressive neurodegenerative disorder and one of the most universal causes of mental weakening in the early age of human being. Recent research efforts are to study the drug development, determination of molecular, biochemical and cellular mechanisms of AD. Several hypotheses proposed to elucidate the pathogenic characterization of AD including β-amyloid deposition, tauhyperphosphorylation, acetylcholine deficiency, inflammation, and oxidative stress. The Acetyl Cholinesterase (AChE) inhibitors are being major and large amount developed class of drugs approved for AD therapy have been approved by Food and Administration (FDA) and European Medicines Evaluation Agency (EMEA) example such as donepezil, rivastigime and galanthamine for symptomatic treatment of behavioural and psychiatric symptoms of AD [1]. The indanone derivatives play an important part in the discovering of novel structural moiety for the action of AChE inhibitors [2]. The indanone derivative are seems to be interesting chemical used to synthesis some important biomedical applications oriented compound such as anticonvulsants [3] anticholinergics [4] and aromatic retinoids [5].

The conformational stability and vibrational spectral studies of 2-bromo-1-indanol based on DFT has been investigated by Balchandran et al. [6], based on quantum chemical calculation. For 5-fluro-1-indanone molecule, the various spectral measurements have been recorded at different temperatures and states of aggregation were also carried out by F.Gomez et.al [7]. by assume C_s as point group. T.P.Ruiz et al. [8] studied the structure of 1-indanone by XRD at 120 K and calculated its vibrational frequencies and theoretical calculations by DFT techniques. Intermolecular forces on crystal structure of 5-chloro-1-indanone are reported by T.P.Ruiz [9] et al. Several noval derivatives of 5,6-DMI was synthesized based on Schiff's are found in literature by V.M.Patel et. al. [10], they also found all the derivative shows potential antimicrobial agents. M.Tureik et. al., [11], reported the comprehensive methods of preparation of 1-indanones in research article and patent for a decade of years. Up to our knowledge, only the XRD study of 5,6-DMI was reported by Shoja et al. [12] so far. In our present study we are focused on determining the molecular structure, a detailed vibrational (FTIR and

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Synthesis, spectral characterization, intramolecular interactions, electronic nonlinear optical response and molecular docking studies of ethyl-6-methyl-4-(3-(1-methyl-1H-pyrrole-2-carboxamido)phenyl)-2-oxo-1,2,3,4-tetrahydropyrimidine-5-carboxylate

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SnO_2 nanoparticles loaded Cashew Nut Shell resin modified polyvinyl alcohol nanocomposite membranes for PEMFCs

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Abstract:

In this work, SnO_2 nanoparticle dispersed Cashew nut shell liquid blended polyvinyl alcohol membrane was developed through dialdehyde crosslinking of PVA and CNSR, in addition to the preamble of mercapto succinic acid into the double bonds of CNSR. The CNSR was blended in polyvinyl alcohol at 10 wt% using DMSO as solvent. The blend membranes were analysed using SEM and FTIR analysis, further, 1%, 2% and 3% SnO_2 NPs loaded PVA with CNSR (10wt%) nanocomposite membranes were prepared and characterized for their ion exchange capacity, swelling ratio, water uptake, oxidative stability and proton conductivity. The hydrophilic nature of the PVA was retained even after blending with CNSR with slight reduction in water uptake ratio. The incorporation of carboxylic acid groups through the rection between CNSR and mercaptsuccinic acid was found to enhance the ion exchange capacity. The PVA/CNSR found to have superior ion exchange capacity, water uptake and oxidative stability than that of neat polvinylalcohol membrane. The examination on proton exchange capacity reveals that the obtained PVA/CNSR has higher proton conductivity with a highest value of 0.011S cm^{-1}.

Keywords: Proton exchange membrane fuel cell, Polyvinyl alcohol, Cashew Nut Shell Resin, SnO_2 NPs, Thermal stability, Polymer nanocomposites.

1. INTRODUCTION

Significant exploration of energy production devices are aimed at investigating new route to minimize the price, increase effectiveness, and lower the footprint of power generation systems on the environment. Fuel cell encompass promising advantages that warrant the expansion of a sustainable power generation system for future energy demand. Amongst the various types of fuel cell, the Proton Exchange Membrane Energy Cell has entered quick development in present decade owing to their high effectiveness, low environmental impact and low-temperature operation [1-3]. Among the synthetic polymers used in PEMFCs, Nafion membranes and polyfluorosulfonate ionomer membranes are the familiar marketable films engaged in the PEMFC owing to their higher proton conductivity [4]. Nonetheless, usuage of these polymers are restricted by high price tag and specific operation temperatures [5]. A broad choice of accoutrements as a cover for Nafion has been reported [6-8]. A foremost progress in this view is witnessed for sulfonated polymers such as sulfonated poly (phenylene oxide) (SPPO) [9], sulfonated poly ether ether ketone (SPEEK) [10], sulfonated polyimide [11] and sulfonated poly ether sulfone (SPES) [12].

A huge string of commercial polymers can be employed as matrix in the manufacture of PEM, among them polyvinyl alcohols (PVA) are recognized for their superior characteristics such as: and high impact and tensile strength, stability during exposure of solvents oils and alkalis, being compatible to

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Structural analysis and chemical descriptors analysis of 4-aminopyridine adsorbed on M_4 (M = Co, Ni, Cu) clusters: A DFT study

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Abstract

The geometrical properties of 4-aminopyridine and the transition metal clusters M_4 (M = Co, Ni and Cu) adsorbed 4-aminopyridine were examined using DFT/B3LYP/6-31G*/LANL2DZ. The reactivity descriptors were thoroughly examined to determine which cluster had the best biological potential for adsorption. This molecule's bioactivity may be predicted using wavefunction-dependent qualities such as the ones found in research such as the ones conducted using algorithms such as ALIEE, LOLE, LIE, ELF, RDG, and the NCI. The molecule has relevant adsorption energy on the surface of the metal clusters M_4 (M = Co, Ni, and Cu).

Keywords. DFT, 4-aminopyridine, copper and nickel metal clusters, wavefunction studies, ELF, LOL, LIE, NCI.

1. INTRODUCTION

Ampyra, a pyridine amine with the chemical formula $C_5H_4N–NH_2$, is a pyridine amine with the chemical formula $C_5H_4N–NH_2$. It's one of three pyridine amine isomers. It's also known as dalfampridine or 4-aminopyridine. The Hoffman rearrangement is used to decarbonylate pyridine 4-carboxamide with sodium hypochlorite.[1] It's a brand name for a drug that helps people with multiple sclerosis (MS) who have trouble walking. It was authorised by the US Food and Drug Administration (FDA) on January 22, 2010, and it was released in 2010. Multiple sclerosis (MS) is a chronic disease that affects both the immunological and central neurological systems. MS symptoms include muscle weakness, vision loss, loss of coordination, paralysis, stiffness, physical exhaustion, and an impaired ability to understand or remember.[2] The drug was previously known as fampridine sustained release and was sold as Ampyra, but it is now known as dalfampridine.[3] This medicine improved nerve transmission and boosted walking speed in clinical trials. Lambert-Eaton myasthenia and multiple sclerosis have both been treated with fampridine. This medicine acts by inhibiting potassium channels, resulting in an increase in neuronal impulses and neurotransmitter release at the neuromuscular junction, and it has been proven to reverse tetrodotoxin toxicity in animal studies. It's used in pharmacology, toxicology, neurotoxicity, carcinogenic activity, and analytical chemistry reagents.[4] Clinical research and the extension of therapeutic alternatives for people with MS, especially treatments for the disease's most severe and difficult symptoms, are consequently critical.[5] In patients with multiple sclerosis, fampridine has been implemented to enhance visual function and reduce fatigue. Fampridine-SR is an investigational medicine that has been shown to help some people with MS improve their muscle strength and walking capacity. Dalfampridine is meant to deliver a consistent accurate dosage in a time-released formula, so patients don't have to rely on a compounding pharmacy to obtain an unknown medication with potentially adverse effects.[6] According to a review of the literature, theoretical investigations on 4-aminopyridine are few, but various biological studies have been documented due to their enormous medical value. Metal clusters are substances that have a direct and significant metal-metal connection between two or more metal atoms.[7] They are now gaining a significant share of the market in modern medicine. Siddqui et al. reported various structural, NHO analyses, Molecular Electrical Potential Surface, and electron localization descriptors, however, no significant study on the structure and

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Synthesis and characterization of ethyl-6-methyl-2-oxo-4-(3-(2,4,5-trifluorobenzamido)phenyl)-1,2,3,4-tetrahydropyrimidine-5-carboxylate. A DFT approach

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Abstract

This study details the synthesis and spectrum analysis of ethyl-6-methyl-2-oxo-4-(3-(2,4,5-trifluorobenzamido)phenyl)-1,2,3,4-tetrahydropyrimidine-5-carboxylate (TFPPC). Hydrogen bonding between the carboxylate side chain and the dihydropyrimidine ring bearing the methyl group is caused via the C30–H31–O22 interaction. 2.475 and 2.236 are the intramolecular hydrogen bonds in these two O22H31 and O38H15 molecules, respectively. We were able to establish the optical characteristics of this unique (TFPPC) molecule using the polar relationship, which was utilized to forecast the change in hyperpolarizability. To study the optical band gap between valence and conduction bands and the electrostatic potential of the molecule, DFT simulations were used. The docking experiments were performed to theoretically assess the antibacterial capabilities of the chemical. *Staphylococcus aureus* is more efficient against *Bacillus subtilis* in terms of antibacterial activity. Feature drug development may take into account the compound's drug-like properties. Toxicological predictions show that the molecule is less harmful, and its in-silico properties are significant.

Keywords. TFPPC, NLO, NBO, MEP, DFT, Autodocking.

1. INTRODUCTION

In medicinal chemistry, dihydropyrimidine derivatives provide a wide selection of therapeutic applications. The existence of pyrimidine bases such as thymine, cytosine, and uracil, which are fundamental building blocks of nucleic acids such as DNA and RNA, was considered to be an essential factor in their activity.[1] The antifungal, antiproliferative, antitumor, antihypertensive, cardiotonic, and anti-inflammatory actions of these different molecules have been identified for these substances.[2-6] The identification of the (±)-4-(3-hydroxyphenyl)-2-thione derivative monasterol as a precursor anti-cancer medication that suppresses the mitotic kinesin-5 protein has elevated the prominence of this pharmacophore.[7] There are pyridimine core compounds like HEPT, MKC-442, and TNK-651 that have the greatest anti-HIV 1 effectiveness.[8] The *ortho*-chloro substituted benzylidene[9] is the most effective against the MCF-7 human breast cancer cell line. Dihydropyrimidines, which have a structural similarity to phenobarbital, has shown promise of anti-epileptic action.[10] Pyrimidine can be used as an electron-withdrawing component in push-pull structures for intramolecular charge transfer (ICT) since it is a significantly π-deficient aromatic heterocycle. A significant ICT along the molecule's structure can also cause luminescent characteristics. These versions could be utilized to build supramolecular assemblies and sensors by chelating the nitrogen atoms of the pyrimidine ring, protonation and hydrogen bond formation. In several high-tech domains, such as organic light-emitting diodes (OLEDs),[11] organic field-effect transistors (OFET),[12] and photovoltaics,[13] pyridine-based π-backbone molecules exhibited noteworthy

A Study on Different Dimensions on Workforce Diversity in Different Sectors with Reference to Chennai City

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Abstract:
In today's world, diversity isn't something that can be left to chance; it's a must-have phenomenon that any organization must embrace if it wants to compete globally. The performance of employees in the organization is influenced directly or indirectly by this diversified workforce with various characteristics. Employee performance is a crucial determinant of the organization's overall performance. Because there is a paucity of literature in the Indian context on organizational members' perceptions of the impact of workforce diversity on employee performance, the purpose of this study is to determine the relationship between workforce diversity parameters and employee performance from the employee's perspective. Data was gathered from both primary and secondary sources. The study's sample size is 150 people. Employees believe that workforce diversity characteristics have a major impact on employee performance, and the results show that age diversity, gender diversity, ethnicity diversity, and education diversity are all positively connected with employee performance.

Keywords: Diversity, Workforce Diversity, Employee Performance, Perception, Age Diversity, Gender Diversity, Education Diversity, Education Background Diversity

Introduction:

Diversity in workforce can be defined as recognizing, considerate, valuing and accepting dissimilarities among people with respect to their ethnicity, age, gender, physical and perceptual ability, sexual orientation and race. Diversity has different connotations according to different people, but one thing is for sure that one of the most important goals of the country's most progressive organizations is to foster a culture that celebrates the diversity of perspectives based on race, age, gender, language, educational background, and physical limitations. Workforce diversity is a valuable asset for any firm seeking a competitive advantage in today's global economy. Age, colour, ethnicity, language, religion, sex, and other factors all contribute to workforce diversity. Organizations are increasingly becoming a diverse mix of people. An organization's efforts to achieve a harmonious connection among employees are hampered by a racially and ethnically diverse workforce. Women are now more self-reliant and educated, and they can stand shoulder to shoulder with males. Working in an organization is also influenced by age and ability. Beliefs, values, points of view, and methods of acting are all examples of diversity.

Reasons for Diversity at the Workplace

The following are some of the reasons for the rise in workplace diversity:

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The relationship between work–life balance and job satisfaction: moderating role of training and development and work environment

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Abstract

Purpose − The purpose of this study is to investigate the relationship between work–life balance (WLB) and job stress, job commitment and job satisfaction. Further, the role of work environment and training and development as moderators in the relationship between WLB and its consequences is investigated.

Design/methodology/approach − Using a structured survey instrument, this paper gathered data from 331 respondents working in a transportation company in southern part of India. After checking the psychometric properties of the structured survey instrument, the authors analyzed data using hierarchical regression and structural equation modeling.

Findings − The hierarchical regression results indicated that WLB is (1) negatively related to job stress, (2) positively related to job satisfaction and (3) positively related to job commitment. The results also indicated that (1) job stress is negatively related to job satisfaction, and (2) job commitment is positively related to job satisfaction. The results also support that work environment is a moderator in the relationship between (1) WLB and job stress, and (2) WLB and job satisfaction. Results also documented that training and development is a moderator in the relationship between (1) job stress and job satisfaction, and (2) job commitment and job satisfaction.

Research limitations/implications − Since the present research is based on self-report measures, the limitations of common method bias and social desirability are inherent. However, the authors have taken sufficient care to minimize these limitations. The research has implications for managers in work organizations.

Practical implications − This study contributes to both literature on human resource management and practicing managers. The study suggests that employers need to be aware of the importance of WLB and invest moneys into training and development programs. Results also suggest maintaining congenial work environment to help employees maintain balance between work and life.

Social implications − The study is expected to contribute to the welfare of the society in terms of identifying the consequences of WLB.

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Double Layered Neighbourly Irregular Fuzzy Chemical Graphs Using Vertex Cut Method

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ABSTRACT

In this paper, we derive the Double Layered Neighbourly Irregular Fuzzy Chemical Graph using Vertex Cut method by using Neighbourly Irregular Fuzzy Chemical Graph. Also find Total Irregular value for the same.

Keywords: Neighbourly Irregular Fuzzy Chemical Graphs, Neighbourly Irregular Vertex Cut Fuzzy Chemical Graphs, Double Layered Vertex Cut Neighbourly irregular Fuzzy Chemical Graphs and Total Irregular Fuzzy Chemical Graphs.

1. Introduction

The concepts of fuzzy graphs were introduced by K. S. Fu, A. Rosenfeld, M. Shirmura, K. Tanaka, L. A. Zadeh [6] and S.K. Ayyasamy and S. Gnana Bhragsam [4] introduced the concept of Neighbourly Irregular Graph, A. Nagoorgani [7] were introduced some basic definitions and notations for Fuzzy Graphs and Fuzzy Irregular Graphs. J. Arockia aruldoss and M. Arunambigai [2] introduced construction of Neighbourly Irregular chemical Graph among p-block Elements, J. Arockia aruldoss and U. Gogulalakshmi constructed independent neighbourhood number of a Neighbourly Irregular Graphs among s-Block and p-Block elements [3], S. Anjalmose & J. Arockia Aruldoss [1] introduced Neighbourly Irregular Fuzzy Chemical graphs. The double layered fuzzy graphs were introduced by J. Jesintha Rosline and T. Parthinathan [5].

In this, paper we discuss on Double Layered Neighbourly Irregular Fuzzy Chemical Graphs and their total irregular value using vertex cut method.

2. Preliminaries

A fuzzy subset of a non empty set X is a mapping $\sigma : X \to [0, 1]$ which assigns to each element ' x ' in a degree of membership $\sigma(X)$ in [0, 1] such that $0 \leq \sigma(x) \leq 1$.

2.1 Definition [6]**:**
A fuzzy graph is a pair of function G: (σ, μ) where σ is a fuzzy subset of V, μ is a symmetric fuzzy relation on σ. i.e. $\sigma : V \to$ [0, 1] and $\mu : V \times V \to$ [0, 1] such that $\mu(u,v) \leq \sigma(u) \wedge \sigma(v) \forall u, v \in V$.

2.2 Definition [1]**:**

The degree of a vertex of an neighbourly irregular fuzzy chemical graph is denoted by $d_{NIFC}(v) = \sum u \neq v \mu(v,u)$.

2.3 Definition [7]**:**
Let G = (σ, μ) be a fuzzy graph. Then G is irregular, if there is a vertex which is adjacent to the vertices with distinct degrees.

2.4 Definition [7]**:**
Let G = (σ, μ) is a fuzzy graph. Then G is totally irregular, in which each vertex has distinct total degrees with its adjacent to vertices. Where the total degree of vertex u is defined as td(u)=$\sum\mu(u,v)+ \sum(u)$=d(u)+ $\sum(u)$.

2.5 Definition [6]**:**
If every two adjacent vertices of a fuzzy graph G = (σ, μ) has distinct total degrees, then G is said to be a Neighbourly total irregular fuzzy graph. It is denoted by G_{NTI}=(σ, μ).

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ORIGINAL ARTICLE

Structural, Spectroscopy and Magnetic Properties of Copper Doped Nickel Ferrite by the Co-precipitation Method

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Abstract

The Copper doped nickel ferrites were integrated by the co-precipitation method at 900 °C in this study. XRD patterns reveal the synthesized material are in single phase, face-centered Cubic (FCC) spinel structure and got good crystallinity with 10–20 nm in size. FT-IR confirmed high (426–456 cm^{-1}), low (346–387 cm^{-1}) frequency integration of tetrahedral and octahedral voids and confirmed inverse spinel structure. The ferrimagnetic properties of all synthesized materials at different concentrations were declared by the VSM. EPR analysis confirmed that existence of paramagnetic centers proves the evidence of free radicals in the ferrite materials.

Keywords Co-precipitation · Nanoparticle · Ferrimagnetisms · VSM · Free radicals · Ferrite

1 Introduction

Ferrite and its composite ferrites are produced by various methods. Some methods, such as hydrothermal [1, 2], sol–gel [3], Auto combustion [4, 5] and co-precipitation [6, 7] are widely used by researchers. Co-precipitation is a simple and economical method of preparing various components of mixed ferrites. Therefore, the co-precipitation approach is one of the essential avenues for success produced by ferrites. Its structural properties, optical properties, thermal properties, magnetic properties and electrical properties were studied by young researchers. However, ferrite products have a legitimate interest in a wide variety of applications such as high-speed digital tapes, radio frequency circuits, optoelectronics, phase shifters, electrochemical technology, isolators, transformer cores, and superior quality filters [8]. As larger ions attempt to fill the voids left by smaller ions, the lattice constants in the resulting spinel structure increase. As the pH value was most important in the synthesis of nanoferrite, which decreased from 11 to 9, the dielectric and magnetic losses were significantly increased to larger values [9]. The octahedral stretching vibrational mode of metal–oxygen is indicated by the band at 385–450 cm^{-1}, whereas the tetrahedral stretching vibrational mode is characterized by the band at 550–650 cm^{-1}. There were out of plane bending vibrations of O–H stretching at 1058 cm^{-1}. The H–O–H stretching mode of adsorbed or free water molecules is related with the vibrational band at 1633 cm^{-1} [10]. Metal oxide stretching vibrations (Ni–O and Fe–O) at the octahedral B-site and Fe–O stretching vibrations at the tetrahedral A-site is related to the primary and secondary absorption bands at 449 cm^{-1} and 583 cm^{-1}, respectively. Cation coordination in the ferrite form has been demonstrated [11]. Nickel ferrite is an integrated and occupied on different platforms. (Fe^{2+}) $(Ni^{2+}Fe^{3+})$ O_4, this compound is occupied by a half-half tetrahedral (A) site and an octahedral site (B) of iron (Fe^{3+}). Divalent cations (Fe^{2+} occupy the tetrahedral site) while divalent and trivalent cations (Ni^{2+} and Fe^{3+}) occupy the [12, 13] octahedral site (B site). Since the divalent and trivalent cations are displaced by each other due to the small radii of the cations, the products estimate the length in the grain parameter with subject to Vegard's law. Therefore, it shows the formation of ferromagnetism; an antiparallel spins between Fe^{3+} in the tetrahedral site and Ni^{2+} in the octahedral site [14]. The ferrite surface affects the particle size. The structural and ionic properties on the surface of the particles lead to the misperception of the grain symmetry presenting the anisotropy. A significant

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RESEARCH ARTICLE

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இனவரைவியல் நோக்கில் புறநானூறு

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[அ] தமிழ்த்துறை, தூய வளனார் கலை மற்றும் அறிவியல் கல்லூரி (தன்னாட்சி), மஞ்சக்குப்பம், கடலூர்-1, தமிழ்நாடு, இந்தியா

Ethnography from Purananuru's perspective

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ABSTRACT

Sangam literature emphasizes not only love, war, valor and gift but also humanity. Sangam poets were intelligent, thoughtful and humane. During the Sangam era, the clans were based on the occupation of the people. Tamil society accordingly changed due to the needs and environment, and the land and occupation of the people through social development. Any learned pattern of behavior that is sustained by some recognized system can be said to be part of culture. Anthropological culture includes all the customs, traditions, institutions of people, products, and their methods of occupation. The purpose of this article is to analyze the life elements of such Tamil ethnic community with the help of Purananuru.

Keywords: Sangam literature, Purananuru, Tamil society, Culture

முன்னுரை

பண்பாடு என்பது இன்றைய மானிடவியலின் அடிப்படைக் கருத்தாக்கமாகும். பண்பாடு என்பது மனிதனின் சமூக மரபு என்றும் மனிதன் உருவாக்கியுள்ள சுற்றுச்சூழல் என்றும் குறிப்பிடப்படுகின்றது. கற்றறிந்து கொள்ளப்படும் எந்தவொரு நடத்தை வடிவமும் சில அங்கீகரிக்கப்பட்ட முறைமைகளினால் நிலைநிறுத்தப் பெறுவதாயின் அவற்றைப் பண்பாட்டின் அங்கங்கள் எனலாம். மானிடவியலார் பண்பாடு என்பதனுள் அனைத்துப் பழக்கங்கள், மரபுகள், மக்களின் நிறுவனங்கள், உற்பத்திப் பொருட்கள், அவற்றின் தொழில் முறைகள் போன்ற எல்லாவற்றையும் உள்ளடக்குகின்றனர். இதனடிப்படையில் இக்கட்டுரையானது எட்டுத்தொகை நூல்களுள் ஒன்றான புறநானூற்றை இனவரைவியல் பார்வையில் மதிப்பிட உள்ளது.

இனவரைவியல்

இனவரைவியல் என்பது கள ஆய்வுகளின் அடிப்படையில், மனித சமூகத் தொடர்ப்பாடுகள் தொடர்பான பண்புநிலை விளக்கமாக அமையும் ஒருவகை எழுத்தாக்கம் ஆகும். பண்பாட்டு மானிடவியலின் முக்கியமான பிரிவாக இனவரைவியல் அமைந்துள்ளது. ஒரு குறிப்பிட்ட சமுதாயத்தில் வாழும் மக்களின் பிறப்பு முதல் இறப்பு வரையிலான வாழ்வியல் கூறுகளை, கள ஆய்வு முறைகளின் மூலம் பெறப்படும் முக்கியமான தரவுகளைக் கொண்டு விளக்கமாக

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A Study on Labeling of Standard Graphs

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This part introduces the fundamental terminology that will be used throughout the dissertation and defines the fundamental ideas of graph theory.

A graph G is made up of vertices, which are a finite non-empty collection of objects, and edges, which are a set E of 2-element subsets of vertices. The sets V and E are, respectively, the vertex set and edges set of G. Thus, two sets V and E make up a graph, or G. This is why some individuals write G = (V, E).

- To stress that these are the vertex and edge set of a certain graph G, it is helpful to write V (G) and E (G) rather than just V and E.
- The standard symbol for a graph is G, although we may also use F, H, G', G" and G1, G2, etc.
- Vertices are often referred to as points or nodes, and edges are occasionally referred to as lines.
- Parallel edges are any number of edges that connect the same two different vertices.
- A loop is an edge that is represented by an unordered pair with non-distinct members.

List of Symbols

n	Order of the graph
m	Size of the graph
V (G)	Vertex set of a graph G
E (G)	Edge set of a graph G
$\cong$	Isomorphic
$\subseteq$	Subset
$\langle S \rangle$	Induced sub-graph induced by
$\bar{G}$	Complement of a graph G
$\deg V$	Degree of a vertex V
δ (G)	Minimum degree of a graph G
Δ (G)	Maximum degree of a graph G

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PROPERTIES OF FUZZY CO-LOCALLY IRRESOLVABLE SETS

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Abstract

In this paper we introduce a new concept of fuzzy co-locally irresolvable sets and their properties are discussed with suitable examples.

1. Introduction

The idea of fuzzy sets and fuzzy set operations were introduced by L. A. Zadeh [8]. The first notion of fuzzy topological space had been defined by C. L. Chang [3]. The concept of fuzzy locally closed and fuzzy co-locally closed sets were introduced and studied by the authors in [4]. The fuzzy co-locally somewhere dense set were introduced and studied by the authors Dr. S. Anjalmose and A. Virgin Raj [2]. The fuzzy resolvable set and fuzzy irresolvable sets were introduced and studied by the authors Dr. G. Thangaraj et al. [5] [6]. In this paper we introduce a concept of fuzzy co-locally irresolvable sets. Several properties are also discussed with suitable examples.

2020 Mathematics Subject Classification: 54A40, 03E72.
Keywords: Fuzzy open sets, fuzzy co-locally closed sets, fuzzy co-locally somewhere dense, fuzzy co-locally irresolvable sets.
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Original Article

Under Homomorphism and Anti-Homomorphism of a Study on (Q, L)-Fuzzy P-Subsemiring of a P-Semiring

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Abstract *- The goal of this study is to investigate the algebraic nature of* $[Q, L]$*-fuzzy*ℓ*-subsemirings of a P-semiring. We further studied the fundamental hypothesis under homomorphism and anti-homomorphism by looking at a few features of* $[Q, L]$*-fuzzy P-subsemirings of P-semiring.*

Keywords *-* $[Q, L]$*- fuzzy subset,* $[Q, L]$*-fuzzy P-subsemiring,* $[Q, L]$*-fuzzy relation, Product of* $[Q, L]$*-fuzzy subsets, Pseudo* $[Q, L]$*-fuzzy coset.*

1. Introduction

Several scientists investigated the idea of fuzzy sets after L.A.Zadeh's presentation [5]. Azriel Rosenfeld [2] described a fuzzy group. A fuzzy subgroups finding was reported and detailed by AsokKumer Ray [1]. R. Biswas [15] established the concept of fuzzy subgroups and anti-fuzzy subgroups. Fuzzy homomorphism, anti-homomorphism, and anti-fuzzy groups were proposed by N. Palaniappan and T. Muthuraj [12]. A.Solairaju and R.Nagarajan devised and studied another mathematical design known as Q-fuzzy subgroups [3]. We introduce the concept of $[Q, L]$- fuzzy P-subsemiring of a P-semiring and discuss its implications.

2. Preliminaries

Definition 2.1 Let X be a set that isn't empty. A function$A_\mu: X \to [0, 1]$ a fuzzy subset A_μ of X.

Definition 2.2 Let X be a set that isn't empty. Let $L = (L, \leq)$ be a lattice with 0 as the least element and 1 as the greatest element and Q be a set that isn't empty. A (Q, L)-fuzzy subset A_μ of a function$A_\mu: X \times Q \to L$.

Definition 2.3 Let ℟ be a P-semiring and Q be a set that isn't empty. A $[Q, L]$-fuzzy subset A_μ of ℟ is said to be a $[Q, L]$-fuzzy P-subsemiring of a P-semiring [QLFLSLSR] of ℟ if it meets the following requirements:

$$A_\mu(x + y, q) \geq A_\mu(x, q) \wedge A_\mu(y, q)$$
$$A_\mu(xy, q) \geq A_\mu(x, q) \wedge A_\mu(y, q)$$
$$A_\mu(x \vee y, q) \geq A_\mu(x, q) \wedge A_\mu(y, q)$$

$A_\mu(x \wedge y, q) \geq A_\mu(x, q) \wedge A_\mu(y, q)$,for every x and y in R and q in Q.

Example 2.1 If $(Z, +, \bullet, \vee, \wedge)$ is a P-semiring and $Q = \{p\}$, the (Q, L)-Fuzzy Set A_μ of Z is defined as follows:

$$A_\mu(x, q) = \begin{cases} 0.6 & if x \in <2> \\ 0.3 & otherwise \end{cases}$$

$A_\mu$is unmistakably a (Q, L)-Fuzzy P-subsemiring of a P-semiring.

Definition 2.4 Let A and B be any two $[Q, L]$-fuzzy subsets of sets $G$and H, respectively. The product of $A$and B, denoted by $A \times B$, is defined as $A \times B = \{< ((x, y), q), (A \times B)_\mu((x, y), q) >/$ for every x in ℟ and y in H and $q \in Q\}$, where $(A \times B)_\mu((x, y), q) = A_\mu(x, q) \wedge B_\mu(y, q)$.

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Synthesis, characterization and magnetic properties of Mg^{2+} doped green pigment Cobalt aluminate nanoparticles

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ABSTRACT

The green pigment cobalt aluminate nanoparticles have been prepared by the simple and cost-effective co-precipitation method. And also, the structural, optical and magnetic properties of cobalt aluminate nanoparticles are altered by $Mg^{2þ}$ ions. In this work, stoichiometric ratio for the synthesis process to be taken is $Co_{1-x}Mg_xAl_2O_4ðx ¼ 0:00;\ x ¼ 0:06Þ$ for the preparation of nanoparticles. The XRD analysis revealed a single-phase mixed spinel ferrite, whereas a scanning electron microscopy (SEM) analysis revealed spherical particles with a size of 20 nm. Williamson–Hall (W–H) method was also used to determine the microstructural parameters of $Mg^{2?}$-doped cobalt aluminate nanoparticles. Fourier Transform Infrared (FT-IR) spectrometer has been recorded in the wavenumber range of 4000 — 400 cm^{-1} for the presence of various vibrational and stretching bands in the metal aluminates. A band gap energy value of 2:25 eV and 2:74 eV was estimated for undoped and doped cobalt aluminate nanoparticles using Tauc plot through UV–visible study. The transmission electron microscopy (TEM) analysis showed the synthesized nanoparticles display a mixed spherical and cubical shaped nanoparticles with good crystallinity in nature. Important magnetic parameters of the metal aluminate nanoparticles are also noted using Vibrating Sample Magnetometer (VSM)

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Analyzing the Lack of Interest in the Undergraduate Science Courses by Using Fuzzy Relational Equations of Max-Add Composition.

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Abstract:
In this paper we introduce a concept of fuzzy relational equations to appear today as a problem for lack of interest to learn under graduate science courses, because it connects mathematics and complicated science related syllabus with real world applications. Our aim finds out the problems of difficulties and increases the student interest on this science subject. Fuzzy relation equations, which are obtained by the composition of binary fuzzy relations, are used in this work as a tool for finding interest of students which they are liked and disliked and their under graduate causes

Keywords: Fuzzy subsets, composition of maximum-minimum, composition of maximum-addition, Fuzzy Binary Relations, algebraic sum and product of fuzzy subsets, Fuzzy Relation Equations.

1. INTRODUCTION

Fuzzy relations are significant concepts in fuzzy theory and have been widely used in many fields such as fuzzy clustering, fuzzy control and uncertainty reasoning. The notion of fuzzy relational equations based upon the max-min composition was first investigated by Sanchez [4]. Fuzzy relational equations are identities of the form $R \circ S = T$, where R, S and T are fuzzy relations (R is a fuzzy relation between sets X and Y , S is a fuzzy relation between Y and Z, and T is a fuzzy relation between X and Z). The maximum-addition composition of fuzzy relations were introduced and studied by S. Ramathilagam and A. Arokiamary [1]. In this paper we discuss about finds out the problems of difficulties and increase the student interest on the undergraduate science subject. Fuzzy relation equations, which are obtained by the composition of binary fuzzy relations, are used in this work as a tool for finding interest of students which they are liked and disliked their under graduate degree courses.

Preliminaries

A popular in such cases method for evaluating the interest to subject wise of a student Grade Point Average (GPA) index, GPA is a weighted average in which greater coefficients (weights) are assigned to the higher grades, which means that it reflects not the mean, but the quality performance to interest of the student. In an effort to find out the mean of student interest in such fuzzy assessment cases. We have used in the tools from fuzzy relational equations. More explicitly, representing a student interest as a fuzzy set in the set of the linguistic grades assessing the student. We calculated the existing in it probabilistic or

T-Fuzzy bi-quasi ideals in ternary Γ-semi-ring

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R. Padmapriya, D. Sivakumar and S. Anjalmose

T-fuzzy quasi-ideals, T-fuzzy bi-ideals in ternary Γ-semi-ring

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R. PadmaPriya, D. Sivakumar and S. Anjalmose

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Chromatic Index and Line graphs of Neighbourly Irregular Fuzzy Chemical Graphs(G_{NIFC}) among *s*-block and *p*-block elements

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Abstract.: In this paper, we have worked on fuzzy vertex coloring and fuzzy edge coloring for neighbourly irregular chemical graph G_{NIC} and its complement graph $\tilde{G}_{NIC}$. Also derived line graphs $L(G_{NIC})$ of neighbourly irregular chemical graph and line graph of complement neighbourly irregular chemical graph $(L(\tilde{G}_{NIC}))$. Using fuzzy edge coloring, we have find chromatic index for $\xi(G_{NIFC})$, irregular chromatic index $\xi_{ir}(G_{NIFC})$ also for $\xi_{ir}L(G_{NIFC})$ and $\xi_{ir}L(\tilde{G}_{NIFC})$. We have given the required propositions with the required examples for each. And we fund strength of the $\xi L(G_{NIFC}) = (N, W)$, and the colors.

AMS (MOS) Subject Classification Codes: 35S29; 40S70; 25U09
Key Words: Fuzzy chemical graphs, Neighborly irregular fuzzy chemical graphs, Fuzzy coloring, Chromatic index and Strength of the neighborly irregular fuzzy chemical graphs.

1. Introduction

In a graph $G = (V, X)$, where V represents the vertex set and X represents the edge set. Then the chemical graph is $G_C = (A, B)$ where A represents atoms and B represents bond set, in the molecular structure of molecules named as chemical graph. Among the molecules in the periodic table the molecular structure of S block and p block elements forms neighbourly irregular chemical graphs(G_{NIC}). Nenad Trinajstic [6] introduced the concept of chemical graph theory, S.K Ayyasamy et al [5] introduced the concept of neighbourly irregular graphs. J. Arokia Aruldoss et all [4] introduced Negibourly irregular chemical graph and irregular chromatic number for line graph of the same S.Anajalmose et all [1] introduced the idea of Neighbourly irregular fuzzy chemical graphs. Arindam Dey [2] et all introduced the concept of edge coloring of complement fuzzy graph. In this paper, we discuss the chromatic index and the strength of G_{NIFC}, $\tilde{G}_{NIFC}$ and their line graphs $L(G_{NIFC})$ and its complement graph $L(\tilde{G}_{NIFC})$.

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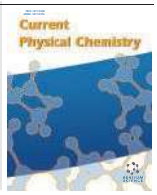
RESEARCH ARTICLE

DFT and Molecular Docking Analysis of Newly Synthesized Compound (2E)-3-[3-(Benzyloxy) Phenyl]-1-(4'-Chlorophe-Nyl)- 2-Propen-1-One [Bpclpo]



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Abstract: ***Background*:** The parent molecule in the skeleton of this chalcone is the benzyloxy phenyl, which is linked to the chlorophenylpropen at C-3. The hydrophobic phenyl groups are naturally resistant to oxidation and reduction. Antiviral, antimalarial, antibacterial, anti-inflammatory, anticancer, antioxidant, antitubercular, and anti-Alzheimer activities are among the many pharmacological properties of chalcone derivatives. As a result, chalcone-based compounds are investigated using molecular docking and molecular modelling calculations to determine their suitability for drug formulation.

***Aims*:** To synthesise (2E)-3-[3-(benzyloxy) phenyl]-1-(4'-chlorophenyl)-2-propen-1-one [BPClPO] and perform DFT and molecular docking analysis of the synthesized compound to better understand its medicinal properties.

***Objective*:** The characterization of BPClPO is investigated in this study using various approaches, including wavefunction analysis and spectral analysis, which are associated with quantum chemical calculations to investigate its medicinal properties.

***Methods*:** The Gaussian 09W programme was used to perform computational chemistry calculations. The BPClPO's molecular structure was optimised, and the vibrational frequencies, Natural Bond Orbital (NBO), Fukui function, electronic properties and Nuclear Magnetic Resonance (NMR) chemical shifts were calculated using the B3LYP/6-311G (d, p) as the basis set. The VMD user interface and Multiwfn (3.4.1) software were used to conduct topological analyses of the Electron Localization Function (ELF), Localized Orbital Locator (LOL) and Reduced Density Gradient (RDG). The binding sites of active cancer proteins were calculated using the auto dock and auto grid.

***Results*:** Theoretical reaction path investigation was done for BPClPO to detect reactions from the parent chemical to the synthesized compound. Theoretical bond lengths and bond angles are compared with XRD values. Theoretical values of vibrations caused by electron-rich and electron-deficient centres were investigated. The electronic spectra of λ_{max} were examined under UV-Vis light and the electron absorbance spectrum was absorbance wavelength and oscillator strength compared to theoretical values. The electron-rich carbon atoms are de-shielded in NMR, resulting in stronger fields and chemical shifts. The Harmonic Oscillator Model of Aromaticity (HOMA)and the retain ability of aromaticity in the addition and removal of electrons are examined in the Nucleus Independent Chemical Shift (NICS) study. The stability of the compound was investigated using Thermo-Gravimetric analysis and Differential Scanning Calorimeter (TG/DSC) analysis. Four cancer proteins with the reactive site were studied in docking simulations.

***Conclusion*:** The NBO analysis determined the intramolecular charge transfer within the molecule of high stabilization transition from C34-C37 donor to C35-C39 acceptor of (22.31 Kcal/mol) ($\pi \rightarrow \pi^*$) due to phenyl transition belonging to Cl atom in the ring. In the solvent phase, UV-visible spectra reveal a prominent peak at 300 λ_{max}, with an absorbance range of intensity of 0.6983. (a.u.). According to TG/DSC experiments, the molecule begins to break around 290-370°C, and total decomposition occurs at 300°C. The molecule was found to have a higher bioactivity than and was employed related more to medicinal properties mechanism(s) of action in drug docking investigations.

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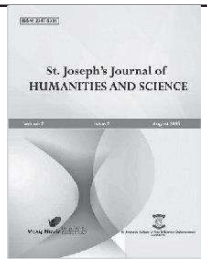

Synthesis and Enhanced Photo Degradation on Copper Ferrite Nano Particles

R. Sagayaraj[a*]
S. Sebastian[a]
S. Asokan[b]

ABSTRACT

The Co-precipitation method was effectively used in this study to create copper ferrite. It has positive surface because the potential hydrogen (pH) was held constant at 11. The temperature for annealing was set at 600°C for the synthesis of copper ferrite. The outcomes of the photocatalytic activity showed how to remove organic pollutants from wastewater.

Keywords: Co-precipitation method; Annealing; organic pollutants; wastewater; copper ferrite, photocatalytic activity.

INTRODUCTION

The Mixed ceramic Ferrite has been examined in the current years by many experts (researchers) by reason of their distinctive structural, optical, morphological along with magnetic properties. These materials are reasonable interest for an extensive multiplicity of applications like high-speed digital tapes, optoelectronics, isolators, phase shifters, electrochemical technology, radio frequency circuits, great quality filters and transformer cores [1]. Iron oxide mixed ferrite materials can be integrated using different techniques viz. hydrothermal [2, 3], sol-gel [4] auto combustion [5, 6] and co-precipitation [7]. One of the quick and affordable methods for creating multiple aspects of mixed ferrites is co-precipitation. So, one of the fundamental paths to success created by various ferrites is the co-precipitation technique. A prominent ferromagnetic material with an inverse spinel structure is nickel ferrite [8]. This compound is characterized by the formula $(Fe^{2}+)$ $(Ni^{2}+Fe^{3}+)$ O4, whereas half of the iron atoms occupy the

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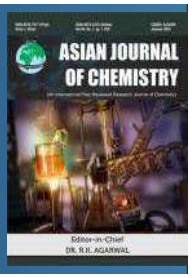

A Facile Catalytic One-Pot Synthesis of Benzimidazole and Benzothiazole Compounds using Amberlite IRA 400-Cl Resin as Green Catalyst

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A series of pharmaceutically valuable functionalized fused heteroaromatic compounds such as benzimidazoles and benzothiazoles have been synthesized *via* catalytic cyclocondensation between 1,2-phenylenediamine or 2-aminothiophenol and aryl aldehydes at ambient conditions. The Amberlite IRA400-Cl resin have been proved to be an efficient green catalyst in this protocol. The salient features of this method are the mild condition, easy work-up, an excellent yield of product, green catalyst and reusability of the catalyst.

Keywords: Cyclocondensation, Amberlite IRA-400 Cl resin, Green catalyst, Benzimidazoles, Benzothiazoles.

INTRODUCTION

Solid base heterogeneous catalysts such as quaternary ammonium halide type of anion exchange resin, [Amberlite IRA400 (Cl^-)], has been achieved great interest from both environmental and economic points of view [1]. The main benefits such as low cost, reusability, ease of handling and no side reactions making the process economically viable. Furthermore, this heterogeneous catalyst Amberlite IRA400 (Cl^-) has been used for a wide range of organic transformations [2-5. Benzofused heteroaromatic compounds display an array of applications in pharmaceutical and medicinal chemistry. This class of heterocycles also show a wide range of biological activities including antihypertensive, antiulcer, antifungal, anticancer, antihistamine, antihelminthic, antiparasitic, antiviral, anticoagulant, antiallergic, analgesic, anti-inflammatory, antimicrobial and immunosuppressant [6-13].

Benzimidazole derivatives are an integral part of various clinical medicines against several viruses such as herpes (HSV-1) [14], HIV [15], RNA [16] and influenza [17]. Benzothiazoles and its derivatives have been used as radiolabeling for positron emission tomography (PET) imaging in the diagnosis of Alzheimer's disease and to enhance the donor-acceptor effects in the chromophores [18]. Further, benzothiazoles are also known to be powerful antitumour agents [19-24], calmodulin antagonists [25], neurotransmission blocker [26-28] and neuroprotective agent [29,30]. Several catalytic methods have been reported for the construction of benzofused heterocyclic compounds, using Mont-K10, Air/DMSO and H_2O_2/CAN catalytic systems [31-38]. The disadvantages of this catalysts are expensive, excess catalysts loading, long reaction times and tedious work-up procedures. In this context, developing an efficient and eco-friendly greener method for the synthesis of benzimidazole and benzothiazole is still in demand. To our knowledge, there is no report available for the synthesis of benzimidazole and benzothiazole derivatives using Amberlite IRA 400-Cl resin as a green catalyst. Therefore, our approach to utilize the Amberlite IRA-400 Cl ion exchange resin as solid base catalyst for cyclocondensation between 1,2-phenylenediamine or 2-aminothiophenol and aryl aldehydes. The optimization, synthetic utility and characterization of benzimidazole and benzothiazole compounds have been discussed.

EXPERIMENTAL

All chemicals and solvents were commercially available and were used after distillation or treatment with drying agents. All the reactions were carried out in oven dried glassywares.

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A facile one-pot synthesis, computational and molecular docking studies of benzimidazole and benzothiazole compounds using Amberlite IRA 400-Cl resin as green/reusable catalyst

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abstract

A series of pharmaceutically valuable, functionalized fused heteroaromatic compounds such as benzimidazoles, and benzothiazoles have been synthesized via catalytic cyclocondensation between o-phenylenediamine, or o-aminothiophenol, and aryl aldehydes at ambient conditions. The Amberlite IRA400-Cl anionic resin has proved to be an efficient green catalyst in this protocol. The salient features of this method are the mild condition, easy work-up, an excellent yield of product, green catalyst, and reusability of the catalyst. Theoretical studies on selected compounds have been carried out using Density Functional Theory (DFT) method and Gaussian 09 package, B3LYP 6-311G(d,p) basis set. Molecular dock- ing studies were also performed on selected compounds to determine their pharmaceutical activities.

1. Introduction

Solid base heterogeneous catalysts such as quaternary ammonium halide type of anionic resin, [Amberlite IRA400 (Cl^-)], has achieved great interest from both environmental and economic points of view [1]. The main benefits such as low cost, reusability, ease of handling, and no side reactions make the process economically viable. Furthermore, this heterogeneous anionic resin catalyst has been used for a wide range of organic transformations [2–5]. Benzofused heteroaromatic compounds display an array of applications in pharmaceutical and medicinal chemistry. This class of heterocycles also shows a wide range of biological activities including anti-hypertensive, anti-ulcer, antiviral, antifungal, anticancer, antihistamine, anti-helminthic, anti-parasitic, anticoagulant, anti-allergic, analgesic, anti-inflammatory, antimicrobial, and immunosuppressant [6–13].

Benzimidazole derivatives are an integral part of various clinical medicines against several viruses such as herpes (HSV-1) [14], HIV [15], RNA [16] and influenza [17]. Some of the biologically active Benzimidazole compounds are presented in Fig. 1.

Benzothiazole and their derivatives have been used as radiolabeling for the diagnosis of Alzheimer's disease and to enhance the donor-acceptor effects in the chromophores [18]. Further, benzothiazoles are also known to be powerful anti-tumour agents [18–23]. calmodulin (CaM) antagonists [24], neurotransmission blocker [25–28] and neuroprotective agent [29–31]. Some of the biologically active benzothiazole compounds are presented in Fig. 2.

Several catalytic methods have been reported for the construction of benzofused heterocyclic compounds, using Mont-K10, Air/DMSO and H_2O_2/CAN catalytic systems [32–39]. The disadvantages of these catalysts are expensive, excess catalysts loading, long reaction times, and tedious work-up procedures. In this context, developing an efficient and eco-friendly greener method for the synthesis of benzimidazole, and benzothiazole is still in demand. To our knowledge, there is no report available for the synthesis of benzimidazole, and benzothiazole derivatives using Amberlite IRA 400-Cl resin as a green catalyst. This present work describes the catalytic utility of this anionic resin in cyclo condensation between *o*-phenylenediamine, or *o*-aminothiophenol, and aryl aldehydes. The detailed optimization, synthetic utility and characterization of benzimidazole, and benzothiazole compounds have been discussed.

Density functional theory (DFT) is a type of electronic structure calculation that has rapidly gained popularity. It often helps to calculate the electronic structure of atoms. It helps in the drug design of the molecule which otherwise would be very expensive and time consuming. To the best of our literature survey, neither DFT studies nor Molecular docking simulation has been proposed based on compounds **3h** and **6g.** Therefore, we have decided to investigate the potential applications of these compounds by perform-

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Experimental and theoretical studies of novel Schiff base based on diammino benzophenone with formyl chromone – BPAMC

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abstract

A bioactive chromone-based Schiff base (BPAMC) has been synthesised from diammino benzophenone and formyl chromone. The structural study performed by ^{13}C NMR and ^{1}H NMR Spectrum validates the expected product formation. FT-IR spectrum data were compared to simulated wavenumbers using the B3LYP/6–31G* level of theory. The optical band gap between the valence and conduction bands was also measured, and DFT calculations were performed to investigate the electrostatic potential of the molecules. The reactivity characteristics were extensively studied to identify the most biological potential for DNA binding. Wavefunction-dependant properties such as ALIE, LOL, LIE, ELF, RDG, and NCI studies provided a great deal of information about electronic properties that can be used to predict a molecule's bioactivity. The AutoDock programme was used to analyse DNA binding in calf thymus DNA. In silico ADME analysis was also performed to predict important pharmacokinetic properties.

1. Introduction

Schiff bases are condensation products of amine with aldehydes or ketones. They are also known as azomethine or imine. The general structural formula is RHC = N-R. [1] O, S and N containing Schiff bases of metal complexes have more interest at present time due to wide varieties of pharmacological activities [2]. Chromone is derived as a pigment from plant leaves and flowers. They are very necessary for the synthesis of different oxygen-containing heterocyclic compounds, xanthones and transition metal chelates [3,4]. Generally, chromones have a broad spectrum of medical and pharmaceutical applications such as antimicrobial, antitumor, anticancer, antifungal, antioxidant, antihypertensive, and anti-inflammatory activities [5–16]. The bicyclic chromone moiety has been classified as a favourable structure in drug discovery because it contains a wide spectrum of pharmacologically active compounds, including anti-HIV, antibacterial, and anti-inflammatory drugs, as well as serving as a fluorescent material [17]. It works as therapeutics in the treatment of asthma, disease of the blood circulatory system and liver cell regeneration. They are tyrosine and protein kinase C inhibitors, antitubuline, antihypertensive agents. The chromone system having an electron substituent at the 5th position considerably changes the reactivity of the pyrone ring. 3-Formyl chromone has been used in the formation of different heterocyclic compounds [18]. Metal complex with chromone compounds has much more attention because of structure, biological and pharmaceutical activity. These complexes elevated anticancer activity compared with their parent chelates [19]. Cancer is a virulent growth or tumour caused by unusual and disorderly cell division that led to the cause of death around the world. The platinum-based drug, cisplatin is used for the treatment of small lung cells, head, neck testicular, and ovarian cancer. Toxicity, nonspecific targeting and drug resistance are the drawbacks of using cisplatin drugs [20]. Most platinum-based anticancer drugs are available for the standard chemotherapeutic treatment of human cancer. There is no standard amicable resolution so far because of non-selectivity, high toxicity, and poor potency of drugs, which results in many drawbacks like ototoxicity, neurotoxicity, tissue toxicity, nephrotoxicity, peripheral, nausea, thrombocytopenia, neutropenia, gametogenesis due to their interaction with DNA via covalent binding [21,22]. Derivatives of chromones, which have a

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Exploring the Fe doped borazine system as a promising CFC adsorbent: A DFT study

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ABSTRACT

Adsorption of ozone-depleting chlorofluorocarbons (CFC) over Fe-doped borazine is of major global environmental concern. The first-principles conceptual density functional theory with the B3LYP/LANL2DZ/6-31G* level of theory is used to investigate the nature of CFCs including fluoro, chlorofluoro and hydrofluoro/chloro carbons (CH_2FCl, CHF_2Cl, CF_2Cl_2, CF_2ClBr, and CF_3Cl) adsorption on Fe doped borazine system. Maximum hardness and minimum electrophilicity principles were used to compute global reactivity parameters. According to our calculations, the embedded iron metal atom interacts rather weakly with the fluorine atom in CFC molecules. The adsorption energy, LUMO, HOMO, and density of states (DOS) were calculated using the optimal parameters. All the calculations and analyses denoted that the adsorption of the CFC molecule on the Fe-doped borazine system occurred due to chemical adsorption and van der Waals interactions.

1. Introduction:

Air pollution has captivated the interest of many researchers all over the world [1,2] because it is such a big concern for society. Air polluting agents, whether natural or man-made, cause acid rain [3], facility damage [4], affecting the planet's environment [5], having put human health in danger throughout the universe, and other concerns [6]. Pollutants in the air are typically divided into two categories: primary and secondary. The first is caused by the activation of primary species in the air, whereas the second is caused by natural or industrial activities [7]. CFCs (chlorofluorocarbons) are one of the most common environmental pollutants [8,9]. The elimination of CFCs was mandated by the Montreal Protocol since they were found to be actively involved in atmospheric ozone depletion. Although the total CFC phase-out for the industrialized countries was to be implemented in 1993, the developing countries were exempted from this for another 10 years according to the treaty. Nevertheless, the generation of CFCs continued in several developing countries and since large amounts of CFCs are still being used in the economy today, the demand to promote new techniques to destroy these compounds after their use is being explored. Owing to their wide industrial uses of refrigerants and propellants, the extinction of CFC is of particular interest [10–12]. Single-atom catalysts, which are active single metal atoms coupled to monolayer-surfaced supports, have been pushed as a new cutting-edge technology in the field of heterogeneous catalysis and have proven to be excellent for many reactions [13–17]. For the oxidation of carbon monoxide, Zhang et al. used a Pt atom attached to the surface of iron oxide nanocrystallites, which increased stability and catalytic performance [18]. The evolution of MoN_3 and FeN_3 moieties supports the production of ammonia from dinitrogen utilising single Mo and Fe atoms supported by *N*-doped defective graphene [19–20]. Following that, the catalytic activities of a variety of single metal atoms placed on various substrates have been extensively investigated both theoretically and empirically [21–27]. Single isolated Pd^{2+} cations supported on *N*-doped carbon active sites for H_2 generation from formic acid were disclosed by Bulushev et al., [28]. Only very few investigations on the adsorption of CFCs are available. Fossil fuels will

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Potential study on Social Network Falsehood Detection and Suggestions

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ABSTRACT

Spoofing is a widespread issue in social networking websites. Techniques for assessing fraudulent activity are being developed as part of the continuing studies. Nevertheless, because all these approaches have primarily been assessed through field experiments, their real-world usefulness is still uncertain. A survey of typical state-of-the-art outcomes on detecting identification deception is presented. They encounter similar numerous problems for such techniques study based on the research, and they suggest suggestions to enhance their efficacy if used in real-world settings.

Keywords: Individuality, Falsehood, Recognition, Vulnerability

1. Introduction

This proliferation of fraudulent practices on the internet has drastically altered how individuals communicate. Platform managers are continuously attempting to remain one point ahead of malicious attackers, thus there seems to be an armed conflict between many complex falsity tactics as well as detection techniques that scientists are using to discover them [1]. Several recent research has focused on identification deception specifically. The issue frequently manifests itself in internet forums as fake claims created with simplicity by hackers meant to cause havoc [2].

Numerous approaches for identifying identity fraud have shown to be very effective over time. Nonverbal behavior, web usage sequencing, evolutionary computation, information similarities, & consumer social behavior are among the approaches used to identify unauthorized accounts. Nevertheless, no discernible decrease in unauthorized charges has been found as a result of the adoption of these approaches on internet websites [3]. While delays in technological innovations are not uncommon, many systems have been unsuccessful in their attempts to solve the challenge of fraud and identity theft [4]. There seems to be a disparity among scientific work that presents highly successful methods and industrial outcomes that are less than ideal whenever it comes to actual deployments [5].

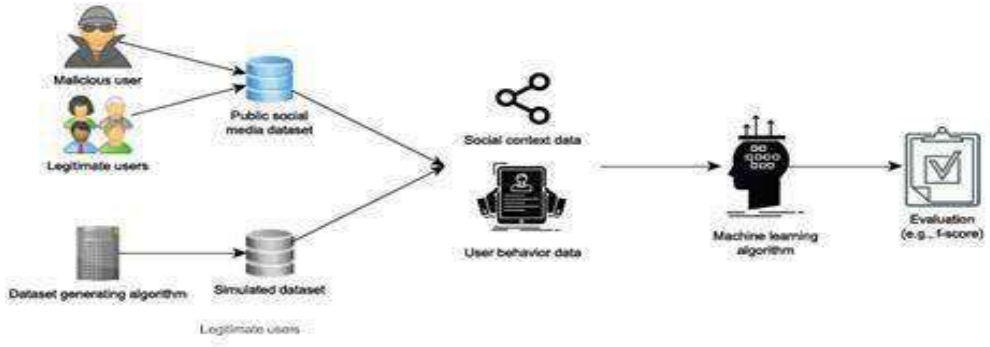

Figure 1: Architecture of evaluating the social networks trustworthy

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REVIEW ARTICLE

A Study on Indirect Performance Parameters of Object Detection

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Abstract

Object detection is one of the inevitable tasks in the technological world. When the world started to rely entirely on technological intervention for almost all the tasks, different sectors started to implant artificial intelligence for precise decision making. Object detection is one among the category, which showed its applications in various domains including health care, military and anomaly detection, etc. Since there are many review on object detection, we focus only on the methods which are less expressed but indirectly have a significant performance gain. Notwithstanding, we review predominant methods of object detection including the pre-deep learning era. From the review, we are able to conclude indirect performance parameters of object detector has a significant impact on their performance for different problem scenarios. Finally, we also highlight the best characteristic of object detection in various applications.

Keywords Object detection · Context · Object proposal · Training strategy · Human intervention · Technological intervention

Introduction

From many aspects, technological intervention for human problems has changed its face from assisting to complete depending on the technology, especially, after the evolution of artificial intelligence and deep learning. Object detection is one among the task gaining its reputation almost in all the sectors. There are numerous reviews on the area. Therefore, we tried to avoid reassert the same topics again. Instead, we intensify the least expressed attributes of object detection.

The main motive of our study is to highlight indirect parameters of object detection also provide significant acceleration in performance. Moreover, we also briefly review predominant methods including the pre-deep learning era. Further, we tried to draft the best-researched applications of object detection over the decades from various domains.

The manuscript is organized as follows. In second section, it briefly reviews predominant methods, and third section analyzes indirect parameters of object detection. The fourth section drafts best applications of object detection, and the last section draws conclusion.

Review on Predominant Methods

Object detection was carried out based on the template matching and object's part-based representation [16]. The focus was on a particular object whose object position layout is roughly adamant (like faces). Then, recognition was based on the object's geometric structure till 1990 [43]. Later, the focus shifted from geometry to the statistical classifier which was based on feature representation [like Adaboost [59], SVM [39] and Neural. The feature representations through global hand-crafted features, extraction-based classifier have set a stage for consecutive research in the ground. The appearance feature representation later shifted

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ORIGINAL RESEARCH

Machine Learning-Based Trust Management in Cloud Using Blockchain Technology

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Abstract

Blockchain technology contains records of data which consists of all transactions and these details are distributed among all legal nodes present in a network. This system confirms all its transactions based on consensus mechanisms, and this data once stored cannot be changed or updated. Blockchain is an important technology in current digital currency in the name of Bitcoin. Cloud computing is a remote server used for storing, managing and processing data in networking. But it is facing lot of issues like reliability, integrity and data management. The efficiency and authentication of cloud server will be improved by novel trust management framework by integration of blockchain in cloud computing environment. This hybrid model of cloud-based blockchain is named as blockchain as a Service (BaaS). This proposed framework contains the smart contract and access mechanism for data authentication against Byzantine attack. Also, the performance of the proposed model is compared with some state of art methods and proving that our framework is having highest security against Byzantine attack.

Keywords Blockchain · Machine learning · Cloud computing · Security · BaaS

Introduction

Cloud computing is a recent developing technology which is emerged from large scale and distributed technology. Cloud computing is used to reduce the data managing issues of users [1]. It is also having various advantages of scalability, availability of data all over world, minimum maintenance of hardware, easy access, low costs and flexibility. Some major corporations are also using cloud technology of IBM, Google, Microsoft and Amazon. Many cloud applications are available in the name of Google App Engine, Google Cloud Platform, the Amazon Cloud, the Elastic computing platform, etc. [2]. These are usually providing the facility of pay per user and flexible architecture which are accessible through the internet from anywhere using portable devices. In spite of its having so many services and benefits, the organizations are little bit slow to accept it owing to its privacy concerns. These significant drawbacks are hampering the cloud in security aspect [3].

Commonly, there are three important trust risk in cloud computing.

Data controlling. After submitting their data to the cloud server, the users are struggling to control their private data.

No transparency. Cloud computing does not provide their internal operation to its user. Only it acts as block box. So, the cloud users are having their own concern on their privacy policies.

Unclear security assurance. To offer a commitment, most of the cloud services are providing the Service Level Agreements (SLAs) to its user for data privacy, security and reliability. But these SLA is unclear to understand in user level.

This article is part of the topical collection "Predictive Artificial Intelligence for Cyber Security and Privacy" guest edited by Hardik A. Gohel, S. Margret Anouncia and Anthoniraj Amalanathan.

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A BRIEF OVERVIEW APPLICATIONS OF ARTIFICIAL INTELLIGENCE IN MACHINE LEARNING

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ABSTRACT

Artificial intelligence's most recent hot topic is machine learning. Learning algorithms can be found in a wide range of applications we use every day. A learning algorithm implemented by Google or Microsoft is one of the many reasons that search engines like Google and Bing perform so well every time you use them to find information on the internet. Every time a user logs on to Facebook and the service recognises a friend's photo, machine learning is at work. For email users,

IMPACT OF BLOCKCHAIN TECHNOLOGY ON FINANCIAL SERVICES

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ABSTRACT

This study attempts to shed light on how widely used blockchain technology is in the financial sector and the key issues that have developed as a result. Blockchain is viewed as more appealing by its users than traditional methods, which they perceive as being expensive, opaque, and ineffective. Blockchain technology, when used in the banking sector, enhances the security, quickness, and efficiency of many processes while also reducing costs and raising customer service standards. This technique is still rather new while being inventive and optimistic. The adoption of blockchain technology in the banking and finance sector will hasten transaction processing, reduce the need for paperwork, and boost security. It can therefore enhance consumer experiences and promote safer financial transactions.

Keywords: Blockchain, financial industry, upcoming difficulties, advantages, Bitcoin, banking

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INTRODUCTION

International logistics are constantly being improved, by both private businesses and national governments. Even still, the global economy could use a boost. The current year saw an approximate 2.2 percent rise in the global GNP. The global COVID-19 epidemic and ensuing economic upheaval have affected 2020. Economic barriers to trade can be reduced by reducing evident frictions like tariffs and quotas, with the majority of the results focusing on cost reduction. ledger system using encryption. This technique, which also promises to minimised costs, wasted time, risk, and stimulate novel business alternatives, could help to lessen these intangible barriers to global trade. Examples include service agreements, overseas payments, and customs paperwork. Businesses are interested in blockchain for reasons other than its financial advantages. Businesses are increasingly embracing blockchain technology, and 41% of those businesses report seeing a positive return on their investment (ROI). The new battlefield is networks, not individual enterprises, and as a

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EVALUATION OF ANTIBACTERIAL ACTIVITY OF *Cleome gynandra* AND *Cassia alata* AGAINST BACTERIAL PATHOGENS AND CHARACTERIZATION OF PHYTOCHEMICALS USING GC-MS ANALYSIS

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This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Original Research Article

ABSTRACT

Herbal medicines are used mainly in developing countries for primary health care because of their closeness with human body and have minimum side effects.Leaf and stem extracts of *Cassia alata* and *Cleome gynandra* were investigated for antimicrobial activity against clinically important pathogens such as *Acinetobacterbaumannii*(MCC 2076), *Pseudomonas otitidis* (MCC 2509), *Pseudomonas oleovorans*(MCC 2566), *Enterococcus faecalis*(MCC 2041) and *Bacillus cereus*by disc diffusion method.Acetone and water extracts of *C. gynandra* leaf showed maximum inhibition against Gram positive *E. faecalis* and Gram negative *P. oleovorans* (20mm). Acetone extract of *C. gynandra* stem showed maximum inhibition against Gram positive *E. faecalis* (19mm). Acetone extract of *C. alata* leaf showed maximum inhibition against Gram positive *B. cereus*(19mm) and ethanol extract of *C. alata* stem showed maximum inhibition against Gram positive *B. cereus*(14mm).GC/MS analysis was carried out for *Cleome gynandra* leaf sample which showed maximum inhibitory activity against the pathogen *P. oleovorans*(20mm).Important phytochemicals present in the leaf sample were 2-hydroxy-2-methyl-4-pentanone, Methane, sulfinylbis, 1,2-Benzenedicarboxylic acid, Tetradecanoic acid, Hexadecanoic acid, 2-Hexadecen-1-ol, 3,7,11,15-tetramethyl and 9,12,15-Octadecatrienoic

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ANTIBACTERIAL POTENTIAL OF PLANT PARTS OF *Ficus racemosa* AGAINST HUMAN PATHOGENS AND GC-MS ANALYSIS

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ABSTRACT

The leaves, stem, bark and fruit samples of *Ficus racemosa* were collected from Arumparthapuram, Puducherry District. Tamil Nādu. The samples were processed. Powdered plant parts were individually extracted with solvents such as ethanol, methanol, acetone, Dimethyl sulfoxide and water. Antibacterial activity of the extract was done by disc diffusion method. The solvent extracts of plant parts were prepared and tested against MCC cultures such as *Acinetobacter baumannii* (MCC-2076), *Pseudomonas otitidis* (MCC-2509), *Pseudomonas oleovorans* (MCC-2566), *Enterococcus faecalis* (MCC-2041) and *Bacillus cereus* (MCC-2039). Antibiotic susceptibility testing of MCC cultures were carried out using 8 antibiotics. All the 5 MCC cultures exhibited antibiotic resistance towards the antibiotics used. *Ficus racemosa* fruit extract showed maximum activity against *Pseudomonas oleovorans* (21mm) and *Pseudomonas otitidis* (21mm). *Ficus racemosa* stem extract showed maximum activity against *Bacillus cereus* (13mm). Leaf extract showed maximum activity (8mm) against *Pseudomonas otitidis* (MCC 2509) and *Pseudomonas oleovorans. Ficus racemosa* bark extract showed maximum activity against *Bacillus cereus* (17mm). Among the 4 plant parts of *Ficus racemosa* analysed, the fruit extract showed highest inhibitory activity. GC-MS analysis was carried out for the *Ficus racemosa* fruit extract. The major phytochemicals were identified as Acetic acid, 2-Furancarboxaldehyde, Methane Sulfinylbis, 2, 5 anhydro-1-6-dideoxy hexo, 2-furancarboxaldehyde, cyclohexane, 2,3-dihydro-3,5-dihydroxy-6-methyl-4h-pyran-4-one, and 1,2-benzenedicarboxylic acid.The phytochemicals contribute the antimicrobial properties responsible for the therapeutic effect of plant part.

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IPOs in Indian Stock Market: Analyzing Pricing and Performance of IPO Listed in 2021

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Abstract
The covid-19 pandemic has had unprecedented effects on the world economy. All countries, including India, have gone through this crisis. The coronavirus reported in India in March 2020 has spread across the nation, affecting all industries. Like other sectors of the economy, the pandemic has adversely affected the Indian stock market. In March 2021, the value of the Nifty and Sensex, two important indices, fell from 12000 points to 8000 points and 32000 points to 17000 points, respectively. The initial wave continued till the end of the year. However, 2021 has been a bumper year for the stock market, with businesses generating $1.2 trillion through Initial Public Offering (IPOs). The year started with an IPO and ended with one, and sixty-six IPOs were listed on the Indian stock exchange despite the adverse environment. It is more than twice as many as the previous year. Some IPOs received more public attention and could not perform as expected. This study aims to examine the performance of IPOs on the day of listing and their current status. The findings of this study will help those new to the field of trading and researchers to understand the process of IPO listing and its working.

Keywords: Initial Public Offer, Bombay Stock Exchange, National Stock Exchange, and Insider-Trading

Introduction

Companies go for Initial Public Offering (IPO) to raise a large amount of capital in return for securities on the stock market. The IPO plays an important role in providing firms access to financial resources required for their expansion and achieving long-term sustainable growth over the competitors. Moreover, understanding the IPO market is essential for aspiring entrepreneurs in a range of industries as well as for investors, financial managers, and underwriters. Because entrepreneurs of small, private firms may need this market in the long run to realize the value of their business enterprise. Additionally, business owners of publicly traded companies should stay informed about this market since they can decide to launch new divisions or organize a leveraged buy-out that could go public sooner or later.

Despite India's booming IPO market, there was little research on IPO firms' post-issue performance. During the late 1990s and early 2000s, India witnessed some capital market reforms (Goswami, 2001) putting in place a world-class regulatory and government regime in the country (Marisetty & Subrahmanyam, 2010).

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A STUDY TO MEASURE THE MORALE OF EMPLOYEES IN SELECT MANUFACTURING COMPANY OF CUDDALORE DISTRICT.

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ABSTRACT

Morale may be defined as an invisible concept of psychological well-being that refers to how positive and supportive a group of people feelstoward the organization in which they work. There is a close relation between the employee performance, psychological well-being and the special feelings of the employeesshare with othersthat includeself-worth, trust, pride in one's achievement, and faith in the leadership. In this study, the level of employee morale at amanufacturing company in Cuddalore is measured. Descriptive research study is used as a research design and followed stratified sampling method. Based on the analysis, conclusions were drawn based regarding morale of employees in various grades.Recommendations were provided for enhancing the quality of the processes and personnel policies of the organisation. Through this study, it is identified that manufacturing companies can implement job enhancement, job enrichment and self-development training methods to enhance the worker morale.

Keywords: Organisation, Employee Morale, Employee Performance, Psychological Well-being

I. INTRODUCTION

Employee morale, in human resources, is defined as the jobsatisfaction, outlook, and feelings of well-being an employee has within a workplace setting.Proven to have a direct effect on productivity,it is one of the corner stones of business. Employee morale proves to be detrimental to the business in these respects. Morale can drive an organization forward or can lead to employee discontent, poor job performance, and absenteeism(1). There is a direct and in-direct association between the employee morale and employee performance which has major impact on the production of the organization. In this project, I focused on conducting an analysis on the employee morale by conducting a survey study on the employees working in one of the manufacturing companies in Cuddalore, TamilNadu.

II. EMPLOYEE MORALE

Employee morale describes the overall outlook, attitude, satisfaction, and confidence that employees feel at work. When employees are positive about their work environment and believe that they can meet their most important needs at work, employee morale is positive or high.If employees are negative and unhappy about their workplace, and feel unappreciated and as if they cannot satisfy their goals and needs, employee morale is negative or low.Employee morale is defined by the employee's outlook, optimism, self-concept, and assured belief in themselves and their organization, its mission, goals, defined path, daily decisions, and employee appreciation. Faith in self and faith in their organization are both important factors in positive employee morale.(2)

Morale is considered among the outstanding dimensions of a healthy organization (Cox, 2001). A high level of morale has the capability to compensate the weaknesses in other required resources to increase productivity in an organization (Analoui, 2000). Morale of the human resources of an organization is the base of operations for organizations from both private and public sector. Morale building in the organization is a continuous process and a responsibility of every manager. Thus it can be said that a high level of morale is associated with job satisfaction, job honorability, creativity and

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A study on Skill and performance of higher secondary school teachers –Competency mapping and analysis

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Abstract
Teachers are the soul of the younger generation. They ignite light to the students for equipping themselves and to reach heights in their life. So, it is mandatory for a teacher to have suitable understanding of human nature, their needs and developmental principles, technology advancements, etc.,. Simple possession of knowledge and certified qualification does not give assurance for a teacher to meet the competency. Day by day the role of teacher is changing. Due to extension of roles and responsibilities teacher need to show high order of professionalism both inside and outside the classroom. It is unfeasible for a teacher to have all competencies in perfect combination though training and experience lead teacher towards proficiency. Quality teaching has become an issue of magnitude as the background of higher education has been facing continuous changes. This research article focuses on how competencies match with the skill and how the performance to be executed.
Keywords: - Competency mapping, quality teaching, skill, performance, training

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I. Introduction

Competency mapping identifies individuals' strengths and weaknesses. The aim is to enable the person to better understand him or herself and to point out where career development efforts need to be directed. New students call for new teaching methods. Modern technologies have entered the classroom, modifying the nature of the interactions between students and teachers. Government, students, their families, the employers, fund providers increasingly demand value for their money and desire more efficiency through teaching. Hanushek, Kain and Rivkin(1998), Some key competencies for a teacher is the competency needed to perform the professional activity and it includes information communication competency, social working competency, language competency, socio cultural competency etc., some special competencies represent the level of competencies of teachers for the content of the subject they teach and for the research of their own practice, in order to create one's own style of teaching, in the function of better achievement of students.

1. Factors affecting competency of school teachers

The literature stresses that "good teachers" have empathy for students, they are generally

Good teachers always have empathy for students they are experienced teachers and most of all are organized and expressive. "Excellent teachers" are those who have passions: passions for learning, for their field, for teaching and for their students. But research also demonstrates that "good teaching" depends on what is being taught and on other situational factors. In all education system, the performance of teachers is one of the handfuls of factors determining school effectiveness and learning outcomes. Naik (1998) explains that teaching is dignified, but demanding occupation. In order for teachers to maintain a high level of professional performance under these conditions, they must assume personal responsibility for their own performance, growth and development. Teachers are the most critical component of any system of education. How well they teach depends on motivation, qualification, experience, training, aptitude and a mass of other factors, not the least of these being the environment and management structures with in which they perform their role.

Teachers must be seen as part of the solution, not part of the problem. Poor pay, low status and morale are key causes of poor performance and corrupt behavior in the public sector. Across the world, millions of

A Study on the Purchase Behavior and Cosmetic Consumption Pattern among Young ladies in Cuddalore megacity.

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Abstract: This study was conducted to examine the consumption habits of young women and their attitudes towards cosmetics in the megacity of Cuddalore. This study focuses on colorful marketing variables that have an impact on women's cosmetic consumption and their decorative product purchasing decision-making process. This study also partly explains the influence of customers' decision making process on the purchase of decorative products in Cuddalore. The target sample is in the age group of 15 to 35 times women and people living in the megacity of Cuddalore. This age group belongs to the younger generation order and they may be the millennial order. This research can also help colorful decorating companies to formulate marketing strategies for their decorative products. Primary data was collected using a questionnaire.

Keywords: Indian cosmetic demand, Women, Lifestyle and beauty, Cosmetics.

INTRODUCTION:

In the course of the study, it was observed that the knowledge of consumers is changing and they're switching to natural and herbal ornamental products because they feel that these natural products can ameliorate their appearance better than synthetic cosmetics. They also believe that natural cosmetics have smaller side goods compared to synthetic cosmetics. As we all know, the skin is a veritably sensitive organ of our body, and the skin of the face reflects the appearance of a person. The side goods of cosmetics deduced from synthetic origin are reflected on the face and therefore beget people discomfort. The fashion ability of cosmetics is adding at a faster pace, the reason may be that women are getting a part of the pool these days and therefore their disposable income is adding and their cultures are also perfecting. Fashion for cosmetics is growing not only in large cities, but also in the countryside, as female cattle breeders strive to become like city dwellers. Cosmetics in India have experienced rapid growth over the past decade, and the reason for the growth can be attributed to the increasing purchasing power of women and their additional fashion knowledge.

FORMULATION OF THE PROBLEM:

Consider the role of cosmetics and beauty products in a woman's life.

TARGET

1. Find out where female consumers prefer to buy ornaments.
2. Define a fashionable brand of decorative products.
3. Determine the relationship between annual income and the place of purchase of decorative products.

Sample size and population:

Samples were drawn from people aged 15 to 35 and older residing in the Cuddalore metropolitan area. A total of 100 samples were collected.

Methodology:

The experimenter applied exploratory and descriptive research by designing and completing a questionnaire with 100 female consumers (aged 15-35) who were passionate about life and beauty in India. Collect data using convenient slices. The collected data was dissected using simple tools such as averages, probabilities and measurement scales used to obtain the requested results. Consider the role of cosmetics and personal care products in the lives of female consumers.

LITERATURE REVIEW:

Ann Mane Britton, wrote a report on "THE BEAUTY Assiduity 'S INFLUENCE ON WOMEN IN SOCIETY" in 2012 as per the report by creating announcement with unrealistic images of beauty, it has rebounded in anxiety, low regard, and low tone-confidence in numerous women. Utmost of these negative feelings stems from unhappiness among body and appearance. It's also indicate that council women are high druggies of cosmetics and are apprehensive of ornamental assiduity and many individual differences can have an effect on the choices of women regarding cosmetics.

BrazJ.Pharm, Bruno Fonseca Santos, Marcos Antanio, Chorilli, Correa, March 2015, " SUSTAINABLE, NATURAL AND ORGANIC COSMETICS CONSUMER, PRODUCTS, efficacity, TOXICOLOGICAL, Environmental CONSIDERATIONS ", according to them the interest in sustainable products has increased along the years, where the choice of

A STUDY ON CROPPING PATTERN AND CLIMATE CHANGE IN TAMIL NADU WITH SPECIAL REFERENCE CUDDALORE DISTRICT

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Abstract

The study of climate change impacts on Indian agriculture has gained recent attention, due to the size of India's agricultural sector, and reports suggesting that developing countries are more vulnerable to negative climate change effects. Studies in India have focused on predicting future trends using standard climate change scenarios from externally developed models. The gross cropped area under all crops has decreased to 5571710 ha in 2017-18 from 5824248 ha in 2017-18. While the area under Food crops accounted for 73.6% and that of non-food crops formed 26.4% only, of the gross cropped area in Tamil Nadu during the year under report. The following table shows the cropping pattern in the state during 2018-19. Besides indicating relative share of area under principal crops to total cropped area. However, these studies are not generally able to provide accurate error estimates of their predictions, and are limited in their consideration of farmer adaptations that may onset climate change impacts. Agriculture sector is the most prone sector as it will have a direct bearing on the living of 1.2 billion people. India has set a target of halving greenhouse gas emissions by 2050. There is an urgent need for coordinated efforts to strengthen the research to assess the impact of climate change on agriculture, forests, animal husbandry, aquatic life and other living beings.

Key words: cropping pattern , climate change, agriculture, rain fall, etc...

Introduction

Climate change has become the most significant threats to coastal areas, posing serious harm to both the coastal ecosystem as well as coastal communities. The climate change impacts on the coastal zone includes increase in sea surface temperatures, increase in rain fall intensity, rising sea levels, increase in intensity of cyclones and storm surges. Mounting evidence suggest that climate change impacts would fall more disproportionately on developing countries. Climate change poses itself as a significant problem due to many of its direct and indirect consequences, especially from the standpoint of developing countries. Its direct effects on agricultural production system will have consequences for the global food system as a whole, thereby challenging its sustainability and posing threat towards the food security situation in many developing countries (Porter et al., 2014). Hence, it is likely that efforts made by these countries to towards meeting developmental goals such as reducing malnutrition would be seriously undermined due to climate change. Similarly, direct effects of climate change on health could potentially threaten the existence of many living organisms. Moreover, since any shock to human health could have direct bearing on the productivity of economic agents, climate change could also lead to significant reduction in economic productivity thereby decreasing aggregate human welfare.

Review of literature

(Tamil Nadu state action plan for climate change 2012) India"s economy and 68.8 percent of its population (Census, 2011) residing in rural areas are directly dependent on climate sensitive sectors such as agriculture, animal husbandry, fisheries etc. Since climate change is expected to impact natural and human systems adversely by inducing changes in these systems, India can be considered highly vulnerable, as the extent of exposure is very high when compared to most countries in the world. Climate change is only likely to exacerbate India"s already high physical exposure to climate-related disasters as 65 percent of India is drought prone, 12 percent flood prone and 8 percent susceptible to cyclones. As a consequence, climate

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REALITY AND IMAGINARY: THE CONCEPT OF LIBERAL FEMINISM IN GALSWORTHY'S THE FUGITIVE

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Abstract

This paper examines the motivation of Galsworthy's composition and his marriage with Ada Nemesis Pearson Cooper alias Ada Galsworthy and his obstinate dedication to the subject of the despondent marriage is attributable to his profound individual sensation of the shamefulness of the world's demeanour toward such relationships, that in his plays he concentrates on different potential parts of the existence circumstance. This paper shows that Galsworthy didn't mean to be indifferent and that he accepted that, "the artist can as a rule only reproduce that, or things similar to that which he has felt," and that "unless you are an absolute genius, you must look near home for the material you work with". The play, The Fugitive, which uncovers the lady's concern, When Clare's family is told, they conclude that despite the fact that Clare currently wishes her opportunity, she should pause and shield the case on the grounds that the charges are misleading, despite the fact that appearances and all proof are against the youthful couple. This article has additionally attempted to show that Galsworthy's rationale in picking a subject so close to his own life and experience was not wistful and was not a method for profound articulation completely but on the other hand was an endeavour to change the disposition of society toward the survivors of a troubled marriage. He looked for change in the marriage and separation regulations. He approached making that change by introducing the different parts of a miserable marriage.

Keyword: Galsworthy, Ada Galsworthy, Clare, The Fugitive, Unhappy Marriage, Divorce

Eight years after the wedding of John Galsworthy to Ada, he once more used the subject matter of the unhappily married girl; at the moment, it's far in a play. During this era the two novels. The Man of Property and The Patrician, wherein the same idea has been particularly obscured with the aid of the interweaving of greater implementing topics, had regarded; With the outreach of his play, The Fugitive, Galsworthy boldly units forth the case of the unhappily married spouse with extra element and bolder purpose than he had within the two novels; His very own nine years of awaiting a lady who turned into sure to a person she now not love became over, and he ought to write with more perception and clearer imaginative and prescient than would have been possible for him right now after the give up of his nine-yr length of looking forward to a female who changed into the unhappily married spouse of his cousin.

In The Fugitive, Galsworthy provides the issue of a lady who has to free herself from an unhappy marriage, and he reveals the deplorable mindset of a society that stops her from obtaining happiness after she has forced her freedom. He chooses a woman who has led a protected lifestyle and has no longer been skilled to preserve herself by employing her efforts; Because she defies convention to unfastened her soul from torment, society turns Its lower back on her and forces her to commit suicide rather than to sink deeper into the depths in which she has fallen.

In the play, The Fugitive, we find Clare Dedmond does not try and cover the position of her married affairs from some friends and her husband's own family. She is unhappy and has reached the culmination of her persistence. Encouraged by her friend, Malise, a writer, she turns into extra rebellious in her role and unearths a determined pleasure in making her husband and his own family uncomfortable of their worry, that she will forget about her feeling of shape completely and end to

Subjugation And Exploitation of The Marginalised African Women in The Select Works of Bessie Head

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Abstract:

Bessie Emery Head is a twentieth century African writer who has written about the reality of the African society, pre- and post-colonisation. Her focus does not stop with racial subjugation but concentrates more on the double-oppression of racism and gender suffered by the coloured women. This paper studies the oppression, subjugation and exploitation of women not only by the colonisers but by their own men in the name of culture and tradition with reference to some of Head's works of fiction. Her personal sufferings have enabled her to lend the aura of authenticity to her portrayal of such victimised women.

Keywords: colonisation, African women, migration, racism, sexism, patriarchy, oppression, marginalisation, subjugation, exploitation, isolation, alienation

Introduction:

Bessie Head, a prolific South African writer, who lived in Botswana, had her main focus on the lives of the blacks of southern Africa, who were victims of apartheid under colonial rule. Having migrated from South Africa to Botswana, hoping to find solace and a sense of belonging that had eluded her all her young life, it was a shocking revelation that the ethnic division in Botswana was quite parallel to the racial segregation that prevailed in South Africa. This article, however, attempts to focus on the portrayal of women characters in Head's oeuvre through whom she sheds light on the double colonization they were subjected to. Despite her interest in the status of women in a phallocentric society, she does not favour herself being categorized as a feminist.

Black Women Writers:

Various black women writers from Africa and the Caribbean have broken the walls of enforced silence and emerged forth like butterflies from their cocoons. According to Toni Cade Bambara, writing has helped to "free the colonized mind, to unravel centuries of lies and discover the essential black collective self" (Bambara 42). They have successfully portrayed confident, bold and "alternative images of black womanhood" (52) as opposed to the patriarchy enforced roles on women as "mother, whore or maid-of-all work" (52) as observed by Olga Kenyon. Male writers were more focused on racial discrimination, whereas the women writers have endeavoured to expose women as not only victims of racism, but also victims of gender and sexist bias. The personal experiences of the women have enriched their writings, enabling them to "fictionalize their autobiographical material to affirm the value of their identity, which had been denied to them until recently because of sexism and racism" (54). Some of the recurrent themes in all the works of Black women novelists are themes like, "community, sexuality; the relationship between change and pain; the ill-treatment of their bodies by the men they love; the thwarted female artist figure; the description of clothing, as iconography" (54).

Elements of Pain and Agony:

Bessie Head's personal experiences of pain and agony, both as a victim of racism and sexism have given her a unique perspective of life as an individual of

Racial Inequalities in Selected Works ofBessie Head

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Abstract

Racial inequalities is a major menace to humanity all over the world since ancient times. Technological advance has played a major role in exposing the ugly side of racism in its true colours. Bessie Head, a South African writer, who personally experienced the harshness of the apartheid rule, has incorporated all elements of racism in her writings. This paper endeavours to study the racial inequalities suffered by the natives of Africa under colonial rule and their loss of identity and dignity as a consequence.

IndexTermsRacism, racialism, colonisation, alienation, rejection, discrimination

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Introduction

The Concise Oxford English Dictionary published in 1989, defines race as, "a group of persons, animals, or plants connected by common descent or origin". Race is also defined as a "natural or inherited disposition". It is the somatic differentiation that has led to racial inequalities and practices like apartheid resulting in stratified social order as in South Africa. The Afrikaners were thus designated as a distinct biological entity and superior whereas the Blacks were regarded as belonging to the bottom rung of the ladder. The problem of the twentieth century is the problem of

the colour line, the relation of the darker to the light

races of men [sic] in Asia and Africa, in America and

the islands of the sea.

- (W.E.B. Du Bois 2)

Du Bois observes that the matter people have with skin colour is the most dissentious component that affects societies everywhere in the planet. His focus is on the misery of the Americans though it mightbe applied to the natives of Africa further. Racism has many different definitions to it. It takes many different forms and can happen in any part of the world. Racism has played a major role in the catastrophic genocides like Holocaust, and the European colonization of Africa, Asia, the Americas.

Scientists in the nineteenth century believed that the human population could be divided into races based on certain differential abilities and dispositions. However, as of 2005, human genome research has falsified such belief by concluding that race is not a meaningful genetic classification of humans. The UN defines racial discrimination as meaning "any distinction, exclusion, restriction, or preference based on race, colour, descent, or national or ethnic origin that has the purpose or effect of nullifying or impairing

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Study of the morphological and histological studies of finger millet (*Eleusine coracana* (L.) Gaertn.) using sugar mill effluent

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ABSTRACT

Environmental pollution poses a great health hazard to living and non living substances. Industrial effluents, containing organic and inorganic compounds have strong influence on the development of growth of crop plants. A comparative study utilization of the sugar mill effluent on morphological and anatomical studies of the leaves and stems of *Eleusine coracana* was undertaken. The finger millet seeds were sown in soil-filled pots. Finger millet seedlings were irrigated with different sugar mill effluent concentrations control, 10, 25, 50, 75 and 100. Although high concentrations of sugar mill effluent decreased the growth, the low concentration (10%) of SME was very effective in increasing the growth of finger millet cultivars when compared with control. The T.S. of the root and leaf of *Eleusine* control plants at 90 DAS indicated uniseriate, thin walled epidermis. When the roots and leaf treatment control, 10 and 100 per cent of sugar mill effluent were considered, it was seen that the cortex area accumulated in some heavy hazards in 100% of sugar mill effluent. Industrial wastewater causes accumulation of heavy metals that are toxic in plants and thus affect the plant growth, seed germination, lower crop yield and human health. The adequate dilution of effluents treatment is therefore needed before the disposal and reuse of wastewaters for irrigation purposes. The anatomical studies showed that the lower, upper epidermis, cortex and the diameter of vascular bundles of root and leaves of finger millet reduced at the 100 per cent of effluent concentration, when compared to 10 per cent of effluent concentration. All the above mentioned parameters increased at lower (10%) concentration of the sugar mill effluent.

Keywords: Pollution, sugar mill effluent, Seed germination, anatomical studies.

1. INTRODUCTION

Sugarcane refinery is one of the most important agro-based industries in India and is highly welfare for creating a significant impact on rural economy, in particular and countries economy, in general. Sugar industries rank second among the agro-based industries in India. Sugar industry is seasonal in nature and operates only for 120 to 200 days in a year (Early November to April). The sugar industry requires about 1200 to 1400 m^3 of water and it is released as wastewater of sugar cane crushed. *Eleusine coracana* (L.) Gaertn (Finger millet) belongs to family Poaceae and is one of the most important cereals in the India. The poaceae is the fifth – largest plant family. The family poaceae is represented by 780 genera and 12000 species and distributed across and tropic and sub tropic regions. Finger millet is a high quantity of carbohydrate, proteins, calcium, and iron and the straw is also a nutritious feed for cattle. Finger millet is enriched in the essential amino acids like lysine [1] and methionine which are important in human health and growth but remain absent from most other plant foods. It is also rich in iron and fiber, making this crop more nutritive as compared to other most commonly used cereals. In addition, it also contains useful amounts of the two polyunsaturated fatty acids-linoleic acid and linolenic acid [2], metabolized products of which facilitate normal development of central

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Biological synthesis and characterization of zinc oxide nanoparticles (ZnONPs) from *Anisomeles malabarica*

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Abstract

In nanotechnology, the economic and ecological friendly synthesis of novel nanoparticles of natural structures particularly extracts of plant parts has come to be a rising field. The leaf extract of *Anisomeles malabarica* was used as a novel reducing agent to make zinc oxide nanoparticles (ZnONPs) from zinc acetate dihydrate. This study has been employed for two different concentrations of plant extract (1 and 3 mL) as starting precursors. The formation of NPs was studied using X-ray diffraction, UV-visible, and Fourier transformed infrared spectroscopy. The size distribution and morphology of the synthesised nanoparticles were studied using scanning electron microscopy. The peak at 350 nm in the UV-Vis spectra indicates its high excitation binding strength. The AFM study aimed to determine the shape and size distribution of nanoparticles, while FTIR studies confirmed the existence of biomolecules.

Keywords. Green synthesis, Zinc oxide nanoparticles, SEM, XRD, AFM.

1. INTRODUCTION

Nanotechnology has emerged as a new discipline of material science and engineering in recent years. They have a huge variety of packages due to their length and morphology character and subject inside the fields of primary and implemented sciences. Nanoscale semiconductors have sparked a lot of interest because of their unique properties in optoelectronic applications. Zinc oxide is a type of metal oxide nanoparticle that has been used in a variety of applications including communications, electronics, sensors, cosmetics, medicine, biology, and environmental protection.[1-5] And also ZnONPs has a top-notch capability in applications like drug delivery, gene delivery, biological sensing, labelling, and nano-medicine.[6-8] Different techniques were developed for the ZnONPs preparation such as hydrothermal, sol-gel, microwave-assisted method, spray pyrolysis, ultrasonic condition, precipitation methods and chemical vapour deposition.[9-13] Those types of preparations are in a few drawbacks like high power demand and additionally contain toxic and unsafe chemicals that may additionally put biological risks. In assessment, biological strategies are considered to be the maximum favoured techniques and they are a regular, safe, cost-effective, clean, and single step. According to Raveendran *et al.*,[14] biological synthesis offers nanoparticles with a better morphology and defined sizes in comparison to different physiochemical techniques. Biological systems consist of natural compounds that play critical and flexible functions within the synthesis of NPs. The plants are safe to handle and without difficulty available and the synthesized nanoparticles by using the plant's extracts are more stable[15] and the green synthesis also has the advantages of environmental friendliness and the elimination of hazardous substances.

The synthesis of nanoparticles in this study was done with *Anisomeles malabarica*. In the medical field, it has been used to treat swellings, amentia, fevers, and rheumatism. Also traditionally used in the medical treatment of colic dyspepsia, curing wounds, and intermittent fever.[16] ZnONPs were synthesised using an aqueous extract of *A. malabarica* leaves as a novel reducing agent and zinc salts as a precursor in this analysis. The structural properties of the synthesised ZnONPs were validated using Fourier transmission infrared spectroscopy (FT-IR), UV-Vis spectroscopy, X-Ray diffraction (XRD), scanning

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Structural Equation Model for effect of skill, and job performance of Post Graduate Teachers – An analysis

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ABSTRACT

It is trendy that skill and performance has a direct link. Skill is there automatically performance should also boost up. All the organizations are in need of skill fledged persons to improve the performance. Skill is highly required for teaching profession. Teachers are skillful the students will also learn high and shine well. This article provides a detailed review of the skill and performance relationship. It highlights the problems involved in capturing, measuring and linking skill and performance. It is crucial to utilize the teacher's skill to achieve goals. Skill and job satisfaction are the major influence of performance. Earlier researches also tell the impact of skill and performance. In this concern, this study is momentous in the definition of skill and it finds the relationship with job skill and job performance in education industry particularly an attempt to study the correlation between skill and performance of higher secondary school teachers.

Keywords: Teachers skill, job satisfaction, skill, job performance, SEM Model.

INTRODUCTION

Teaching offers the possibility to modify other people's lives eternally for the better. Teachers alone develop somebody's subject knowledge, mind and their personality. Teaching is incredibly rewarding thing to do and good teachers are needed everywhere, they inculcate the habit of discipline that moulds the students to behave properly in the workplace. Teacher is the backbone of every citizen in the world. Skill means the propensity to do something well, expertise. Performance is how effectual somewhat or someone is at undertaking a good job.

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NEIGHBOURLY IRREGULAR FUZZY CHEMICAL GRAPHS

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Abstract
In this paper, we find the new family graphs namely neighbourly irregular fuzzy chemical graphs. Also we have given proper fuzzy values to the neighbourly irregular chemical graph to satisfy the certain propositions, also we have given some proof for the NIFCG $G_{NIFC} = (\sigma, \mu)$.

Keywords: Chemical Graphs, Neighbourly Irregular Chemical Graphs, Neighbourly Irregular Fuzzy Chemical Graphs, Highly Irregular Fuzzy Chemical graph.

1. Introduction

A fuzzy subset of a set V is a mapping σ from V to [0, 1]. A fuzzy relation μ on V is a fuzzy relation on σ. If $\mu(uv) \leq \sigma(u) \wedge \sigma(v)$ for all $u, v \in V$. Rosen field [9] introduced the theory of fuzzy graphs in 1975. Nagoor Gani [7] introduced the concepts of various properties of fuzzy graphs like, union, sum, complete fuzzy graph, Regular fuzzy graphs and irregular fuzzy graphs etc.

Gnanapragasm along with Ayyasamy [3] has introduced the concept of Neighbourly Irregular graphs. Arockia Aruldoss et all [1] have introduced the concept of Neighbourly Irregular Chemical Graphs. In this paper we introduce the concepts of Neighbourly Irregular fuzzy chemical graphs. Also we discuss some properties of Neighbourly Irregular fuzzy chemical graphs (G_{NIFC}), with suitable examples.

2. Preliminaries.

Definition 2.1[7]**:**

A graph *G = (V, E)* consists of a non empty set *V(G)* is a vertex set and *E(G)* is a edge set is called graph.

Definition 2.2 [4]**:**

In a graph *G = (V, X)*, the degree of vertex is the number of edges incident on the vertex. It is denoted as $d_G(v)$ or *d(v).*

Definition 2.3 [5]**:**

A graph *G (V, X)* is said to be regular if every vertex of the graph has same degree.

i.e.,) $\delta(G) = \Delta(G) = r$.

Definition 2.4 [5]**:**

A graph G is said to be irregular if it is not regular.

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TREATMENT OF DRINKING WATER FOR TURBIDITY REDUCTION USING *STRYCHNOS POTATORUM* LINN SEED IN PILOT PLANT

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ABSTRACT: Turbidity is one of the major culprits which help microbes present in water and waste water to survive. Also drastically impact the water treatment efficiency mainly the process of disinfection. Coagulants such as Alum, PAC (Poly Aluminium Chloride), $FeCl_3$ etc, are majorly used for the turbidity removal in water. Among this Alum is the most widely used coagulant in water treatment, because of its proven performance and cost effectiveness. Although alum has a proven track record, usage of same in drinking water system increases the concentration of Aluminium ion which does not falls under the WHO (World Health Organization) norms of drinking water standards. Hence this study would be an alternate approach for turbidity reduction in water by using natural coagulants. Different studies in ancient Tamil Literature show *Strychnos potatorum* Linn or Nirmali seed act as a best coagulating agent, which in turn helps in removal of turbidity in water. This study was done to evaluate the effectiveness of *Strychnos potatorum* Linn seed extract in removal of turbidity from the selected water samples. An existing water softener system of capacity 2 m^3/hr from a Residential Apartment named M/s.Ozone Pavillion was selected with an existing scheme of Alum dosing system, Pressure sand filter, Activated Carbon filter and Softener. In this scheme the Alum dosing was replaced with *Strychnos potatorum* Linn seed extract dosing and the softener filter was bypassed. Two different water samples were selected (Bore Well Water and Surface Water) and jar test was performed with the *Strychnos potatorum* Linn extract to arrive the best suited dose for the turbidity reduction. Here the jar test performed with different concentration of *Strychnos potatorum* Linn extract starting from 20 mg/l to 60 mg/l and selected the concentration of 60 mg/l as the best suited dose for turbidity reduction. The selected concentration was used for a pilot plant study in the existing water treatment plant designed by M/s. Green Enviro Polestar. The study showed the turbidity removal efficiency of 40% to 60% and highly emphasizes the usage of *Strychnos potatorum* Linn seed extract as a natural coagulant in water treatment systems.

Index Terms – *Strychnos potatorum* Linn, Water turbidity removal, Natural Coagulants, Drinking Water Treatment, Jar Test, Pilot Plant.

1. INTRODUCTION

Knowing the importance of clean supply of water, this study was carried out in finding an alternate and eco-friendly solution for water treatment process. A different factor like physical, chemical and biological parameters speaks about the water quality. Turbidity one of the vital parameter makes water cloudy or opaque *(*Swanson, H.A.et al., 1965). Turbidity is the measure of relative clarity and optical characteristic of water. It tends to scatter the light passes through it which can be measured by scattering intensity. Higher the intensity of scattered light, higher the turbidity in water. Excessive turbidity in drinking water leads to various health implications and also affects the water treatment method. The process of disinfection in water can be drastically affected by the higher turbidity content of water by reducing the disinfectant chemicals exposure in water (Gayathri Parivallal, et al., 2021). Water turbidity can be removed by the process of coagulation and flocculation which can be achieved by coagulating agents. Coagulation and Flocculation of suspended and particulate matters in water will be the upstream procedure required to improve the Settling and Filtration process. Hence depends upon various applications the measured quantity of chemical agents will be dosed into the water stream to remove turbidity. There are a number of chemical coagulants that are available for turbidity removal which includes Aluminum Sulfate (Alum), Ferric Chloride ($FeCl_3$), PAC (Poly Aluminum Chloride) etc. Alum is the most widely used coagulant in water and waste treatment, because of its viable performance and cost effectiveness. But this increases the aluminum concentration in finished water (Barnett et al., 1969; Miller et al., 1984; Flechar et al., 1992; Selvapathy and Vijayaraghavan 1994). Hence we need an alternate and eco friendly coagulating agent to remove turbidity from water. Conventional water treatment processes have the ability to effectively remove turbidity and even dissolved solids (Source: U.S. Environmental Protection Agency). Hence for this study we have selected natural coagulants (*Strychnos*

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ORIGINAL ARTICLE

Influence of Ce^{3+} (Rare Earth Element) on the Structural, Morphological, Impedance, Binding Energy and Ferrimagnetic Properties of Spinel $ZnFe_2O_4$ Nanoparticles Fabricated by the Coprecipitation Method: Antibacterial Activity

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Abstract

The large ionic radii cerium (REE) ions were successfully coupled to zinc ferrite ($ZnFe_2O_4$) using a simple co-precipitation method. This study deals with how cerium ion affects the structure, magnetic properties and microcolony of ferrites for technological applications. XRD reveals a change in crystallite size from 12.6 nm to 44.2 nm and lattice constant from 8.43 Å to 8.51 Å with increasing Ce3 + ion. FTIR resonance spectra reveal that spinel ferrite structure is possible due to oxygen co-resonance with Ce^{3+} and Fe^{3+} ions in tetrahedral (452–496 cm^{-1}) and octahedral (540–549 cm^{-1}) voids. HR-TEM revealed high crystallinity (2-20 nm) of the ferrite matrix and magnetic domain formation. The chemical states of all metal ions in the ferrite composite were confirmed by XPS. The impedance analysis clearly shows that all the doped samples have higher electrical conductivity as the resistivity of all the cerium doped samples is lower (2400Ω) than the zinc ferrite sample (2600Ω). Knowing through VSM that cerium (REE) ion significantly affects the magnetic factors like coercivity (Hc), remanent magnetization (Mr), saturation magnetization (Ms) and confirms the presence of ferriparamagnetic materials. As the remanent ratio is found to be less than one (> 1), soft ferrite is obtained. Antibacterial activity analysis confirms that the magnetic nanoparticles are effective in killing bacteria. Magnetic nanoparticles penetrated the cell walls of Gram positive bacteria (G^+) and Gram negative bacteria (G^-) and stabilized the microbial colony over 6 mm.

Keywords Zinc ferrite · Co-precipitation · Ferriparamagnetic · Antibacterial activity · Cerium

1 Introduction

A general formula for spinel ferrites is defined by many scholars as A^{2+} B_2^{3+} O_4^{2-}. A represents tetrahedral sites and B represents octahedral sites. The cation distributes between the A and B sites based on its ionic radius. Cation distributions cause a significant change in the structure and magnetic properties of ferrite. In this FCC structure, divalent cations Mg^{2+}, Ni^{2+}, Zn^{2+}, Cu^{2+}, Co^{2+}, Mn^{2+}, Fe^{2+} occupy tetrahedral sites[1]. Previous research has shown that Ce^{3+} ion has shown excellent magnetic properties and microstructures suitable for various applications when incorporated into spinel ferrites [2, 3]. Ferrite have been used in different technological applications such as Biosensors [4], Biomedical applications [5], Antibacterial activity [6], Photocatalytic activity[7], Microwave devices [8], high-frequency appliance [9], Intelligent transformer co[illegible] [10], Magnetic drug delivery [11]. Magnetic recording devices [12], Waste

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RELATIONSHIP BETWEEN BARRIERS AND CLIENT SATISFACTION: PERFORMANCE OF HEALTHCARE UNIT AS A MEDIATOR

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ABSTRACT

In the recent phenomena, considering the increasing importance of healthcare in well-being of people, it is necessary to identify the factors that affect client satisfaction. Most of the time, we encounter some barriers in the healthcare industry and the present paper is aimed at identifying the potential barriers and their effect on client satisfaction. A conceptual model is developed, and propositions are offered. The implications for healthcare management are discussed. The study revealed that, as providing affordable healthcare is one of the objectives of WHO (World Health Organization), it is necessary for developing countries like India to take care of rural population who contribute to significant chunk to GDP (Gross Domestic Product).

KEYWORDS

healthcare, satisfaction, rural population, world health organization, gross domestic product.

JEL CODE

M30

INTRODUCTION

The health needs of population are rapidly increasing day by day. According to Indian Brand Equity Foundation Report (IBEF), healthcare market in India is around $100 billion in 2015; $160 billion in 2017 and is expected to skyrocket to $280 billion by 2020 (Ganesan & Veena, 2018). This explains phenomenal growth of healthcare spending in the country. Considering this, it is important to see that the amount spent is properly utilized for the benefit of customers (hereafter known as clients). Though the demand for healthcare is increasing, the major shortfalls in Indian health system include lack of physical infrastructure, adequate manpower, lack of transportation facilities to carry patients from rural areas to the nearby cities or towns, lack of quality of healthcare etc. These shortcomings keep India below the benchmark when compared to international standards. Some of the strengths of the healthcare system in India include growing health awareness among population, increased willingness on the part of the consumers to pay higher money for quality of the health care. These gave rise to the scope of several corporate hospitals. But unfortunately, there is growing exploitation of these corporate hospitals and lower income people cannot afford to get treatment from these hospitals. The only alternative for the lower income and middle-income groups is the access to government hospitals. In this context, we develop a conceptual model that shows the effect of potential barriers on performance of healthcare unit and client satisfaction.

Several researches have studied in different parts of the country about the quality of healthcare (Kermani et al, 2019; Jennens et al, 2013; Levesque et al, 2006). Some researchers focused on accountability (Gaitonde et al, 2019), whereas some others attempted to examine the patient satisfaction (Gaur et al, 2020). Employers need to be aware of the importance of quality of work life and work life balance in achieving organizational effectiveness (Aruldoss, A. et al. 2020) It is also necessary for the organisation to motivate the employees by providing the welfare measures to promote the work-life balance in the workplace without compromising productivity and efficiency (A, Alex & V, Sundar, 2019). The study is majority of the employees are satisfied in their job and their company benefits. The study depicted that the promotion opportunity in the company was disappointed among the employees. The company properly providing salary and other monetary benefits, fringe benefits, and facilities benefits to the employees at satisfactory level (Sembiyan, R., Baranidharan. S &Balamurugan, K., 2020)

Despite volumes of research which is spread around different aspects of healthcare, there is no one unified study that examines the interrelationships between the potential barriers and outcomes. The rationale for the present study stems from the need for identifying the important variables that need to be considered for efficient utilization of health services.

OBJECTIVES OF THE STUDY

Despite volumes of research which is spread around different aspects of healthcare, there is no one unified study that examines the interrelationships between the potential barriers and outcomes. The rationale for the present study stems from the need for identifying the important variables that need to be considered for efficient utilization of health services. The main objective of the study is to identify the relationship between barriers (personal, health care system & professional) and Client's satisfaction.

METHODOLOGY OF THE STUDY

The present study is review based one and descriptive in nature. Seventy-five research articles were collected for the purpose to identify the variable of personal, health care system and professional barriers which have close relationship with client satisfaction. After a deep analyze of research articles, the researcher presents the barriers in access to the healthcare by the clients first. Secondly, the relationship between these barriers and healthcare outcomes will be examined. Thirdly, as the reputation plays a major role in influencing the outcomes of healthcare barriers, the connection between reputation and the health outcomes will be examined. This study is novel in the sense that there are no prior researches available that studied the importance of reputation of healthcare units in reducing the effect of barriers on healthcare outcomes. In this sense, this is exploratory study and first of its kind in India. Based on the review a conceptual model is framed to test its fitness in accessing health care services.

SIGNIFICANCE OF RESEARCH ON HEALTHCARE

World Health Organization categorically stated that health services are a major part of the basic social services of any country (WHO, 1971). Recognizing this, India has introduced rural health services in 1978, following the recommendations of Bore Committee (Park, 2007). Government of India has come with a set of standards for all the community hospitals under the National Rural Health Mission (NRHM).

sustainability

MDPI

Article

Work-From-Home Productivity and Job Satisfaction: A Double-Layered Moderated Mediation Model

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Abstract: This study was conducted against the backdrop of the global-pandemic-induced change in work climate resulting in employees working from home (WFH). The current study investigated the relationship between work-from-home productivity (WFHP) and job satisfaction. Using a structured survey instrument, data were collected from 1158 respondents from a developing country, India. After checking the psychometric properties of the measures using the LISREL software of structural equation modeling (SEM), data were analyzed using Hayes's PROCESS macros. The findings indicate that: (i) WFHP positively predicts (a) job satisfaction and (b) work–life balance (WLB), (ii) WLB positively predicts job satisfaction, and (iii) WLB mediates the relationship between WFHP and job satisfaction. The results also support that (i) work stress moderates the relationship between WFHP and WLB, (ii) work–personal life enhancement (WPLE) (second moderator) moderates the moderated relationship between WFHP and work stress (first moderator) in influencing WLB, (iii) emotional exhaustion moderates the relationship between WLB and job satisfaction, and (iv) WPLE (second moderator) moderates the relationship between WLB and emotional exhaustion (first moderator) in influencing job satisfaction. The first three-way interaction between WFHP, work stress, and WLB and the second three-way interaction between WLB, emotional exhaustion, and job satisfaction have been investigated for the first time, to the best of our knowledge. The conceptual double-layered moderated mediation model is a novel idea, and the results significantly contribute to the literature on WLB and job satisfaction. The implications for theory and practice are discussed.

Keywords: work–life balance; job satisfaction; work from home; emotional exhaustion; work stress; moderated mediation; India

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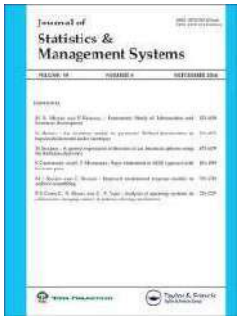
1. Introduction

The unprecedented COVID-19 global pandemic has resulted in a phenomenal metamorphosis in the lives of people and organizations worldwide [1–3]. To prevent the spread of the virus, governments imposed frequent lockdowns and social distancing. Organizations did not have any alternative but to request employees to work remotely [4,5]. This study was conducted against the backdrop of this global-pandemic-induced WFH of employees in a developing country, India.

The separation of work from family has remained an exciting topic for organizational behavior and psychology researchers for over three decades [6–10]. Often, employees struggle to balance their work demands and personal priorities and preferences, resulting in a work–life imbalance. To help employees effectively balance work and life, organizations offer flexible working hours, remote working, or work from home (WFH) [11–13]. Several researchers documented that, in order to maintain a work–life balance (WLB), remote



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Aggrandizing the human resource development with underpinning artificial intelligence

A. Lilly, R. Rajkumar & R. Amudha

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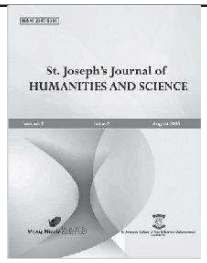

Archetypal Journey of Karna a Mythical Character: An Analysis

M. Rishika[a]
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ABSTRACT

Archetype is a stereotypical pattern that stimulates the profound thoughts and feelings in our unconscious memory. The archetypes are the symbols and images that mainly discern within the myths which were suited in just a position. The archetypal hero appears in almost all cultures and mythologies around the world. Carl Jung and Joseph Campbell theorize that heroes are an expression of our personal and collective unconscious. There are several characters that a hero shares. This paper decodes the elements of the archetypal hero and the archetypal journey of the hero with the frame of reference from the work Karna: The Great Warrior written by Ranjit Desai.

Keywords: Archetype, Collective unconsciousness, Hero, Mythology.

INTRODUCTION

Archetype is a universal pattern that provokes deep emotional responses in the subconscious memory. The archetype can be also known as the first pattern that they form as a prototype of any symbols, images, characters, and situations. The word archetype itself describes the original pattern or the mother pattern which was followed by other behaviours. The archetypal patterns can be modules of anything; they can be related to literature, psychology or any other streams.

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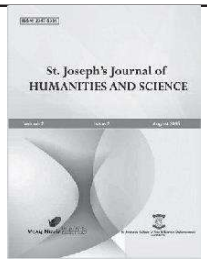

The Patriarchal Predators in AMITAV *GHOSH'S The Hungry Tide*

R. Preskila Josephine[a]
B. Prabakaran[b*]

ABSTRACT

In Indian Literature, The twenty first century novel *The Hungry Tide* was written in the year 2005 by Indian Writer AMITAV GHOSH. The novel *The Hungry Tide* is a Psychological novel which can be seen in the way of repression of female characters. Though many writers spring to write about the controversy themes, still in the Indian Literature some writers tends to write about the Suppression of women, Subjugation of Female in Indian Countries. The women in Indian countries are forced to be under the Male Chauvinist society. Their whole life in depended upon the male around them. Women were not allowed to go beyond their limits in ancient Indian Country. The writer brings the background of the novel in the easternmost coastal area of the Bay of Bengal. This place is known as tiny Islands, the Sundarbands. These are familiar for the man eaters (deadly tigers), which destroy the life of the innocent people living there. The female characters in the novels are *Piyali Roy*; the Marian Biologist came as a cetologist to seek the marine mammals. *Nilima*; the wife of Nirmal, she sacrificed her life for the welfare of other women in the tide countries. *Kusum*; is a modern rebellionist who fought for the Morichijhapi Massacre in 1979. *Moyna*; the wife of Fohir, she was forced to sacrifice her dreams to look after her family. All the female characters are struggling to achieve the equality and freedom among the male. The male characters Kanai Duttu makes Piyali to be pliable to impress her and Mejda tries to abuse Piyali and Fohir is illiterate fisherman who made Moyna to live a unhappy life, Nirmal lives in his own idealist world, but his wife Nilima runs after his unloving husband. So all the women are suppressed to be in a limit and their independence is prohibited. This presentation shows how women lives are ruined by Male chauvinist society.

Keywords: Inequality, rebellion, male domination, suppression.

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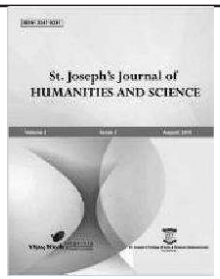

Sustainable Development in the Select Novels of Amish Tripathi

S. Aishwarya[a]
V. R. Suresh Kumar[b*]

ABSTRACT

Sustainable development became a key socio-political issue in the contemporary era. The literary critics were vehemently persistent with the environmental-based analysis. The paper focuses on key issues relating to the concepts of development, sustainability and sustainable development with the context of Amish Tripathi's Shiva trilogy: The Immortals of Meluha, The Secret of the Nagas and The Oath of Vayuputras. The Meluhan people were so developed and organized. They had brilliant architecture, organized towns, and systematic houses. On the other hand, they were dumping gigantic amounts of Somras by products in the river water. The ill effects of their dumping were so horrible that a new generation of Nagas had come into existence.

Keywords: Sustainable development, ecocriticism, existential crisis.

Indian English Literature has been developed widely and seen in various dimensions from colonial theories to postmodern studies. At the beginning, Indian writers and in English imitated the works of western writers and later they adopted their narrative style that could blend with the cultural contexts. In recent times many theories like postmodernism, feminism, subaltern studies and ecological studies have occupied a major part in Indian English Literature. Ecocriticism is the critical approach towards ecological studies that focuses on the existential crisis which is led by ecological anxiety and climatic distress. Since there was an imbalance in the ecosystem, people are very much concerned about spreading awareness through literary and non-literary forms. Sustainable development is an alarming term that has been overly used when discussing ecological studies.

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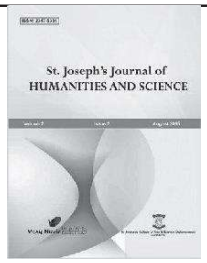

Bicultural Ambivalence in JhumpaLahiri's *The Namesake*

A. Parkavi[a]
M.A. Mary[b*]

ABSTRACT

The bicultural ambivalence in JhumpaLahiri's work *The Namesake* is the subject of this paper. Lahiri addresses the difficulties faced by second-generation immigrants. The importance of family bonds and the loss of identity are the significant themes in this work. Lahiri presents immigrants as struggling to live, but she focuses on their relationship with their American-born children and their attachment to a country. The character Gogol Ganguli, a second-generation immigrant, is the centre of this paper, which discusses his problem with accepting his ethnic identity and his double consciousness. Gogol separates himself into two halves. He claims to have two selves, one named Gogol and the other named Nikhil. Gogol's perseverance as a second-generation immigrant in recognizing his bicultural identity as an American and an Indian is remarkable.

Keywords: Cultural Identity, Double Consciousness, Diaspora, Biculturalism.

Diaspora is a term used to describe a group of individuals who originated in one country but now resides in another. It is separated into two parts in Indian diasporic works. The first is forced migration, while the second is voluntary migration. Compelled migration occurs when authors are forced to leave their home country and settle in another country for various reasons. Voluntary migration means that the authors are not forced to leave their own nation in order to reside in another.

In terms of Indian diasporic literature, a large number of Indian writers have contributed to the field. Salman Rushdie and V.S. Naipaul are two famous Indian authors who have contributed to

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Case Report

MLVSS / MLSS ratio's standard value obtained from different aeration tank samples of different capacity sewage treatment plant - A case study

Gayathri Parivallal[1], Ranadive Ananth Govindaraju[1,*], Arun Nagalingam[1], Sumitha Devarajan[2]

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MLVSS standard percentage

ABSTRACT

Waste water treatment system plays a vital role in controlling pollution of natural water bodies like lake, pond, river etc., by Municipal and Industrial effluents. Different industrial effluents play its own role in contaminating the water bodies which in turn creates huge impact for aquatic and terrestrial life. From past studies we understood that, all the sewage treatment systems have a secondary treatment step which are mainly driven by Bacterial oxidation or in other terms can be pronounced as Biological augmentation, Biological calcification etc., In environmental engineering term this bacterial growth will be pronounced as MLSS (Mixed Liquor Suspended Solids) and MLVSS (Mixed Liquor Volatile Suspended Solids). MLVSS will be an inclusive part of the MLSS and also can be sorted as live bacterial cells which can really does the oxidation process in the secondary treatment step of Sewage treatment plant. Hence, this study was performed to evaluate the percentage or concentration of MLVSS available in the total value of MLSS. For this study aeration tank water samples were collected from 6 different STP capacities from 6 different areas. All the samples were tested for MLSS and MLVSS concentration with the available standard method of drying. Drying with 105° C in oven gives the value of MLSS and drying with 550° C in furnace gives the value of MLVSS. With all the tested samples the concentration of MLVSS from the total MLSS was evaluated and standardized.

1. Introduction

MLSS (Mixed Liquor Suspended Solids) are usually expressed in grams per litre (Water online, 2011). Mixed liquor is a mixture of activated sludge, settled sludge, live microbes and even dead cells contained in an aeration basin in the activated sludge treatment. The term MLSS is a general parameter used to design a wastewater treatment plant in the suspended growth process. [1] Most of the Sewage Treatment Plant designs were done with the consideration of MLSS as a critical operational parameter. [2] Different sewage treatment technologies such as Activated Sludge process (ASP), Sequential batch reactor (SBR), Fluidized air bed bioreactor (FBBR), Moving bed Bioreactor (MBBR), Membrane Bioreactor (MBR) etc., consider MLSS as a vital parameter for their design. MLSS concentrations have a direct impact on viscosity of the waste water. [3,4] Proper concentration of MLSS in the aeration zone can create a healthy environment for microbial survival and improves the settling velocities of the solids. [5,6] This study shows the vitality of MLVSS (Mixed Liquor Volatile Suspended Solids) which tend to be the live microbes facilitating a healthy aeration zone in any sewage treatment plant. Sewage treatment plant has BOD (Biochemical Oxygen Demand) as food and MLVSS as Microbes. Hence, always a healthy F/M

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Case Report

Performance evaluation of 1 MLD MBBR type sewage treatment plant

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STP
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Bio augmentation

ABSTRACT

Sewage treatment system considered to be an inevitable step to handle the burgeoning water scarcity in the recent years. In this study a 1 MLD (Million Litres per Day) sewage treatment plant was selected and evaluated its performance efficiency for a period of 8 Weeks (02.10.2021 to 20.11.2021). The adapted treatment technology was Moving bed Bioreactor (MBBR) which is an attached biological growth method. This technology totally driven by MBBR Carrier media, which provides an enormous surface area for the microbial attachment. The treatment system has the following units such as Bar screen chamber, Grit Chamber, Oil & Grease Chamber, Equalization Tank, Anoxic Tank, MBBR Tank, Settling Tank, Filter Feed Tank, Pressure Sand Filter (PSF), Activated Carbon Filter (ACF), Chlorine dosing and Treated Water Tank. Water samples were collected from different treatment units for 10 days and analysed for the major water quality parameters such as Biochemical oxygen demand (BOD), Chemical oxygen demand (COD), Total Kjeldhals Nitrogen (TKN) and Total suspended solids (TSS). The analysis showed that all treated water parameters meet the State Pollution board standards. Also the results were very much useful to prepare a Standard Operating Procedure (SOP) which helps in hindrance free Operation and Maintenance of the system.

1. Introduction

1.1. Screening (Bar screen and grit chamber)

The raw sewage first be screened through a manual bar screen, where all particles with diameter below 5 mm as well as small pieces of the fibre and floating suspended matters like polythene paper, polythene bags, rags and others materials are removed. These units are used to protect downstream equipment such as pumps, pipelines, valves etc. from damage and clogging by rags and other large objects. The bar screen and grit chamber is cleaned manually by means of rakes. The screened clean effluent flows by gravity to an equalization tank. [1,2]

1.2. Oil & grease chamber

The screened wastewater then gets skimmed properly to remove Oil and Grease. The removal principle based on density and viscosity of the sewage.

1.3. Equalization tank

The raw wastewater collected in the equalization tank, where it is equalized with respect to its characteristics, homogeneity, flow and uniform pollution load as well as to make bacteria acclimatized. The equalization tank is designed for hydraulic retention time of around 6 hours. Proper equalization process minimizes the shock loadings

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A PERSPECTIVE STUDY ON COMMUNITY DEVELOPMENT THROUGH THE IMPLEMENTATION OF MICRO FINANCE PROGRAMMES AND FINANCIAL INCLUSION

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Abstract

Generally, Indian society consists of heterogeneous groups with wider different culture, religion, pattern and lifestyle. Community development programmes were initiated since from the days of independence. The main aim of implementing CD programme is to reduce interpersonal and intrapersonal disparities and also reducing inequalities of income distribution. Prominent CD Programmes in India have so far been initiated at various zones in various states. But at the same time the desired results were not been achieved. Poverty reductions as well as eradication of illiteracy, creation of social assets, social infrastructure, dimensions of development and overall improvement are the important notions of CD Programmes. The Panchayat Raj system especially Amendment 73rd clearly envisages giving more autonomy to local bodies in achieving community development. The existence of growth pockets as well as depressed pockets consumes larger plan allocations in India. Since, the command area project achieved the overall economic growth and societical development. This paper clearly reveals the way in which of attaining inclusive growth with the main aim of quicker accessibility of credit and overall rural development. Most of the programmes under the instruction of Niti Ayog sustainable rural development and creating of social infrastructure in the rural areas are the main thrust as well as priority oriented schemes. A deliberate attempt was made by the researchers to focus the main theme of rural development with suitable financial inclusion strategies.

Keywords: Community Development – MFI Programmes – Process and Pattern – Banking and NGOs role – Recent developments.

INTRODUCTION

India lives in her villages if you want to improve the whole part of India our attention must simply goes to improve the rural areas because 65% of the people living in the rural as well as far flung rural areas. Most of the planners and policy makers strongly advocated the policy of SDGs with clear cut rural oriented programmes to improve the social infrastructure as well as financial inclusion of the underprivileged and uncared poor. Voice of the voiceless marginalized people's economic conditions has improved only by the overall rural oriented developmental programmes. Micro finance in India played a dominant role in satisfying the financial needs of rural marginalized poor. Inclusive growth is a process in which all the sectors of the people without any barriers must be developed in all spheres. In achieving inclusive growth through MFI is definitely an inducive factor for the uncared poor in India. Hence, to address the problems and voice of the poor many more

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Study of the morphological and histological studies of finger millet (*Eleusine coracana* (L.) Gaertn.) using sugar mill effluent

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ABSTRACT

Environmental pollution poses a great health hazard to living and non living substances. Industrial effluents, containing organic and inorganic compounds have strong influence on the development of growth of crop plants. A comparative study utilization of the sugar mill effluent on morphological and anatomical studies of the leaves and stems of *Eleusine coracana* was undertaken. The finger millet seeds were sown in soil-filled pots. Finger millet seedlings were irrigated with different sugar mill effluent concentrations control, 10, 25, 50, 75 and 100. Although high concentrations of sugar mill effluent decreased the growth, the low concentration (10%) of SME was very effective in increasing the growth of finger millet cultivars when compared with control. The T.S. of the root and leaf of *Eleusine* control plants at 90 DAS indicated uniseriate, thin walled epidermis. When the roots and leaf treatment control, 10 and 100 per cent of sugar mill effluent were considered, it was seen that the cortex area accumulated in some heavy hazards in 100% of sugar mill effluent. Industrial wastewater causes accumulation of heavy metals that are toxic in plants and thus affect the plant growth, seed germination, lower crop yield and human health. The adequate dilution of effluents treatment is therefore needed before the disposal and reuse of wastewaters for irrigation purposes. The anatomical studies showed that the lower, upper epidermis, cortex and the diameter of vascular bundles of root and leaves of finger millet reduced at the 100 per cent of effluent concentration, when compared to 10 per cent of effluent concentration. All the above mentioned parameters increased at lower (10%) concentration of the sugar mill effluent.

Keywords: Pollution, sugar mill effluent, Seed germination, anatomical studies.

1. INTRODUCTION

Sugarcane refinery is one of the most important agro-based industries in India and is highly welfare for creating a significant impact on rural economy, in particular and countries economy, in general. Sugar industries rank second among the agro-based industries in India. Sugar industry is seasonal in nature and operates only for 120 to 200 days in a year (Early November to April). The sugar industry requires about 1200 to 1400 m^3 of water and it is released as wastewater of sugar cane crushed. *Eleusine coracana* (L.) Gaertn (Finger millet) belongs to family Poaceae and is one of the most important cereals in the India. The poaceae is the fifth – largest plant family. The family poaceae is represented by 780 genera and 12000 species and distributed across and tropic and sub tropic regions. Finger millet is a high quantity of carbohydrate, proteins, calcium, and iron and the straw is also a nutritious feed for cattle. Finger millet is enriched in the essential amino acids like lysine [1] and methionine which are important in human health and growth but remain absent from most other plant foods. It is also rich in iron and fiber, making this crop more nutritive as compared to other most commonly used cereals. In addition, it also contains useful amounts of the two polyunsaturated fatty acids linoleic acid and linolenic acid [2], metabolized products of which facilitate normal development of central

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Antibacterial studies, GC/MS Analysis and Antioxidant activity of plant parts of *Achyranthes aspera*

Dr. M Parimala Celia and B Aruna

Abstract
Achyranthes aspera is the herb and one of the medicinal plant in India, belongs to the family Amaranthaceae which is used to treat various infections. *Achyranthes aspera* is called as Nayurivi in Tamil. The plant parts (leaf, stem and root) of *Achyranthes aspera* were collected and extracted with solvents such as ethanol, methanol and acetone. Antibacterial study was carried out by well diffusion method using ATCC pathogens, *Staphylococcus aureus* (ATCC25923), *Pseudomonas aeruginosa* (ATCC 27853) and *Escherichia coli* (ATCC 25922). Acetone extract of the leaf showed maximum inhibition of 25mm against *P. aeruginosa.* Stem extracts showed maximum inhibition of 16mm against *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *E. coli*. Ethanol root extracts of *Achyranthes aspera* showed the maximum inhibition of 17mm against *Pseudomonas aeruginosa* Among the 3 plant parts of *Achyranthes aspera*, acetone extracts of the leaf showed maximum inhibition of 25mm against *Pseudomonas aeruginosa.* The mass chromatogram of *Achyranthes aspera* leaf extract showed 48 different phytochemical compounds. Free radical scavenging activity exhibited by leaf extract of *Achyranthes aspera* using DPPH assay was 50%, where the positive control, ascorbic acid showed 87%.

Keywords: Nayurivi, Amaranthaceae, well diffusion, GC/MS, Antioxidant and ATCC pathogens

Introduction
Achyranthes aspera is a herb which can grows up to 1-2 meters height. In recent years there is a rapid progress in use of plant based health products. The medicinal plants are used for treatment of various diseases because of their safety and effectiveness (Saba Hasan, 2014) [14]. *Achyranthes aspera* is commonly found in tropical and warmer regions. It is found in tropical Asian, African countries, Balochistan, Srilanka, Australia and America (Praveen Kumar, 2014) [13]. There is growing demand for plant based medicines, pharmaceuticals, food supplements and cosmetics (Bhoomika *et al*., 2007) [5].

Plant parts like root, shoot and stem are used for medicinal purpose (Shinde Ganesh *et al*., 2021) [17]. *Achyranthes aspera* is used to treat cough, bronchitis, asthma, hypertension, diabetes, fistula, scrofula, skin rash, nasal infection, renal dropsy, piles and bites. It is also used to control vomiting, heart disease, abdominal pain and itching (Bhoomika *et al*., 2007) [5]. The plant can be used as anti –Parasitic (Zahir *et al*, 2009) [20], Hypoglycemic (Akhtar and Iqbal, 1991), hepatoprotective (Bafna *et al*., 2004) [4], Nephroprotective (Jeya Kumar *et al*., 2009), anticancer (Chakraborthy *et al.*, 2009) and anti-inflammatory (Vijayakumar *et al*., 2009). It also possess antiperiodic, astringent, antiarthritic, laxative, antihelminthic, anticoagulant, diuretic and antitumour properties (Ratra *et al*., 1970) [19].

The plant parts are widely used for the treatment of upper respiratory tract infections, pneumonia, rheumatoid arthritis, urinary tract infections and sexually transmitted diseases (Lakshmi Naidu *et al*., 2006) [12]. *Achyranthes aspera* is used to cure oedema, dropsy, boils, piles and skin eruptions. Plant infusion is used to cure pneumonia and root infusion is used to cure bowel complaint. Boiled extract of plant inflorescence is used to treat jaundice. Paste of roots in water is used to treat ophthalmia (Srivastava *et al*., 2011). Fresh piece of the Root is used as tooth brush. *Achyranthes aspera* stem is used for the treatment of toothache. Decotion of powdered leaves with honey or sugar candy is useful to treat diarrhea and dysentery (Saurabh *et al*., 2011) [15].

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Influence of Ce^{3+} Substitution on Magnetic Properties and Antibacterial Activity of Manganese Ferrite Nanoparticles Synthesized by Coprecipitation Method

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Rare earth element cerium incorporated $MnFe_2O_4$ nanoparticles were synthesized by using a co-precipitation method. Phase signature, vibrational analysis, morphology, element composition, magnetometry, surface analysis, medicated analysis were studied by XRD, FTIR, FE-SEM, EDAX, VSM, XPS and antibacterial activity. X-ray diffraction (XRD) reveals a cubic structure and obtained crystallite size and lattice constant. Fourier transform infrared spectroscopy (FTIR) studies were confirmed spinel structure ferrite. Vibrating sample magnetometer (VSM) revealed that the magnetic interaction of materials and obtained saturation magnetization, remnant magnetization and coercivity, which were impressed by their magnetic properties by Ce^{3+} incorporated $MnFe_2O_4$. Field emission scanning electron microscope (FE-SEM) observed clear lattice size and magnetic domain nature. X-ray photoelectron spectroscopy (XPS) confirmed cerium (Ce^{3+}) ions in the all doped materials and identified the chemical state of ions in the ferrite composite. Antioxidant effects were observed against Gram-positive and Gram-negative bacteria ferrite nanoparticles.

Keywords: Cerium, Ferrite nanoparticles, Antibacterial activity, Magnetization, Co-precipitation method, Nanoparticles.

INTRODUCTION

In literature, a strong antibacterial activity of CeO_2 and its doped ferrite nanoparticles is observed, which lead novel approaches in the production of biomedical, food applications and antimicrobial control systems. Cerium oxide nanoparticles with cubic fluorite phase/structure have improved antibacterial activity and band gap is 2.61 eV [1]. CeO_2 nanoparticles have a unique antibacterial activity because of their reversible conversion between (pro-oxidant & antioxidant) Ce^{3+} and Ce^{4+} valence states. For the reactive oxygen species (ROS) involved in the antibacterial activity mechanism, where Ce^{3+} occupy octahedral voids and O^{2-} occupy tetrahedral voids. The CeO_2 nanoparticles can destroy cancer cells by causing them to produce free radicals because of reactive oxygen species (ROS) [2]. It is hypothesized that CeO_2 nanoparticles' antibacterial activity is effective since the cellular proteins being inactive after successfully incorporating pathogens, causing their enzymes to become deactivated and the pathogens to die [3]. The Ce^{3+}/Ce^{4+} ratio is used to assess the concentration of oxygen vacancies. As a result, nanoparticles as a functionalized percentages of cerium particles increase as particle sizes decrease and *vice-versa*. Because of the oxygen vacancy, a quantified region known as oxygen storage capacity arose. An improvement in this ratio favours ROS, but a decrease favours catalytic activity.

CeO_2 is also a natural insulator and it exists as Ce^{4+} ions. As a result, it exhibits diamagnetic behaviour. However, CeO_2 nanoparticles have a ferromagnetic character and magnetic analysis suggests that Ce^{3+} ions have their own magnetic moment unlike Ce^{4+} ions [4].

$$3Ce^{4+} + 3O^{2-} \longrightarrow 3Ce^{3+} + 3O_2 \text{ (reduction)}$$

$$Ce^{3+} + O^{2-} + 2H^{+} \longrightarrow Ce^{4+} + H_2O_2 \text{ (oxidation)}$$

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A review on structural and magnetic properties of magnesium ferrite nanoparticles

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INVITRO SCREENING OF PHARMACOLOGICAL ACTIVITY OF *ANANAS COMOSUS* LEAVES AND PEEL

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Abstract

The *Ananas comosus* (Pine apple) belongs to the family of Bromeliaceae is known to exhibit a lot of pharmacological properties. The enzyme Bromelain is present in the pine apple which is perform numerous functions including tissue morphogenesis, tissue repair, angiogenesis, tissue modulation, decreasing bruises swelling, pain and healing time. Hence the present work, aim to open new avenues for the medicinal uses of pineapple peel and leaves for the selected area for anti-inflammatory activity, anti-arthritic activity and anti-diabetic activity of various extracts. The aqueous and ethanolic extracts were tested for the presence of phytochemical screening. The results showed that the possessed significant level of pthyconstituents such as alkaloids, flavonoids, glycosides, saponins, tannins and terpenoids. The anti-inflammatory activity of *Ananas comosus* was studied using human RBC membrane. The heat induced hemolytic method provides high percentage of inhibition for leaves at 250µg and the peel provides maximum inhibition at all the concentrations when compared with standard drug. Another method hypotonicity induced hemolysis gives high % of stabilization for leaves matched with peel and standard drug diclofenac. The anti-arthritic activity of bovine serum albumin denaturation (BSA) method showed the good result at 250g compared with anti-arthritic drug aspirin. Anti-diabetic activity was evaluated using alpha glycosidase method. The leaf and peel of *Ananas comosus* exhibited significant anti-diabetic activity. These indicate the Anti-inflammatory, Anti-arthritic and anti-diabetic activity of the peel and leaves extracts of *Ananas comosus* which can be used as a promising herb in treating the common ailment.

Keywords: Anti-inflammatory activity, Anti-arthritic activity, Anti-diabetic activity, A*nanas comosus*.

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A Study on Digital platforms and their adoption with

Special reference to urban users.

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Abstract

Investor perceive GRR (growth, risk and return) in organization to analyze this there are various tools and techniques but to Present it excluding all the complication in a simple language companies need a platform wherein investor, users need a place Where they can have a communication directly or indirectly, the digital platform is a place with people processes and tools It's an operating mechanism for real-time monitoring of projects, there is various digital service landscape such as Domain Navigation like catalogue service, categories service, navigation service, search service and domain finance like Fraud service, payment service, promo service, vouchers service e commerce and digital platform is a wider area to cover, This article will be specific on categories services under categories

Service has various verticals like social media platforms, Knowledge sharing platform, media sharing platform, and service Oriented social media platforms: social media are interactive platform which uses technology and community to connect with People around.

The world like Facebook, WhatsApp, YouTube, Instagram etc.

Knowledge sharing platforms: There are few social media platforms which can include under this category like YouTube, Facebook

And even WhatsApp for some extent but there are also Knowledge management software which exclusively shares enterprise Content management were the software gives preference exclusively for information which will be stored and accessed

Media sharing platform: There is a thin layer of difference between social media and social networking in media sharing platform There will be mix of both talking and listening in social media marketing a video will be posted and everyone just listens to the content And one-sided communication will not be effective because of not receiving feedback in media sharing platform more emphasis will be Given on listening and engaging with others.

Service oriented platform: It is an architectural style that supports service orientation in simple it's a software design built by a Software Company for specific and exclusive service representation of business activities will be the main objectives of it

Out of above-mentioned verticals social media, knowledge sharing, and media sharing goes hand in hand this study will be specifically Focusing on those three segments

The research will be focusing on the company's interaction directly and indirectly with digital users on various digital platforms and Collective opinions and awareness is considered with only certain segment of population.

Research Problem

Digital platforms is the growing industry and will be dominant in every aspect of human life from content creation to content consumption

Or providing assistants to product creation to product and service delivery to end users it has also become a part of our social life and The way we interact with others therefore people are spending more time and emotion on this platforms which includes purchase of Products and getting services through various means in this process organization are trying to reach end users in a massive may there Is creation of automation system which tries to recognize humans pattern and according to algorithm it follows the users How effectively the automation system of companies are following the pattern is the fundamental question to be asked, is promotion Of the product reaching the right users according to users requirements, is flow of information regarding the products or services useful To end users which is supervised or is it unsupervised were reaching the wrong products and services to users which may not be relevant To them, here the recommendation of products and services will be reached according to the time spent by them on social media. But even

After getting right recommendation how many are preferring online purchase willingly or is E-commerce companies pushing users to Purchase online by providing additional benefits which becomes an inevitable factor this leads to another fundamental question which Is how satisfied they are while purchasing the product and using the platforms.

Objectives:

- To Identify Users Preferences on digital platforms for various product categories
- To Understand the behavior of Digital users according to attitude and age group
- To Know the Users perception and their awareness on Digital Platforms
- To Identify demographic profile of users on various digital platforms

Introduction

The world market is facing a digital transformation and emphasis on online platforms is increasing rapidly in this changing era the digital platforms are changing its way of approach to reach consumers

Digital platforms are a digital marketplace providing 360-degree customer view online, it is a place where information, goods and Services are exchanged, it can increase the customers experience of getting products effectively the company will have the opportunity

To expand their customer base and sales through digital marketing

The business success on digital platforms not only depends on the successful implementation of technologies in the marketing approach

but also the ability of the users to adapt to technology, therefore the ease of using technology also plays a major role in reachability of a

Product to users' community, collection of proper data and processing it in a right way becomes key to success, for any company