ANNAMACHARYA UNIVERSITY

EXCELLENCE IN EDUCATION; SERVICE TO SOCIETY

(ESTD UNDER AP PRIVATE UNIVERSITIES (ESTABLISHMENT AND REGULATION) ACT, 2016)

RAJAMPET, Annamayya District, A.P – 516126, INDIA.

RESEARCH & DEVELOPMENT CELL

Department wise Publications in Journals– No. of Titles

July 2025 to June 2026

Departments	CE	EEE	MECH	ECE	CSE	AI &DS	AIML	H & S	MBA	MCA	Total
No.of Papers Published in Journals	3	18	8	11	5	Nil	2	32	62	2	**143**

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET
Department of Civil Engineering
(a.CE). 1. Details of Journals published with ISSN from Ist July 2025 to 31st June 2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/ International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	**Rama Bhupal Reddy Donthi**, Gaddam Venkata Sai Krishna, Matli Chandrasekhar, Ramannagari Bhavani **(4)**	Civil Engineering	Assessment of Leachate-Induced contamination in soil and groundwater surrounding the anantapur open dumpsite	Journal of Material Cycles and Waste Management	Vol. 28 (3)	3	-	May (2026)	International	1438-4957	WoS & SCOPUS	https://doi.org/10.1007/s10163-026-02587-3	-	-	-
2	Lokanath Reddy M., Padma Priya K.T., Madan Mohan Reddy P., Madhava V., **Venkata Vara Prasad S. (4)**	Civil Engineering	Cyclone Shelter Suitability and Flood Risk Assessment Mapping of Amaravati Capital Region, Andhra Pradesh, India	Disaster Advances	Vol. 19 (1)	1	41-53	January (2026)	International	2278-4543	SCOPUS	doi: https://doi.org/10.25303/191da041053	-	-	-
3	G. Nagaraj, P. Girish, Pallavi Hallappanavar Basavaraja, Anusha Preetham, G. Anil Kumar, **D. Gouse Peera (5)**	Civil Engineering	AI- Enabled otimization of Additively manyufactured composite materials for enhanced mechanical and thermal performance	Journal of Polymers and Composites	Volume 14	2	867-891	20-04-2026	International	2321-2810	WoS	https://journals.stmjournals.com/jopc/article=2026/view=240336/	-	-	-

Note:
Ensure that all entries are arranged in **chronological order (latest first)**, and **no field is left blank** — fill all fields **as applicable and available with valid sources.**
If any information is **not available,** clearly mention **"NA"** in that field.

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET

Department of EEE

(a.EEE) 1. Details of Journals published with ISSN from July 2025 to June 2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Vamsidhar Reddy, **Palepu Suresh Babu**, Venkata Ramana K, Sravan kumar T, Vinay kumar Reddy M **(5)**	EEE	Optimised Placement of Micro-PMUs and voltage Estimation in Radial Distribution Networks Considering Zero Injection Constraints	Journal of engineering and technology for industrial applications(JETIA)	12	59	384-392	May-26	International	2447-0228	Scopus & Google Scholar	https://doi.org/10.5935/jetia.v12i59.3461	**NA**	**NA**	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=iGK0AlwAAAAJ&sortby=pubdate&citation_for_view=iGK0AlwAAAAJ:D03iKw7-QYC
2	**NC Alluraiah**, PH Kumar, P Vijayapriya **(2)**	EEE	Hybrid Grey Wolf and Cuckoo Search Optimization for Optimal Energy Management in Microgrid Systems	Journal of engineering and technology for industrial applications(JETIA)	12	59	281-291	May-26	International	2447-0228	Scopus & Google Scholar	https://doi.org/10.5935/jetia.v12i59.3426	**NA**	https://www.scopus.com/pages/publications/105040255270?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=trfeWEMAAAAJ&sortby=pubdate&citation_for_view=trfeWEMAAAAJ:KlAtU1dfN6UC
3	Pujari Harish Kumar, N **Chinna Alluraiah**, Swetha Shekarappa G, **K Harinath Reddy**, Keerthana M **(5)**	EEE	Performance Enhancement of Photovoltaic Solar Panels by a Cleaning Robot Technique	Journal of engineering and technology for industrial applications(JETIA)	12	59	312-319	May-26	International	2447-0228	Scopus & Google Scholar	https://doi.org/10.5935/jetia.v12i59.3436	**NA**	https://www.scopus.com/pages/publications/105040133270?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=trfeWEMAAAAJ&sortby=pubdate&citation_for_view=trfeWEMAAAAJ:kNdYIx-mwKoC
4	Kudumula Praveen Kumar Reddy, **P Balachennaiah (2)**	EEE	Multi-Agent System-Based Real-Time Implementation of Advanced Energy Management in Hybrid Microgrids	Information	17	5	497	May-26	International	2078-2489	Wos(ESCI),Scopus and google schollar	https://doi.org/10.3390/info17050497	**NA**	https://www.scopus.com/pages/publications/105040187043?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=Y69dkkgAAAAJ&sortby=pubdate&citation_for_view=Y69dkkgAAAAJ:Wp0gIr-vW9MC

5	**M. Padma Lalitha**,V. Durga Prasada Rao,S. V. Prayagi, N. Sivarami Reddy **(4)**	EEE & ME	Minimization of makespan without tool delay in a multi machine fms using crow search algorithm	Journal of Advanced Manufacturing Systems	**NA**	**NA**	**NA**	May-26	International	1793-6896	Wos(ESCI),Scopus and google schollar	https://doi.org/10.1142/S0219686728500084	**NA**	**NA**	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=hYCfKL0AAAAJ&sortby=pubdate&citation_for_view=hYCfKL0AAAAJ:1DslQWDZLI8C
6	Pujari Harish Kumar, Gayathri Raju, Mohit Bajaj, **Nallolla Chinna Alluraiah, Pasala Gopi , S**unil Kumar Pulumithi, Reshma Gopi Remabhai, Rashmi Gangadhar and Ievgen Zaitsev **(9)**	EEE & ME	Integrated thermal and battery management for electric vehicles: Experimental validation and simulation-based optimization of lithium-ion batteries	Energy Exploration & Exploitation	**NA**	**NA**	**NA**	May-26	International	2100–2158	WoS(SCIE), and Scopus	https://doi.org/10.1177/01445987251337094	https://www.webofscience.com/wos/woscc/full-record/WOS:001483300800001	https://www.scopus.com/pages/publications/105004447741?origin=resultslist	…
7	Thenkaraimuthu Mariprasath, Kaliappan Esakkiappan, **Shaik M Ali**, Muraly Natarajan, Basem A Zneid, Oleksandr Rubanenko **(6)**	EEE	A system-level critical assessment of electric mobility integrating electric vehicle powertrains, advanced battery technologies, grid impacts, artificial intelligence, and sustainability	Energy Exploration & Exploitation				Mar-26	International	0144-5987	WoS(SCIE), and Scopus	https://doi.org/10.1177/01445987261420536	**NA**	https://www.scopus.com/pages/publications/105031716772?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=aURa2ugAAAAJ&sortby=pubdate&citation_for_view=aURa2ugAAAAJ:_axFR9aDTf0C
8	**O. Hemakesavulu**, Pradyumna Kumar Dhal, Shaik Hussain Vali, Sadhu Radha Krishna, P. Yamuna and Vempalle Rafi **(6)**	EEE	Support vector machine based maximum power degradation detection in photovoltaic modules	ARPN Journal of Engineering and Applied Sciences	21	2	117-124	Mar-26	International	1819-6608	Scopus & Google Scholar	https://doi.org/10.59018/012622	**NA**	https://www.scopus.com/pages/publications/105039116846?origin=resultslist	https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=GkG4TqoAAAAJ&sortby=pubdate&citation_for_view=GkG4TqoAAAAJ:9vf0nzSNQJEC
9	**K.Harinath Reddy**, Pujari Harish Kumar, **N Chinna Alluraiah**, Reshma Gopi R, Ramesh P, Swetha Shekarappa G **(7)**	EEE	Solar tree-shaped renewable energy storage system with lightning protection	Next Research	9	**NA**	101736	Apr-26	International	3050-4759	Scopus & Google Scholar	https://doi.org/10.1016/j.nexres.2026.101736	**NA**	**NA**	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=trfeWEMAAAAJ&sortby=pubdate&citation_for_view=trfeWEMAAAAJ:3fE2CSJIrl8C

10	Dr. V. Phani Bhushan,T. Bhanu Prakash, T. P. Durga Charan, T. Sri Hari, **S. Venkateswarlu,** G. Mouneesh **(6)**	EEE	Automated Fruit Disease Detection and Smart Irrigation System Using YOLOv8	International Journal of Scientific Research in Engineering and Management (IJSREM)	10	4	1-4	Apr-26	International	2582-3930	**NA**	https://doi.org/10.55041/IJSREM58961	**NA**	**NA**	https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=UfsP4mIAAAAJ&sortby=pubdate&citation_for_view=UfsP4mIAAAAJ:NMxIlDl6LWMC
11	**Baya Reddy Lomada,** V Reddy **(2)**	EEE	Modeling and Reliability Analysis of an Efficient Novel Bridge Type Multi-input DC Converter for Low Power Applications.	Journal of Active & Passive Electronic Devices	20	2	100	Apr-26	International	**1555-0281**	**NA**	**NA**	**NA**	**NA**	https://scholar.google.com/citations?hl=en&user=XdOIZkoAAAAJ&view_op=list_works&sortby=pubdate
12	**M Padma Lalitha,** V Durga Prasada Rao, D Venkata Ramamurthy, **N Sivarami Reddy (4)**	EEE & ME	Makespan Minimization in a Multi-Machine FMS with Tooling Constraints Considering Job and Tool Transfer Times Using Crow Search Algorithm	Journal of Advanced Manufacturing Systems	**NA**	**NA**	**NA**	Feb-26	International	1793-6896	Wos(ESCI),Scopus and google schollar	https://doi.org/10.1142/S0219686727500478	https://www.webofscience.com/wos/woscc/full-record/WOS:001684835800001	**NA**	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=hYCfKL0AAAAJ&sortby=pubdate&citation_for_view=hYCfKL0AAAAJ:sszUF3NjhM4C
13	Meisam Mahdavi, Amir Bagheri, Francisco Jurado, Augustine Awaafo, **Pasala Gopi (5)**	EEE	A Probabilistic Temperature-Reliant Model for Optimally Sizing and Siting of Distributed Generators Coordinated With Distribution Network Switching Considering Weather Conditions	IEEE Transactions on Industry Applications	32	1	498 - 515	Jan-26	International	1939-9367	Wos(SCIE), and Scopus	https://doi.org/10.1109/TIA.2025.3595119	https://www.webofscience.com/wos/woscc/full-record/WOS:001666963400020	https://www.scopus.com/pages/publications/105012589224?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=ovYzHPMAAAAJ&sortby=pubdate&citation_for_view=ovYzHPMAAAAJ:ZHo1McVdvXMC
14	**Pasala Gopi,** Tharun Korivi, Vinod Kumar Reddy , Sri Ayodhya Raju and Sathish Kumar **(5)**	EEE	Synthetic data-driven analysis of electric vehicle manufacturing in India using machine learning	Journal of engineering and technology for industrial applications(JETIA)	12	57	305-314	Jan-26	International	2447-0228	Scopus & googlescholar	https://doi.org/10.5935/jetia.v12i57.2905	NA	https://www.scopus.com/pages/publications/105029516567?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=ovYzHPMAAAAJ&sortby=pubdate&citation_for_view=ov
15	T. Mariprasath,,Sujata Shivashimpiger,Marco Rivera, Patrick Wheeler, M. Pala Prasad Reddy,Shaik **Muqthiar Ali,**Venkatesh Peruthambi &Jakson Bonaldo **(8)**	EEE	An experimental investigation of unique high stepup boost converter for electric vehicle and solar photovoltaic	Scientific Reports	16	2402	**NA**	Jan-26	International	2045-2322	Scopus & googlescholar	https://doi.org/10.1038/s41598-025-25807-6	**NA**	https://www.scopus.com/pages/publications/105028121446?origin=resultslist	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=An+experimental+investigation+of+unique+high+stepup+boost+converter+for+electric+vehicle+and+solar+photovoltaic&btnG=

16	**Baya Reddy Lomada**, Vangala Naga Bhaskar Reddy **(2)**	EEE	Dynamic modelling and small-signal analysis of an efficient bridge-type multi-input DC converter for hybrid low-power systems	International Journal of Power Electronics and Drive System (IJPEDS)	16	4	2441-2452	Dec-25	International	2088-8694	Scopus & googlescholar	http://doi.org/10.11591/ijpeds.v16.i4.pp2441-2452	NA	https://www.scopus.com/pages/publications/105025480487?origin=resultslist	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Dynamic+modelling+and+small-signal+analysis+of+an+efficient+bridge-type+multi-input+DC+converter+for+hybrid+low-power+systems&
17	Sainadh Singh Kshatri, Venkata Anjani Kumar G, Chilakapati Lenin Babu, **Palepu Suresh Babu (4)**	EEE	An Enhanced Distribution System Performance with Optimization Techniques for Location of Electrical Vehicle Charging Stations	Journal of engineering and technology for industrial applications(JETIA)	11	54	53-59	Jul-25	International	2447-0228	Scopus & googlescholar	https://doi.org/10.5935/jetia.v11i54.1709	NA	https://www.scopus.com/pages/publications/105012868563?origin=resultslist	https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=iGK0AlwAAAAJ&sortby=pubdate&citation_for_view=iGK0AlwAAAAJ:4OULZ7Gr8RgC
18	N. Sreeramula Reddy, K. Naga Mohan Reddy, A. Sreenivasulu, B. Siva Ganesh Reddy, Suresh M and B. Sharath Kumar	EEE	Fuzzy Logic Control Based Control for fast EV charging stations in DC Micro Grid Systems	Journal of engineering and technology for industrial applications(JETIA)	12	59	1331-1343	Jun-26	International	2447-0228	Not Yet Indexed	https://doi.org/10.5935/jetia.v12i59.3427	NA	NA	NA

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET
Department of Mechanical Engineering
(a.ME) 1. Details of Journals published with ISSN from 1st July 2025 to 30 June 2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Jayakiran Reddy Esanakula; Kotakinda Balaji Nanda Kumar Reddy; Gondi Konda Reddy; **Kishorekumar Nandyala (5)**	Mechanical Engineering	Smart Materials for Crashworthiness and Structural Integrity in Electric Vehicles	International Journal of Engineering Trends and Technology	73	7	234-243	Jul-2025	International	231-5381	Scopus	10.14445/22315381/IJETT-V73I7P118	NA	https://www.scopus.com/pages/publications/105013193411?origin=resultslist	NA
2	**G. Suresh Babu**; A. Saikiran; K. Ravi Kumar; Chigilipalli Bharat Kumar; Ramakrishna Raghutu; Seepana Praveenkumar; Damodara Reddy Annapureddy; G. V. Krishna Pradeep; **B. Devaraj Naik (9)**	Mechanical Engineering	Thermal Performance of Erythritol-Based Biochar Composites for Medium-Temperature Energy Storage Applications	Energy Storage	7	7	01-13	Aug-2025	International	2578-4862	Scopus	10.1002/est2.70276	NA	https://www.scopus.com/pages/publications/105016843843?origin=resultslist	-
3	Pullaiah K.; **Kumar A. Hemantha (2)**	Mechanical Engineering	Exploring the Mechanical Response of Aluminum Composites Reinforced with SiN and ZrO2	Russian Physics Journal	68	7	1065-1071	Aug-2025	International	1064-8887	Scopus	10.1007/s11182-025-03531-y	NA	https://www.scopus.com/pages/publications/105014612145?origin=resultslist	NA
4	Samatham Madhukar; Sekhar S. Chandra; Kumar C. Naga; Veerendra Bana; **Babu G. Suresh**; Saritha P. **(6)**	Mechanical Engineering	Fatigue Life Prediction and Optimization of AA2219 Using Taguchi and Regression Analysis	Journal of Mines, Metals & Fuels	73	8	2579-2590	Aug-2025	International	0022-2755	Scopus	10.18311/jmmf/2025/49334	NA	NA	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Fatigue+Life+Prediction+and+Optimization+of+AA2219+Using+Taguchi+and+Regression+Analysis&btnG=
5	Kumar C. N.; Prasad N. L.; Chandra Shekar K.; **Keerthi N.**; Ravikiran C. (5)	Mechanical Engineering	Thermomechanical Buckling Response of Homogeneous and Functionally Graded Aluminium Beams Using Reddy's Higher-Order Theory	Journal of Mines, Metals & Fuels	73	10	-	Aug-2025	International	0022-2755	Scopus	10.18311/jmmf/2025/49754	NA	NA	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Thermomechanical+Buckling+Response+of+Homogeneous+and+Functionally+Graded+Aluminium+Beams

6	M. Yugandhar; S. Rajesh; D. Raju; **Kishorekumar Nandyala**; B. Surya Prakash **(5)**	Mechanical Engineering	Microstructural Characteristics of Friction Stir Welded AZ91 and AZ31B Magnesium Alloys	International Journal of Vehicle Structures & Systems	17	5	848	Aug-2025	International	0975-3060	Scopus	10.4273/ijvss.17.5.18	NA	https://www.scopus.com/pages/publications/105030653462?origin=resultslist	NA
7	Prasant Aniji; **Veera Sanjeeva Kumar**; Prasad KDV; Sumalatha; Dhivya Ranjith **(5)**	Mechanical Engineering	Eco-friendly Composites from Waste Materials	Ecological Engineering and Environmental Technology	26	11	60-82	Nov-2025	International	2719-7050	Scopus	10.12912/27197050/211229	NA	https://www.scopus.com/pages/publications/105022272002?origin=resultslist	NA
8	**B. Santosh Kumar**; S. Rajesh; M. Yugandhar; **G.I.K. Durga Bhavani**; D. Raju; B. Surya Prakash; T. Chinna Pamulety **(5)**	Mechanical Engineering & CSE	Experimental Investigation and Analysis of Friction Stir Welding on Dissimilar Materials (Cu and Al-6063)	International Journal of Vehicle Structures and Systems	17	4	676-679	Nov-2025	International	0975-3540	Scopus	10.4273/ijvss.17.4.21	NA	https://www.scopus.com/pages/feedback/author/review-profile?authorIds=60249959500	NA

Note: Entries are arranged chronologically from 01-07-2025 to 30-06-2026 (earliest to latest). NA indicates information not available in the supplied source.

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET

Department of ELECTRONICS AND COMMUNICATION ENGINEERING

(a.ECE) 1. Details of Journals published with ISSN from July 2025 to June 2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/ International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	**Himabindhu Jala, Karimullah Shaik (2)**	ECE	GLITCH-FREE CLOCK DISTRIBUTION USING FLIP-FLOP–CONTROLLED CLOCK GATING IN A 32-BIT RISC-V ARCHITECTURE	Journal of Engineering and Technology for Industrial Applications	12	59	2130-2135	30-06-2026	International	2447-0228	SCOPUS	https://doi.org/10.5935/jetia.v12i59.3833	NA	https://doi.org/10.5935/jetia.v12i59.3833	https://doi.org/10.5935/jetia.v12i59.3833
2	**Peddapullaiahgari Hariobulesu, Fahimuddin Shaik (2)**	ECE	AN EFFICIENT DEEP LEARNING FRAMEWORK FOR AUTOMATED DIABETIC RETINOPATHY DETECTION USING OCTA IMAGES	Journal of Engineering and Technology for Industrial Applications	12	59	1533-1544	30-06-2026	International	2447-0228	SCOPUS	https://doi.org/10.5935/jetia.v12i59.3568	NA	https://doi.org/10.5935/jetia.v12i59.3568	https://doi.org/10.5935/jetia.v12i59.3568
3	**Shaik Karimullah,** Ramireddy, Lakshmi Narasimha Reddy; Mudassir Khan; Vasi Lakshmi Narasimha; Mavillapalle Nanda Kishore; Patan Mohammed Aasif Khan; **Fahimuddin Shaik (8)**	ECE	Adaptive Video Processing Through Intelligent Optimization for Enhancing Transmission Quality	AIP Conference Proceedings	3410	1	30006	21-05-2026	International	0094243X	SCOPUS	https://doi.org/10.1063/5.0329130	NA	https://doi.org/10.1063/5.0329130	https://doi.org/10.1063/5.0329130

4	Narapusetti Adinarayana , **CH Nagaraju (2)**	ECE	Performance Analysis of Intra-Pulse Modulation Recognition of Radar Signals Via Hand-Crafted Feature Extraction and Classification	International Journal of Engineering Trends and Technology	74	4	27-36	29-04-2026	International	2231-5381	SCOPUS	https://doi.org/10.14445/22315381/IJETT-V74I4P103	NA	https://doi.org/10.14445/22315381/IJETT-V74I4P103	https://doi.org/10.14445/22315381/IJETT-V74I4P103
5	Shaik Rajeena; **Shaik Karimullah (2)**	ECE	A Comprehensive Review of Memory Architectures and Network Interfaces and Advancements in High-Bandwidth and Low-Latency Systems	Digital Technologies Research and Applications	5	2	63-74	15-04-2026	International	2754-5687	SCOPUS	https://doi.org/10.54963/dtra.v5i2.1745	NA	https://doi.org/10.54963/dtra.v5i2.1745	https://doi.org/10.54963/dtra.v5i2.1745
6	**Venkatesh C**.Fahd N. Al-Wesabi, Haya Mesfer Alshahrani, Abdulsamad Ebrahim Yahya, Ajmeera Kiran, **Chinna Babu J.**, **Sivayamini L**, Afroj Alam (7)	ECE	An optimal diagnosis model for pancreatic cancer prediction based on deep learning method	PeerJ	–	–	(1-23)	27-04-2026	International	2167-8359	SCOPUS	https://doi.org/10.7717/peerj-cs.3541	NA	https://doi.org/10.7717/peerj-cs.3541	https://doi.org/10.7717/peerj-cs.3541
7	**Patti Vasu, CH Nagaraju** (2)	ECE	Performance Evaluation of Error Correction Techniques in 6G Quantum Communication	SSRG International Journal of Electronics and Communication Engineering	13	1	99 to 106	14-01-2026	International	2348-8549	SCOPUS	https://doi.org/10.14445/23488549/IJECE-V13I1P109	NA	https://doi.org/10.14445/23488549/IJECE-V13I1P109	https://doi.org/10.14445/23488549/IJECE-V13I1P109
8	**Fahimuddin Shaik**, Pravin Ramdas Kshirsagar,Sivaneasan Bala Krishnan, Vijaya Krishna Akula, Shrikant Vijayrao Sonekar, Ramakantha B. Reddy (6)	ECE	Enhanced DR Screening Using DiabDHS-Net: A Deep Learning Approach with FGK Clustering and Morphological Processing	Engineering, Technology & Applied Science Research	15	5	26874-26882	06-10-2025	International	1792-8036	SCOPUS	https://doi.org/10.48084/etasr.12496	NA	https://doi.org/10.48084/etasr.12496	https://doi.org/10.48084/etasr.12496
9	**M Venkata Dasu, C Venkatesh, L Sivayamini,** M Shivani, M Penchalamma, N Sandhya, P Raju, M Ravi Kiran **(8)**	ECE	Automated Left Ventricle Segmentation in MRI Using U-Net Architecture	Proceedings of International Conference on Computational Complexity and Intelligent Algorithms: IC3IA 2025	–	–	489-501	02-10-2025	International	2524-7565	SCOPUS	https://doi.org/10.1007/978-981-96-7473-2_36?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle	NA	https://doi.org/10.1007/978-981-96-7473-2_36?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle	https://doi.org/10.1007/978-981-96-7473-2_36?urlappend=%3Futm_source%3Dresearchgate.net%26utm_medium%3Darticle

10	**Peddapullaiahgari Hariobulesu , Fahimuddin Shaik (2)**	ECE	Enhanced multi-grade diabetic retinopathy detection and classification via ensembled deep learning model from retinal fundus images	Expert Systems with Applications	285	–		01-08-2025	International	1873-6793	SCOPUS	https://doi.org/10.1016/j.eswa.2025.128116	NA	https://doi.org/10.1016/j.eswa.2025.128116	https://doi.org/10.1016/j.eswa.2025.128116
11	Asif Hussain Shaik **Fahimuddin Shaik Karimullah Shaik Sureshbabu G (4)**	ECE & ME	LinBGN-Net: A Unified Linguistic Framework for Multi-Task Text Classification in Telugu Using BERT, GCN, and Naive Bayes	Bilingual Publishing Group	7	7	518–539	15-07-2025	International	2705-0610	SCOPUS	https://doi.org/10.30564/fls.v7i7.9470	NA	https://doi.org/10.30564/fls.v7i7.9470	https://doi.org/10.30564/fls.v7i7.9470

R & D Incharge

Head of the Department

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET
Department of CSE
(a.CSE) 1. Details of Journals published with ISSN from JULY 2025 to JUNE 2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Dr.K.Bala K. Ashok Kumar, D. Venu, Bhanu Prakash Dudi, Siva prasad V V. Nirmala	CSE	Covid-19 diagnosis using privacy-preserving data monitoring: an explainable AI deep learning model with blockchain security	Journal of Medical Engineering & Technology	49	8	355-373	22-Aug-25	International	0309-1902	Scopus	10.1080/03091902.2025.2542273	NA	https://www.scopus.com/sourceid/15952	NA
2	Dr.Subba Rao Medabalimi, Keerthi Naidu Katuri	CSE	A Comprehensive Review on Plant Leaf Disease Detection Systems Using Machine Learning and Deep Learning Techniques	Digital Technologies Research and Applications	VOL. 5	Issue 1	297-310	Mar-26	International	Pending	Scopus	DOI: https://doi.org/10.54963/dtra.v5i1.1746	NA	NA	NA
3	S.RIYAZ BANU	CSE	A Robust Fragile Watermarking Approach For Image Tampering Detectionand Restoration Utilizing Hybrid Transforms	Intrenational journal of advance and innovative research	vol-13	issue 1(v)	18-26	Mar-26	International	2394-7780	Scopus	https://iaraedu.com/pdf/ijair-volume-13-issue-1-v-january-march-2026.pdf	NA	NA	NA
4	Dr K Bala	CSE	Federated Deep Reinforcement Q-Learning For Secure And Energy-Efficient Data Routing In Internet Of Things Networks	Peer-to-Peer Networking and Applications	VOL-19		pae 1-page 25	Apr-26	International	1936-6442	Scopus	10.1007/s12083-026-02236-4	NA	NA	NA
5	N.MERRIN PRASANNA	CSE	COMPARATIVE ANALYSIS OF ADVANCED SHIELDING TECHNIQUES FOR CROSSTALK MITIGATION IN MULTI-WALLED CARBON NANOTUBE TSV S	ARPN Journal of Engineering and Applied Sciences	VOL. 20,	Issue-24	2067-2073	Dec-25	International	1819-6608	Scopus	https://www.arpnjournals.org/jeas/research_papers/rp_2025/jeas_1225_9760.pdf	NA	https://www.scopus.com/authid/detail.uri?authorId=57216503538	NA

TOTAL=6

Note:

Ensure that all entries are arranged in **chronological order (latest first)**, and **no field is left blank** — fill all fields **as applicable and available with valid sources**.

If any information is **not available**, clearly mention **"NA"** in that field.

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET															
Department of AI&DS															
1. Details of Journals published with ISSN from July 2025 to June 2026															
S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/ International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
		NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL	NIL

Note:
Ensure that all entries are arranged in **chronological order (latest first)**, and **no field is left blank** — fill all fields **as applicable and available with valid sources.**
If any information is **not available**, clearly mention **"NA"** in that field.

Annamacharya Institute of Technology and Sciences/ Annamacharya University, Rajampet
Department of Artificial Intelligence and Machine Learning
(a.ML) 1.List of Research Papers published in Journals with ISSN by the faculty from 01/07/2025 to 30/06/2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/ International	ISSN	WoS/ SCOPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Ramana Kadiyala, **C. V. Lakshmi Narayana,** S. China Ramu, Narsaiah Putta, Shyam Sunder Pabboju, B. Ramana Reddy (6)	AI & ML	Trust-Aware Federated Learning with Differential Privacy for Secure AIoT in Critical Infrastructures	EAI Endorsed Transactions on Internet of Things	11	2025	1-11	12-2025	International	2414-1399	Scopus & Google Scholar	10.4108/eetiot.10656	-NA-	https://www.scopus.com/pages/publications/105025377006?origin=resultslist	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=rust-Aware+Federated+Learning+with+Differential+Privacy+for+Secure+AIoT+in+Critical+Infrastructures&btnG=

2	**J. Krishna** J. Kavya Ragula Harsha Vardhan Reddy U. Soma Sekhar G. Manikanta K. Venkata Thriveni (6)	AI & ML	Forecasting Crypto Currency Prices with Deep Learning: Short to Long Horizon	Asian Journal of Computer Science and Technology	15	1	29-36	4-2026	International	2583-7907	Google Scholar	https://doi.org/10.70112/ajcst-2026.15.1.4416	-NA-	-NA-	https://scholar.google.com/scholar?hl=en&as_sdt=0%2C5&q=Forecasting+Crypto+Currency+Prices+with+Deep+Learning%3A+Short+to+Long+Horizon&btnG=

Note: Ensure that all entries are arranged in chronological order (latest first), and no field is left blank — fill all fields as applicable and available with valid sources.
If any information is not available, clearly mention "NA" in that field.

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET/ ANNAMACHARYA UNIVERSITY, RAJAMPET

Department of Humanities and Sciences

1. Details of Journals published with ISSN from 01-07-2025 to 30-06-2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	J.V.V.N. Kesava Rao J. Vijay Kumar , U. Mahesh Kumar , A. GuruSampath Kumar, K.Vagdevi , P. Siva Kumar4, P. Rosaiah , G. Prathibha , G. Venkata Ramana, **L. Obulapathi (10)**	H&S (Physics)	Structure and Dielectric behavior of MnxZn1-xTiO3, (x = 0.1, 0.3, & 0.5) ceramics for microwave applications with enhanced permittivity.	Science of Sintering	N.A	N.A	N.A	01-07-2025	Interantional	1820-7413	Google Scholar	https://doi.org/10.2298/SOS250507033V	N.A	N.A	https://scholar.google.co.in/citations?view_op=view_citation&hl=en&user=dexD3SQAAAAJ&sortby=pubdate&citation_for_view=dexD3SQAAAAJ:3fE2CSJIrl8C
2	A. ArunKumar, Jyothi Yarlagadda, **I.Sreevani**, Boopathy G, Mohit Tiwari, Avinash Kumar, L.Ganesh BabuT. Venkatajalapathi **(8)**	H&S (Chemistry)	Optimization of Lightweight Polymer Composites Using Finite Element analysis Machine Learning and Topology Optimization Techniques for Aerospace Applications	Journal of Polymer & Composites	13	Special Issue 6	693 - 709	10-09-2025	INTERNATIONAL	2321-2810	WOS & Google Scholar	https://journals.stmjournals.com/jopc/article=2025/view=228960/	https://www.webofscience.com/wos/woscc/full-record/WOS:001659193500001	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=n3itm24AAAAJ&citation_for_view=n3itm24AAAAJ:4DMP91E08xMC
3	A. ArunKumar, Jyothi Yarlagadda,**I.Sreevani**, Boopathy G, Mohit Tiwari, Avinash Kumar, L.Ganesh T. Venkatajalapathi **(8)**	H&S (Chemistry)	Smart Polymer Composites With Multifunctional Capabilities Integrating Electroactive Polymers Conductive Nanofillers and Flexible Electronics for Advanced Sensing and Actuation …	Journal of Polymer & Composites	13	Special Issue 6	S946 -S965	09-02-2025	INTERNATIONAL	2321-2810	WOS & Google Scholar	https://journals.stmjournals.com/jopc/article=2025/view=225307/	https://www.webofscience.com/wos/woscc/full-record/WOS:001660397500001	N.A	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=n3itm24AAAAJ&citation_for_view=n3itm24AAAAJ:aqlVkmm33-oC
4	**G Subbaiah**, Nasina Madhusudhana Rao, Nukka Praveenkumar, YP Subbaiah, Anju Babu, **S Harinath Babu (6)**	H&S (Physics)	Rare earth and transition metals (Gd–Ni) codoped CeO2 nanopowders: synthesis, structural, optical and magnetic properties	Indian Journal of Physics	99	13	5015-5024	14-08-2025	Interantional	0973-1458	WOS & Scopus & Google Scholar	https://doi.org/10.1007/s12648-025-03748-0	https://www.webofscience.com/wos/woscc/full-record/WOS:001549933300001	https://www.scopus.com/pages/publications/105013457676?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=apXXI8AAAAAJ&sortby=pubdate&citation_for_view=apXXI8AAAAAJ:NhqRSupF_8C
5	Pathan Parhana, **L. Lakshmi Devi**, Shaik Allahudheen , B.Yugandhar and M.V.Lakshmaiah **(5)**	H&S (Physics)	Influence of Film Thickness on Surface Morphology of Nanostructured Azo Thin Films Deposited by Rf Magnetron Sputtering	Power System Technology	49	3	812-819	22-07-2025	Interantional	1000-3673	Google Scholar	https://powertechjournal.com/index.php/journal/article/view/2158	N.A	N.A	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=yTEJ8P0AAAAJ&sortby=pubdate&citation_for_view=yTEJ8P0AAAAJ:zYLM7Y9cAGgC
6	Nakka Praveenkumar, K. V. Madhuri, Nasina Madhusudhana Rao, Lakshmi Rajesh Chebrolu, **G Chinna Venkata Subbaiah**, Anjali Bhattacharyya, Anju Babu, Ch. Linga Raju **(8)**	H&S (Physics)	A Prespective of Recent Progress in Zn3P2 (II-V)Diluted Magnetic Semiconductor for Spintronic Applications	OAJRC Material Science	7(1)	1	13-23	21/10/2025	International	0973-1458	WOS	https://www.hillpublisher.com/ArticleDetails/5500	NA	https://www.scopus.com/authid/detail.uri?authorId=58832408900	NA
7	Dr. G.V.S. Anatha Lakshmi, Dr Sudhakar Beedam, R. Jayanthi, **G V Narmatha**, Dr. Iliyas Ali Shaik **(5)**	H &S (English)	ADMINISTRATIVE DYNAMICS AND NARRATIVE PSYCHOMETRICS: EXPLORING INSTITUTIONAL TRUST, RESILIENCE, AND PSYCHOLOGICAL CONSTRUCTS THROUGH ENGLISH LITERATURE	LEX LOCALIS-JOURNAL OF LOCAL SELF-GOVERNMENT	23	S 5	1795-1806	Aug-25	INTERNATIONAL	1855-363X	Google Scholar	https://doi.org/10.52152/801484	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=JjWFHrwAAAAJ&citation_for_view=JjWFHrwAAAAJ:Zph67rUs4hoC
8	**N. Raghunatha Reddy, Dr. M. Naga Raja Kumar, Dr. Sagili Satyam (3)**	H&S (English)	THE IMPACT OF TECHNOLOGY ON ENGLISH SPELLING & LANGUAGE LEARNING	International Journal of Research and Analytical Reviews	13	1	263-267	March,2026	International	2524-2455	Google Scholar	https://doi.org/10.56975/ijrar.v13i1.329486	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=fKeJoQ0AAAAJ&citation_for_view=fKeJoQ0AAAAJ:hqOjcs7Dif8C
9	C. Ramaiah, **Dr. Sagili Satyam, Dr.M. Naga Raja Kumar, N.Raghunatha Reddy (4)**	H&S (English)	Social Milieu in Aravind Adiga's Novels	International Journal of Research and Analytical Reviews	13	1	769-774	March,2026	International	2348-1269	Google Scholar	https://doi.org/10.56975/ijrar.v13i1.329486	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7NIBCQ0AAAAJ&citation_for_view=7NIBCQ0AAAAJ:MXK_kJrjxJIC
10	M.Chakrapani, **N. Raghunatha Reddy, Dr. K. Janardhan (3)**	H&S (English)	TEACHERS' INSIGHTS ON MATHEMATICS AND ENGLISH AS LANGUAGES	International Journal of Research and Analytical Reviews	13	2	635-644	March 2026	International	2348-1269	Google Scholar	https://doi.org/10.56975/ijrar.v13i1.329486	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=fKeJoQ0AAAAJ&citation_for_view=fKeJoQ0AAAAJ:roLk4NBRz8UC
11	**Dr.M. NAGA RAJA KUMAR, Dr.Sagili Satyam, Mr.N.Raghunatha Reddy (3)**	H&S (English)	Artificial Intelligence And Vocabulary Acquisition: Transforming English Language Learning In Higher Education	International Journal of Creative Research Thoughts (IJCRT)	14	Issue 5 May 2026	i387-i394	March 2026	International	1873-3956	Google Scholar	https://doi.org/10.56975/ijcrt.v14i5.309504	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7NIBCQ0AAAAJ&citation_for_view=7NIBCQ0AAAAJ:5nxA0vEk-isC
12	**B. Saroja Naik, Dr. M. Naga Raja Kumar (2)**	H&S (English)	Artificial Intelligence-Mediated Vocabulary Development: An Empirical Investigation into Lexical Enhancement among Engineering Students	INTERNATIONAL JOURNAL OF RESEARCH AND ANALYTICAL REVIEWS (IJRAR.ORG)	13	2	950-962	March ,2026	International	09754415	Google Scholar	https://doi.org/10.25258/ijddt.16.2or.55	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7NIBCQ0AAAAJ&citation_for_view=7NIBCQ0AAAAJ:3fE2CSJIrl8C
13	**G V NARMATHA, Dr. M. Praveena, S. Sakkumma (3)**	H&S (English)	Reimagining Human–Nature Relationships: An Eco-Spiritual Study of Gun Island	International JOURNAL OF CREATIVE RESEARCH THOUGHTS	14	5 MAY 2026	J815-819	APRIL,2026	International	2320-2882	Google Scholar	https://doi.org/10.5281/zenodo.19691230	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=JjWFHrwAAAAJ&citation_for_view=JjWFHrwAAAAJ:YOwf2qJgpHMC
14	**Marella Lakshmi Narasimha (1)**	H&S (English)	The Self Between Two Worlds: Diaspora, Memory, and Identity in The Namesake and Midnight's Children	International Journal for Research Trends in Social Science & Humanities	5	2	1-8	May 2026	International	2320-2882	Google Scholar	https://doi.org/10.5281/zenodo.19672452	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=IIKGlNEAAAAJ&cstfl=1&email_for_op=mmrclakshmanarasimha123%40gmail.com&citation_for_view=IIKGlNEAAAAJ:u-x6o8ySG0sC
15	**S Sakkumma, N Hari Chandana, G. V Narmatha (3)**	H&S (English)	Predicament of Feminist Consciousness in the select Novels of Toni Morrison	International Journal of Research and Analytical Reviews	13	Issue 2	844-845	April, 2026	International	2584-2455	Google Scholar	https://doi.org/10.56975/ijrar.v13i2.335366	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=JjWFHrwAAAAJ&citation_for_view=JjWFHrwAAAAJ:_kc_bZDykSQC

16	**Dr.Sagili.Satyam, Dr.Nagula Ankanna, Dr.M.NagaRajaKumar (3)**	H&S (English)	Postcolonialism in the Works of Arundhati Roy's The God of Small Things and The Ministry of Utmost Happiness	International Journal of Research and Analytical Reviews	13	1	684-689	May, 2026	International	2520-8160	Google Scholar	https://doi.org/10.56975/ijrar.v13i1.329482	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7NIBCQ0AAAAJ&citation_for_view=7NIBCQ0AAAAJ:8k81kl-MbHgC
17	**Dr.M.Nagarajakumar, Dr. Sagili Satyam (2)**	H&S (English)	Enhancing Vocabulary among Tertiary Level Learners Using Artificial Intelligence: A Pedagogical and Theoretical Exploration	International Journal of Research and Analytical Reviews	13	ISSUE 1	670-683	May, 2026	International	2348-1269	Google Scholar	https://doi.org/10.56975/ijrar.v13i1.329487	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7NIBCQ0AAAAJ&citation_for_view=7NIBCQ0AAAAJ:hqOjcs7Dif8C
18	Sai Kumar Perla, **Pugazhenthi I,** Laxminarayana Eppakayala.**(3)**	H & S(Chemistry)	Design, Synthesis and Anticancer Evaluation of amide derivatives of oxazole-pyridine linked quinazolines	Chemical Data Collections	63	2	101240	June 2026	international	2405-8300	SCOPUS & Google Scholar	https://doi.org/10.1016/j.cdc.2026.101240	NA	https://www.scopus.com/feedback/author/reviewAuthorProfile.uri?authorIds=55791934200	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=uZMtH8oAAAAJ&sortby=pubdate&citation_for_view=uZMtH8oAAAAJ:ISLTfruPkqcC
19	Malla Balakrishna, V. Poli Reddy, Ramu Boddepalli, Ch Rajasekhar, **V. Vishnuvardhan**, M. Gnana Kiran, S. Phani Kumar, Manjula Bharathi Nagulapati, A. Chitti Babu, M. Ramanaiah **(10)**	H&S (E.S)	Interplay of layered Aurivillius structure and nanoscale morphology in Bi3TiNbO9 nanoparticles for ferroelectric and photocatalytic applications	Materials Chemistry and Physics	360		132670	April, 2026	International	2348-1269	Google Scholar	https://doi.org/10.1016/j.matchemphys.2026.132670	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=nmRZ7NcAAAAJ&sortby=title&citation_for_view=nmRZ7NcAAAAJ:W7OEmFMy1HYC
20	Dr. Jugulkar Lalitkumar Maikulal, **Dr. Marripalli Pavani**, Dr. Shivaji Suryabhan Aher, Dr.S.Rajanarayanan, Dr. Rajendra Himmatrao Shinde, Dr. Navneetsinh Shivkumar Yadav **(6)**	H&S (Physics)	Computational Modelling and Structural Optimization of Hybrid Composite Materials for Lightweight Mechanical Components	International journal of drug delivery technology	16	20s	460-469	March ,2026	International	2320-2882	SCOPUS & Google Scholar	https://doi.org/10.56975/ijert.v14i5.309504	Not Yet indexed	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=CFvVPx4AAAAJ&citation_for_view=CFvVPx4AAAAJ:Se3iqnhoufwC
21	**M Parvathi,** J Sukanya, Sudhakaru Komera, **P. chandra Reddy**, N Udaya Bhaskara Varma **(5)**	H&S (Maths)	Modeling of MHD Hybrid Nanofluid Flow with Radiation and Chemical Reaction Effects for Advanced Composite and Energy Applications	Journal of Polymer Composites	14	1	648-660	May, 2026	International	2320-2882	WOS	https://journals.stmjournals.com/article/article=2026/view=235603/	https://www.webofscience.com/wos/woscc/full-record/WOS:001715094400002	NA	NA
22	Kotha Raghavendra, Charankumar Ganteda, Obulesu Mopuri, **Ramesh Babu Kalya**, Satish Kumar Singh, Rajyalakshmi Kottapalli, Farkhod Rakhmonov, Nainaru Tarakaramu **(8)**	H&S (Maths)	Magnetohydrodynamic double-diffusive heat and mass transfer over a semi-infinite inclined porous plate with internal heat generation, thermal radiation, and dufour effect	Multiscale and Multidisciplinary Modeling, Experiments and Design	9	145	1-12	June, 2026	International	2321-2810	WOS&Scopus	https://doi.org/10.1007/s41939-026-01223-9	https://www.webofscience.com/wos/woscc/full-record/WOS:001786041800001	Not Yet indexed	NA
23	**S. Harinath Reddy,** R. Chandra Sekhar Reddy, Aruna Ganjikunta, P. Ramakrishna Reddy, **P. Chandra Reddy.(5)**	H&S (Maths)	Hybrid Numerical–Artificial Neural Network Study of Chemically Reactive MHD Nanofluid Flow Incorporating Thompson–Troian Slip and Stefan Blowing.	Journal of Polymer & Composites.	14	3	409-425	May, 2026	International	**2321-2810**	WOS & Google Scholar	https://doi.org/10.37591/JOPC.v14i03.243964	https://www.webofscience.com/wos/woscc/full-record/WOS:001809822300007	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=j08JEZEAAAAJ&sortby=pubdate&citation_for_view=J08JEZEAAAAJ:2VqYfGsSfTEC
24	**G Chinna Venkata Subbaiah**, Nasina Madhusudhana Rao, Nakka Praveenkumar(3)	H&S (Physics)	Impact of Gd-Cu Co-Doping on the Structural, Optical, and Magnetic Characteristics of CeO2 Nanopowders Synthesized by Solid-State Reaction	Journal of Electronic Materials	54	12	11250-11259	2025/12	International	1543-186X	SCOPUS & Google Scholar	https://link.springer.com/article/10.1007/s11664-025-12574-3#citeas	NA	https://www.scopus.com/pages/publications/105013456765?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=apXXl8AAAAAJ&sortby=pubdate&citation_for_view=apXXl8AAAAAJ:NhqRSupF_l8C
25	**O Akbar Basha, I Pugazhenthi**, K. Mohammed Rehan, S Mohammed Safiullah (4)	H & S(Chemistry)	Electrochemical and structural evaluation of Poly (VTZ-co-GMA)/ZrO_2 nanocomposite coatings for corrosion protection of mild steel	Chemical Papers	80	2	1989-2004	Feb 2026	international	03666352, 25857290	SCIE, SCOPUS, WOS	https://doi.org/10.1007/s11696-025-04505-7	https://www.webofscience.com/wos/woscc/full-record/WOS:001642872100001	https://www.scopus.com/feedback/author/reviewAuthorProfile.uri?authorIds=55791934200	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=uZMtH8oAAAAJ&sortby=pubdate&citation_for_view=uZMtH8oAAAAJ:J_g5lzvAfSwC
26	**O. Akbar Basha, I. Pugazhenthi**, S. Mohammed Safiullah (3)	H&S (Chemistry)	Dielectric and optical properties of poly(4-methyl-5-vinylthiazole) and its zirconia nanocomposite: a novel heteroaromatic system	Materials Letters	405	15	139765	Feb, 2026	International	0167577X, 18734979	SCopus & Google scholar	https://www.sciencedirect.com/science/article/abs/pii/S0167577X25017951	NA	https://www.scopus.com/feedback/author/reviewAuthorProfile.uri?authorIds=55791934200	https://scholar.google.com/citations?hl=en&user=uZMtH8oAAAAJ&view_op=list_works&sortby=pubdate
27	Nakka Praveenkumar, Nasina Madhusudhana Rao, Mathew K Moodley, Gili Lifshitz Sherzer, KV Madhuri, Anjali Bhattacharyya, Anju Babu, **G Chinna Venkata Subbaiah**, Lakshmi Rajesh Chebrolu, B Sree Sesha Sudha Gayatri, Ravi Kumar Yohan, DV Krishna Reddy, Ch Linga Raju (13)	H&S (Physics)	Structural,Optical, and Photoluminescence Properties of Cadmium -Doped Zinc Phosphide Nanoparticles Synthesized by Solid State Reaction	Journal of Electronic Materials	55	9	3034-3044	01.12.2025	International	1543-186X	SCIE & Google scholar	https://doi.org/10.1007/s11664-025-12574-3	https://www.webofscience.com/wos/woscc/full-record/WOS:001633252700001	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=apXXl8AAAAAJ&sortby=pubdate&citation_for_view=apXXl8AAAAAJ:NhqRSupF_l8C
28	**V. Ravi Kumar**, G. Venu gopal Reddy (2)	H&S (Maths)	Thermal Radiation and MHD Effects on entropy Generation In casson-Williason Hybrid Nanofluid flow Over a Rotating disk	International Journal of Applied Mathematics	38	10	2613-2630	Aug-2025	International	1314-8060	Google Scholar	https://doi.org/10.12732/ijam.v38i10s.1143	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=xJkTkAEAAAAJ&cstart=20&pagesize=80&citation_for_view=xJkTkAEAAAAJ:4DMP91E08xMC
29	**B.saroja Naik (1)**	H &S (English)	Revolutionizing English Language Teaching	International Journal for Research Trends in Social Science & Humanities	4	2	1-6	21April2026	International		Google Scholar	https://doi.org/10.5281/zenodo.19691230	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=g4-OrAAAAAJ&citation_for_view=g4-OrAAAAAJ:M3ejUd6NZC8C
30	**P Suneetha Naidu, Dr M Praveena (2)**	H &S (English)	The Contribution of Youth in Nation Building - A Case Study on Young Indian's Initiative	International Journal of Science, Engineering and Technology	13	3	1-6	July-2025	International	2348-4098	Google Scholar	https://www.ijset.in/the-contribution-of-youth-in-nation-building-a-case-study-on-young-indians-initiative_194/	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=-I9sGR8AAAAJ&citation_for_view=-I9sGR8AAAAJ:IjCSPb-OGe4C
31	**N. Hari Chandana, S. Sakkumma, B.Sowjanya Swapna Priya (3)**	H &S (English)	A Critical Study of Race, Gender and Identity in the novels of Toni Morrison	International Journal of Research and Analytical Reviews	13	2	841-843	26-05-2026	International	2348-1269	Google Scholar	https://doi.org/10.56975/ijrar.v13i2.335367	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=xN4JiIQAAAAJ&citation_for_view=xN4JiIQAAAAJ:d1gkVwhDpl0C

32	V. Beula Shanthi Ammani Ammal, C.R. Vijay, Mr. S. Muthukumar, **Shaik Mohammed Ghouse**, Mr. K. Ramanujam, Mr. Shyam D. Bawankar	H&S (Chemistry)	Machine Learning Enabled IoT Framework for Early Diagnosis and Targeted Drug Delivery	International Journal of Drug Delivery Technology	13	39s	812-822	30-04-2026	International	0975 4415	SCopus & Google scholar	10.25258/ijddt.16.39s.100	NA	Not Yet indexed	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=0AFrVu8AAAAJ&sortby=pubdate&citation_for_view=0AFrVu8AAAAJ:WpdgIr-vW9MC

ANNAMACHARYA INSTITUTE OF TECHNOLOGY AND SCIENCES, RAJAMPET

Department of MBA

(a. MBA) List of Research Papers published in Journals with ISSN by the faculty from 01/07/2025 to 30/06/2026

S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg.	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Dr.E.Gnanaprasuna Dr. B. Arun Kumar Dr. Avula Sreenivasulu **Dr.T.Navaneetha (4)**	MBA	Exploring Financial innovation through cryptocurrency:A Global systematic and Bibliometric Analysis	International Journal of Accounting and Economis studies	12	4	767-774	Aug-25	International	2309-4508	Scopus	https://doi.org/10.14419/1rv9b847	NA	https://www.scopus.com/pages/publications/105015076347?origin=resultslist	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7_xAt58AAAAJ&citation_for_view=7_xAt58AAA
2	V. Bhagyamma Dr. K. Rakesh **K SUBBAREDDY (3)**	MBA	IMPACT OF CULTURAL FACTORS ON CONSUMER BEHAVIOUR :A CROSS -CULTURAL STUDY	JOURNAL OF IMFORMATICCS EDUCATION AND RESEARCH	VOL 5	3	1085-1096	25-07-2025	INTERNATIONAL	1526-4726	ABDC	https://jier.org/index.php/journal/article/view/3340	NA	NA	NA
3	Dr. E. Gnanaprasuna, Dr. Senthamizhselvi A. , Dr.Avula Sreenivasulu, **Dr. V. Mouneswari,** Dr. B. Arun Kumar, Dr. K.Sankar Reddy **(6)**	MBA	Impact of Capital Structure on The Performance of Non-Financial Firms in Emerging Markets: Evidence from The Bombay Stock Exchange Using GMM Estimation	International Journal of Accounting and Economics Studies	12	6	624-631	10-2025	International	2309-4508	SCOPUS	https://www.sciencepubco.com/index.php/IJAES	NA	https://www.researchgate.net/publication/396674713_Impact_of_Capital_Structure_on_The_Performance_of_Non-Financial_Firms_in_Emerging_Markets_Evidence_from_The_Bombay_Stock_Exchange_Using_GMM_Estimation	
4	Dr. Rakesh Vasantrao Patil Dr Pradip Sanatkumar Padhye Dr. Ajayraj M Vyas **B.Swathi** Dr. Deepti Ibrahim Cholakkal **(5)**	MBA	Triple Bottom Line Approach To Business:Balancing Profit,People and Planet Through Effective Management	International Journal Of Environmental Sciences	11	SEP	5209-5216	23-09-2025	International	2229-7359	NA	NA	NA	NA	NA
5	Y. YOGASREE, K. **VENKATASUBBAIAH (2)**	MBA	A STUDY ON RISK & RETURN ANALYSIS OF SELECTED MUTUAL FUNDS WITH REFERENCE TO DEFC BANK, NEW BOYANAPALLI, RAJAMPET, KADAPA DISTRICT	International Journal Of Science and Technology	2	########	10-14	02 May 2026	International	2049-7318	Google Scholar	NA	NA	NA	NA

6	P Jasmitha ,**Dr. V. Mouneswari (2)**	MBA	A Study on Financial Performance	Special issue on Trends in Financial Analysis International Journal of Science and Technology	2	2S1	27-31	2026	INTERNATIONAL	2049-7318	PEER REVIEWED	10.5281/zenodo.19808641	https://scirojournals.com/index.php/ijst	NA	NA
7	V.Sirisha, **B.Swathi (2)**	MBA	Exploring Employee Satisfaction in composite Manufacturing:Insights From Triovision Composite Technologies	Journal of Organizational &Human Resource Management	1	2	46-52	Feb 2026	International	2349-0691	PEER REVIEWED	NA	NA	NA	NA
8	Thota Naga Lakshmi & **Dr. Mouneswari V (2)**	MBA	EMPLOYEE MOTIVATION STRATEGIES IN THE CEMENT SECTOR: EVIDENCE FROM ULTRATECH CEMENT, TADIPATRI, ANDHRA PRADESH	Journal of Organizational &Human Resource Management	1	2	94-100.	Feb 2026	NATIONAL	PISSN 3117-7867 EISSN 3117-7875	PEER REVIEWED	- www.mcmed.us/journal/johrm	NA	NA	NA
9	B.Dhathri & **B Koushik(2)**	MBA	"A Study on Customer Retention	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	2	9-12	Feb 2026	National	2049-7318	PEER REVIEWED	https://scirojournals.com/index.php/ijst	NA	NA	NA
10	Mahesh & B Koushik **(2)**	MBA	A Study on Inventory Management with	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	2SI	10-14	Feb 2026	National	2049-7318	PEER REVIEWED	https://scirojournals.com/index.php/ijst	NA	NA	NA
11	Dinesh Y & **B Koushik (2)**	MBA	A STUDY ON IMPACT OF DIGITAL MARKETING ON LEAD	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	2	10-14	Feb 2026	National	2049-7318	PEER REVIEWED	https://scirojournals.com/index.php/ijst	NA	NA	NA
12	Bhavana Priya & **B Koushik (2)**	MBA	A STUDY ON CASH MANAGEMENT WITH	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	2SI	10-14	Feb 2026	National	2049-7318	PEER REVIEWED	https://scirojournals.com/index.php/ijst	NA	NA	NA
13	Y Anusha & B Koushik **(2)**	MBA	IMPACT OF PRODUCT PACKAGING ON CONSUMER BUYING DECISION WITH REFERENCE TO KOTTHA'S FOODS ,KADAPA	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	2SI	10-14	Feb 2026	National	2049-7318	PEER REVIEWED	https://scirojournals.com/index.php/ijst	NA	NA	NA
14	Sammeta Venkateswara Raju & **Dr. Mouneswari V (3)**	MBA	EVALUATING FINANCIAL PERFORMANCE IN MANUFACTURING SECTOR: EVIDENCE FROM CHAITANYA CHEMICALS, KADAPA	Journal of Finance and Operations Management	1	1	:09-14.	Feb 2026	NATIONAL	PISSN 3117-7840 EISSN 3117-7859	PEER REVIEWED	NA	NA	NA	NA

15	Batthala Veerasowjanya & Dr. Mouneswari V **(3)**	MBA	AN EMPIRICAL STUDY ON EMPLOYEE SATISFACTION IN THE CHEMICAL INDUSTRY: EVIDENCE FROM CHAITANYA CHEMICALS, KADAPA	Journal of Organizational &Human Resource Management	1	2	53-59.	Feb 2026	NATIONAL	PISSN 3117-7867 EISSN 3117-7875	PEER REVIEWED	NA	NA	NA	NA
16	B.LAKSHMI , **Dr.V.MOUNESWARI (2)**	MBA	A STUDY ON FINANCIAL RISK MANAGEMENT AND ITS EFECT ON THEPERORMANCE OF HDFC BANK,RAJAMPETA	INTERNATIOANL JOURNAL OF SCIENCE AND TECHMOLOGY	2	1	33-36	Feb 2026	TERNATIONAL		PEER REVIEWED	NA	NA	NA	NA
17	U.Sravani, **B.Swathi (2)**	MBA	Performance Appraisal Practices in Manufacturing Firms:Evidence from Triovision Composite Technologies,Kadapa.	Journal of Organizational &Human Resource Management	1	1	33-39	Feb 2026	TERNATIONA	2349-0691	PEER REVIEWED	NA	NA	NA	NA
18	T.Siva kumari, **B.Swathi (2)**	MBA	Work Life Balance in the Pharmaceutical Industry:Evidence from Hetero Labs Hyderabad	Journal of Organizational &Human Resource Management	1	2	40-45	Feb 2026	TERNATIONA	2349-0691	PEER REVIEWED	NA	NA	NA	NA
19	C.Shahina banu, **B.Swathi (2)**	MBA	Determinants of Employee Motivation:A case Study of triovision Composite Technologies ,Kadapa	Journal of Organizational &Human Resource Management	1	1	27-32	Feb 2026	TERNATIONA	2349-0691	PEER REVIEWED	NA	NA	NA	NA
20	M. Saritha, **B.Swathi (2)**	MBA	Employee Job Satisfaction in the Indian Cement Sector:Insights From Ultratech Cement , Tadipatri	Journal of Organizational &Human Resource Management	1	1	60-66	Feb 2026	TERNATIONA	2349-0691	PEER REVIEWED	NA	NA	NA	NA
21	Chaitanya. B & **A. Anjanaiah (2)**	MBA	Financial Performance Evaluation of Hindustan Cocacola Beverages limited, Srikalahasthi	Journal of finance & operations management	1	2	59-65	Feb 2026	National	2349-0691 3117-7840-P 3117-7859-E	Peer Reviewed	NA	NA	NA	NA
22	S. Fathima & **A. Anjanaiah (2)**	MBA	A study on working capital management with reference to chaitanya chemicals, kadapa	International Journal of science & technology	2	2SI	24-26	Feb 2026	International	2049-7318	Peer Reviewed	NA	NA	NA	NA

23	Geetha. T & **Fateh Khan Lodi (2)**	MBA	Awareness & Usage of Banking Services among youth: A casestudy of Union Bank of India, Rajampet	Journal of finance & operations management	1	2	40-45	Feb 2026	National	3117-7840	Peer Reviewed	NA	NA	NA	NA
24	A. Kiran& **Fateh Khan Lodi (2)**	MBA	Astudy on portfolio management with reference to YEN YES Finserv LLP, Kadapa	International Journal of science & technology	2	2SI	13-16	Feb 2026	International	2049-7318	Peer Reviewed	NA	NA	NA	NA
25	R. Lavanya & **Fateh Khan Lodi (2)**	MBA	Influence of Sales prmotion strategies on Customers: A case study of Chennai MGR Shopping Mall, Rajampet	International Journal of Strategic Business, Marketing & Statistics	1	1	48-51	Feb 2026	International	3117-7891	Peer Reviewed	NA	NA	NA	NA
26	P. RajaSekhar & **Fateh Khan Lodi (2)**	MBA	Assessing financial performance in Mining sector: Lakshmi Nivitha Minerals casestudy	Journal of finance & operations management	1	2	1-8	Feb 2026	National	3117-7840	Peer Reviewed	NA	NA	NA	NA
27	D. Ram Kumar & **A. Anjanaiah (2)**	MBA	A study on financial performance Analysis	Journal of Advance & Future Research	4	4	1-8	April 2026	National	2984-99x	Peer Reviewed	NA	NA	NA	NA
28	B. Ravindra Reddy& **Fateh Khan Lodi (2)**	MBA	Data Vizualization for Health care Analytics using PoweBI: Acasestudy of Niva Bupa Health Insurance	Journal of Data Driven Business Management & AI	1	1	16-22	Feb 2026	National	3117-7913	Peer Reviewed	NA	NA	NA	NA
29	M. DHARANI KUMARI, **K. VENKATASUBBAIAH (2)**	MBA	A STUDY ON NON-PERFORMING ASSETS WITH REFERENCE TO UNION BANK OF INDIA, NEW BOYANAPALLI, KADAPA DISTRICT, ANDHRA PRADESH	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	2	########	10-14	2 May 2026	INTERNATIONAL	2049-7318	GOOGLE SCHOOLAR	NA	NA	NA	NA
30	K. VENKATA DILEEP, **K. VENKATASUBBAIAH (2)**	MBA	A STUDY ON FUNDS FLOW ANALYSIS WITH REFERENCE TO SRIRAM FINANCE LIMITED, RAJAMPET	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	2	########	10-14	2 May 2026	INTERNATIONAL	2049-7318	GOOGLE SCHOOLAR	NA	NA	NA	NA
31	Shaik Abdul Kareem, **Fateh Khan Lodi (2)**	MBA	CUSTOMER PREFERENCES TOWARDS TWO-WHEELER PURCHASING: A CASE STUDY OF BAJAJ MOTORS, RAJAMPET	International Journal of Strategic Business, Marketing & Statistics	1	1	38-44	Feb 2026	International	3117-7891	Peer Reviewed	NA	NA	NA	NA

32	Thonduru Shabeena, **Mr. Fateh Khan Lodi (2)**	MBA	A STUDY ON SALES FORECASTING AND DEMAND ANALYSIS OF PACKAGED DRINKING WATER INDUSTRY WITH REFERENCE TO CRYSTAL WATER BOTTLE PVT. LTD	Journal of Advance Future Research	4	4	943-948	02-2026	International	2984-889X	Peer Reviewed	NA	NA	NA	NA
33	MEDA AMRUTHADEEP, **K SUBBAREDDY (2)**	MBA	CUSTOMER RELATIONSHIP MANAGEMENT AND MARKETING EFFECTIVENESS: A CASE STUDY OF VK HOND AUTOMOBILES RAJAMPET	INTERNATIONAL JOURNAL OF STRATEGIC BUSINESS MARKETING & STATISTICS	1	1	25-31	02-2026	International	2349-0691	Peer Reviewed	NA	NA	NA	NA
34	S.GOWTHAMI, **K. SUBBAREDDY (2)**	MBA	IMPACT OF NON-PERFORMING ASSETS ON PROFITABILITY WITH REFERENCE TO HDFC BANK, RAJAMPET	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	7	2	49-52	05-2026	International	2049-7318	Peer Reviewed	NA	NA	NA	NA
35	Y. VENKATA AJAY CHANDRA, **K. SUBBAREDDY (2)**	MBA	A STUDY ON FINANCIAL PERFORMANCE ANALYSIS	JOURNAL OF ADVANCED AND FUTURE RESEARCH	2	1	847-852	04-2026	International	2984-889X	Peer Reviewed	NA	NA	NA	NA
36	G. PRAHLADHA, **K. SUBBAREDDY (2)**	MBA	A STUDY ON FINANCIAL PLANNING AND FORECASTING: A CASE STUDY OF HINDUSTAN COCA COLA BEVARAGES, SRIKALAHASTI	JOURNAL OF FINANCE & OPERATIONS MANAGEMENT	1	1	33-39	05-2026	NATIONAL	2349-0691	Peer Reviewed	NA	NA	NA	NA
37	R. SAI KUMAR RAJU, **K. SUBBAREDDY (2)**	MBA	A STUDY ON TECHNICAL ANALYSIS	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	7	2	17-19	05-2026	International	2049-7318	Peer Reviewed	NA	NA	NA	NA
38	Y.SREE CHARAN, **K. SUBBAREDDY (2)**	MBA	EVALUATING CAPITAL STRUCTURE PRACTICE IN SHRIRAM FINANCE	JOURNAL OF FINANCE & OPERATIONS MANAGEMENT	2	1	46-51	05-2026	NATIONAL	3117-7859	Peer Reviewed	NA	NA	NA	NA
39	B. SAI PRASANNA, **K. SUBBAREDDY (2)**	MBA	EMPLOYEE RELATIONS AND WORKPLACE CULTURE: A DESCRIPTIVE STUDY OF BHARATHI CEMENT CORPORATION PRIVATE LIMITED	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	7	2	37-44	05-2026	International	2049-7318	Peer Reviewed	NA	NA	NA	NA

40	D.VARA PRASAD., **Dr.P.KRISHNA MOORTHY (2)**	MBA	EVALUATING CUSTOMER SATISFACTION IN AGRRECULTURAL MACHINARY :SRI HAYATHRE MAHINDRA TRACTORS CASE STUDY, NILL	INTERNATIONAL JOURNAL OF STRATEGIC BUSINESS MARKETING AND STATISTICS	1	1	07-13	02-2026	International	3117-7891	PEER REVIEWED	NA	NA	NA	NA
41	G.JAYASREE, **Dr.P.KRISHNA MOORTHY (2)**	MBA	BRAND PROMOTION APPROCHES IN RETAIL MARKETING: SATYA AGENCIES CASE STUDY,RAJAMEPETA	INTERNATIONAL JOURNAL OF STRATEGIC BUSINESS MARKETING AND STATISTICS	1	1	01-06	02-2026	International	3117-7891	PEER REVIEWED	NA	NA	NA	NA
42	K.NAGALAKSHMI , **Dr.P.KRISHNA MOORTHY (2)**	MBA	ANALYSING EMPLOYEE RETENTION PRACTECES IN CEMENT SECTOR :EVIDENCE FROM ULTRATECH CEMENT,TADIPATRI	JOURNAL OF ORGANIZATIONAL AND HUMAN RESOURCE MANAGEMENT	1	1	14-19.	02-2026	NATIONAL	3117-7875	PEER REVIEWED	NA	NA	NA	NA
43	P.NAGUL SHARIFA ,**Dr.P.KRISHNA MOORTHY (2)**	MBA	PERFORMANCE EVOULATION PRACTICES IN EMERGING AGRO ,BEVERAGE FIRMS :INSIGHTS FROM SPY AGRO BEVARAGES	JOURNAL OF ORGANIZATIONAL AND HUMAN RESOURCE MANAGEMENT	1	1	01-06.	02-2026	NATIONAL	3117-7875	PEER REVIEWED	NA	NA	NA	NA
44	R.PRAGATHI, **Dr.P.KRISHNA MOORTHY (2)**	MBA	RECRUITMENT AND SELECTION DYNAMICS IN CHEMICAL INDUDSRTY:CASE STUDY OF CHAITANYA CHEMICALS ,KADAPA	JOURNAL OF ORGANIZATIONAL AND HUMAN RESOURCE MANAGEMENT	1	1	07-13.	02-2026	NATIOANAL	3117-7875	PEER REVIEWED	NA	NA	NA	NA
45	SHAIK RIZWANA,**Dr.P.KRISHNA MOORTHY (2)**	MBA	RECRUITMENT AND SELECTION PRACTIECS IN MANUFACTURING :CASE STUDY OF CENTURY PANELS ,BADVEL	JOURNAL OF ORGANIZATIONAL AND HUMAN RESOURCE MANAGEMENT	1	1	82-87.	02-2026	NATIONAL	3117-7875	PEER REVIEWED	NA	NA	NA	NA
46	G.NAGA SANTHOSH ,**Dr.P.KRISHNA MOORTHY (2)**	MBA	BUSINESS ANALTYTICS FOR RETAIL SALES TRENDS :CASE STUDY OF SHANMUKHA AGENCY AT NANDALUR	JOURNAL OF DATA- DRIVEN BUSINESS MANAGEMENT AND AI	1	1	1-7	02-2026	NATIONAL	3117-7913	PEER REVIEWED	NA	NA	NA	NA

47	S.ANIL., **Dr.P.KRISHNA MOORTHY (2)**	MBA	RISK- RETURN ANALYSIS IN EMERGING FINANCIAL INSTUTUTIONS :EVIDENCE FROM SRI RAM FINANCE AT TADIPATRI	JOURNAL OF FINANCE AND OPERATIONS MANAGEMENT	1	1	21-25.	02-2026	NATIONAL	3117-7859	PEER REVIEWED	NA	NA	NA	NA
48	M Venkateswar & **A Anjanaiah (2)**	MBA	A Study on risk and retuen analysis in ALPHA Comodity Pvt Ltd Bangalore	JOURNAL OF FINANCE AND OPERATIONS MANAGEMENT	1	1	52-58	02-2026	NATIONAL	3117-7859	PEER REVIEWED	NA	NA	NA	NA
49	Yamuna Kalyani K , **A Anjanaiah (2)**	MBA	Investors Behaviour towards mutual funds : Evidence from HDFC Customers	JOURNAL OF FINANCE AND OPERATIONS MANAGEMENT	1	1	26-32	02-2026	NATIONAL	3117-7859	PEER REVIEWED	NA	NA	NA	NA
50	Shaik Shahin & **A Anjanaiah (2)**	MBA	Behavioural drivers of Employee job satisfaction: Evidence from Century Panels Budvel	JOURNAL OF FINANCE AND OPERATIONS MANAGEMENT	1	1	88-93	02-2026	NATIONAL	3117-7859	PEER REVIEWED	NA	NA	NA	NA
51	Renuka Y & **A Anjanaiah (2)**	MBA	A Study on worklife Balance and employee well- being with refernce to Bharathi Cement corporation Pvt Ltd	INTERNATIONAL JOURNAL OF SCIENCE AND TECHNOLOGY	2	2	20-26	05-2026	international	2049-7318	PEER REVIEWED	NA	NA	NA	NA
52	S. Abdul tharak ; **V. Vedavathi (2)**	MBA	A study on cashflow analysis with refernce to shiram finance limited	Journal of advanced and future research	4	5	461-465	05-2026	international	2984-889x	Peer Reviewed	https://www.rjwa	NA	NA	NA
53	Udhiboina Nandusha, ; **V. Vedavathi (2)**	MBA	A STUDY ON RECRUITMENT&SELECTION WITH REFERENCE TO ULTRATECH CEMENT LIMITED, TADIPATRI	Journal of advanced and future research	4	4	983-985	04-2026	international	2984-889X	Peer Reviewed	https://www.rjwa	NA	NA	NA
54	NARESH J ; V. **VEDAVATHI (2)**	MBA	A Study on Portfolio Management with Reference to Shriram Finance Limited	Journal of advanced and future research	4	4	915-920	04-2026	international	2984-889X	Peer Reviewed	https://rjwave.org	NA	NA	NA
55	Nalamaru Dharani , **V.Vedavathi (2)**	MBA	A STUDY ON TRAINING & DEVELOPMENT WITH REFERENCE TO ULTRATECH CEMENT LIMITED, TADIPATRI	Journal of advanced and future research	4	4	652-654	04-2026	international	2984-889X	Peer Reviewed	https://rjwave.org	NA	NA	NA
56	Botla Venkata Bharath , **V.Vedavathi (2)**	MBA	A Study on Capital Structure	Journal of advanced and future research	4	4	387-392	04-2026	international	2984-889X	Peer Reviewed	https://rjwave.org	NA	NA	NA
57	Peerambi Badegalla1, **V Vedavathi (2)**	MBA	AStudy on Training and Development with Reference to Century Panels Limited, Badvel	International Journal of Science and Technology	7	2	95-98	05-2026	international	2049-7318	Peer Reviewed	https://doi.org/10	NA	NA	NA

58	Konduru Nandhini1, V. **Vedavathi2, (2)**	MBA	AStudy on Employee Job Satisfaction With Reference to Zuari Cement, Yerraguntla	International Journal of Science and Technology	7	2	91-94	05-2026	international	2049-7318	Peer Reviewed	DOI: 10.5281/zenc	NA	NA	NA
59	**S.Partha sarathi** Dr.T Naraya Reddy **(2)**	MBA	FINANCIAL LITERACY AS A DETERMINANT OF EMPLOYEE INVESTMENT CHOICES: INSIGHTS FROM RAYALASEEMA, ANDHRA PRADESH	Journal of Finance and operations Management	1	1	15-20	02-2026	International	3117-7840	Peer Reviewed	NA	NA	NA	NA
60	S. Rahima jaffrin **Dr.T.Navaneetha (2)**	MBA	A study on Business analytics applications in talent management with reference to NEETshala, Hyderabad	Journal of advance and future research	4	4	500-505	04-2026	International	2984-889X	Google scholar	https://www.rjwave.org/jaafr/papers/JAAFR2604308.pdf	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7_xAt58AAAAJ&citation_for_view=7_xAt58AAAAJ:dhFuZR0502QC
61	U Bahrgav **Dr.T.Navaneetha (2)**	MBA	A study on the Impact of celebrity endorsment with reference to bharthi cemnt corporation private limted, nallalingayapalli	International Journal of science and research	15	4	260-263	04-2026	International	2319-7064	Google scholar	https://www.ijsr.net/getabstract.php?paperid=SR26401153654	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7_xAt58AAAAJ&citation_for_view=7_xAt58AAAAJ:9ZlFYXVOiuMC
62	S.Abdul Munaf **Dr.T.Navaneetha (2)**	MBA	A study on impact of Social Media Marketing with reference to VK Honds Rajampet	Journal of advance and future research	4	4	68-71	04-2026	International	2498-889X	Google scholar	https://www.rjwave.org/jaafr/papers/JAAFR2604260.pdf	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=7_xAt58AAAAJ&citation_for_view=7_xAt58AAAAJ:mVmsd5A6BfQC

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S.No	Name of the Author(s)	Department of the Author(s)	Title of the paper	Name of the Journal	Volume	Issue	Page Numbers (Ex: 102-110)	Month and Year of Publication (MM-YYYY)	National/ International	ISSN	WoS/SCPUS/ Google Scholar (If in all or both sometimes mention and eg. WoS & SCOPUS)	Journal URL (DOI)	WoS URL of the Article	SCOPUS URL of the Article	Google Scholar URL of the Article
1	Uma Mahesh Boda, **Mallikarjuna Rao Nuka**	MCA	Intent-Driven Diffusion - based path for Mobile Data Collector in Iot-Enabled Dense WSNs	WILEY - Internet Technology Letters	9	3	2-7	Apr-26	International	2476-1508 2331-8422	Scopus & Google Scholar	https://doi.org/10.1002/itl2.70285Digital Object Identifier (DOI)	NA	https://www.scopus.com/inward/record.url?eid=2-s2.0-105031171911&partnerID=MN8TOARS	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=G7AZhT0AAAAJ&sortby=pubdate&citation_for_view=G7AZhT0AAAAJ:hlknAaTi
2	R R Shantha Spandana1, N Sukanya2,A **Uma Maheswara Reddy**	MCA	An Integrated Learning Approach for Detecting Depression in University Students	International Journal of Data Science and IoT Management System	5	2(1)	115-125	08-04-2026	International	3068-272X	Google Scholar	https://doi.org/10.64751/ijdim.2026.v5.i2(1).686	NA	NA	https://scholar.google.com/citations?view_op=view_citation&hl=en&user=ejIU4mMAAAAJ&citation_for_view=ejIU4mMAAAAJ:u5HHmVD_uO8C

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Assessment of Leachate-Induced contamination in soil and groundwater surrounding the anantapur open dumpsite

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Journal of Material Cycles and Waste Management

Rama Bhupal Reddy Donthi, Gaddam Venkata Sai Krishna, Matli Chandrasekhar & Ramannagari Bhavani

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Abstract

Open dumping remains the most prevalent practice in India, leads to generation of leachate containing highly toxic metals that can impact surface and groundwater sources and surrounding ecosystems. The current study aims to examine the physicochemical and heavy metal characteristics of leachate collected from the dumpyard of Anantapur, India, and evaluate its effects on adjacent soil and groundwater. Further, it employs the Leachate Pollution Index (LPI), Enrichment Factor (EF), and Contamination Factors (Cf) to assess the intensity of pollution and trace contamination origins. The analysis revealed significantly hazardous leachate characteristics, including a Chemical Oxygen Demand (COD) of 19,200 mg/L, Chlorides at 6455 mg/L, and Total Dissolved Solids (TDS) of 9700 mg/L, all exceeding the acceptable national standards. Elevated concentrations of Pb (1.1 mg/L) and Cr (1.39 mg/L) suggest the presence of hazardous waste materials. The soil sample collected near to dump site revealed moderate to severe contamination with Cf

Cyclone Shelter Suitability and Flood Risk Assessment Mapping of Amaravati Capital Region, Andhra Pradesh, India

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Abstract

Amaravati, the capital region of Andhra Pradesh, is highly vulnerable to flood hazards due to its proximity to the Krishna River and exposure to cyclonic influences from the Bay of Bengal. The Amaravati is situated at 16.5131° N latitude and 80.5165° E longitude, approximately 40 km inland from Machilipatnam, the region experiences recurrent riverine flooding and storm impacts. This study integrates Geographic Information System (GIS) and the Analytical Hierarchy Process (AHP) within a Multi-Criteria Decision-Making (MCDM) framework to assess flood susceptibility and map cyclone shelters for disaster preparedness and sustainable regional planning.

A total of 12 thematic layers including elevation, slope, aspect, hillshade, distance from rivers and roads, land use/land cover (LULC), soil, geology, geomorphology, population density and water bodies have been analyzed using the Weighted Overlay Technique (WoT) and AHP to determine flood-prone zones and optimal locations for cyclone shelters. The relative weights for each factor were assigned based on their influence on flooding and site suitability, ensuring a comprehensive risk assessment with 5 classes from very high to low. The study also incorporated a wind-rose diagram derived from three years of wind data (2022-2024) from the Global Wind Atlas to evaluate wind patterns, aiding in cyclone shelter site selection. The results highlight flood-prone zones in low-lying areas with poor drainage conditions while identifying elevated and geologically stable regions as suitable for cyclone shelters.

Keywords: Cyclone Shelter Mapping, Flood Risk Assessment, GIS-AHP, Multi-Criteria Decision-Making, Sustainable Regional Planning and Disaster Resilience.

Introduction

Amaravati, the capital region of Andhra Pradesh, has been experiencing rapid urbanization since its designation as the capital following the bifurcation of Telangana in 2014. The region, located at 16.5131° N latitude and 80.5165° E longitude, is situated on the right bank of the Krishna river and is approximately 40 km from Machilipatnam, the nearest coastal city. The location map of the Amaravati region is shown in figure 1. Due to its geographical location, Amaravati is highly vulnerable to flooding and cyclonic storms, making disaster preparedness and risk assessment essential for sustainable regional planning. The confluence of riverine flooding, extreme rainfall events and coastal cyclonic impacts poses significant risks to both infrastructure and human settlements, necessitating a comprehensive approach to flood susceptibility assessment and cyclone shelter planning[1,4,12].

Geospatial technologies such as Geographic Information System (GIS) and Remote Sensing (RS) have become indispensable tools for disaster risk assessment, enabling precise spatial analysis and multi-criteria decision-making (MCDM). The Analytical Hierarchy Process (AHP), a widely used MCDM technique, allows for the assignment of weighted values to various influencing parameters based on their relative importance in determining flood and cyclone risk[16,18].

In this study, a GIS-AHP-based approach is utilized to develop flood susceptibility and cyclone shelter maps for Amaravati, integrating multiple thematic layers such as elevation, slope, aspect, roughness, hillshade, flow accumulation, flow direction, distance from roads and rivers, land use/land cover (LULC), normalized difference vegetation index (NDVI) and topographic wetness index (TWI). These parameters play a crucial role in determining flood-prone zones and identifying suitable locations for cyclone shelters[21].

The study further incorporates wind data analysis using a wind-rose diagram, derived from three years (2022-2024) of meteorological records obtained from the Global Wind Atlas, to assess wind flow characteristics and their implications for cyclone shelter planning[18,19].

By combining hydrological, topographical and meteorological data, this research aims to provide a systematic and spatially accurate assessment of flood risks while ensuring the strategic placement of cyclone shelters to enhance disaster resilience in the Amaravati region[4,6].

STM Journals' Response to UGC-CARE Policy Changes.

AI-Enabled Optimization of Additively Manufactured Composite Materials for Enhanced Mechanical and Thermal Performance

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By

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Abstract

This paper discusses the optimization of multi-objective optimization of enhanced coupling of heat and mechanical properties of 3D printed polymer composite materials by artificial intelligence (AI), as a component of a multi-objective optimization framework. It aims at development of nonlinear printing parameters and material properties relationships to achieve maximum tensile strength and thermal conductivity in polymer composites produced through fused deposition modeling (FDM). Short carbon fiber reinforcement was used to make the polymer composite by FDM at various deposition temperatures, raster pattern, and infill densities. A machine-learning model was created experimentally with the tensile strength and thermal conductivity of the polymer composite measured and then combined with an evolutionary optimization algorithm to give a combination of printing parameters, which will give the optimum structural and thermal performance of the final part. The optimized composite specimens exhibited an average tensile strength improvement of approximately 9.4% compared to baseline systems reported in recent literature. Similarly, effective thermal conductivity increased by nearly 14.2%, indicating improved heat transfer pathways within the composite matrix. The predictive model achieved a coefficient of determination of 0.94 for tensile strength and 0.91 for thermal conductivity, demonstrating strong agreement between predicted and experimental responses. The suggested structure will allow the simultaneous enhancement of mechanical and thermal performance of additive-manufactured polymer composite structures, and, potentially, intelligent process-driven design of multifunctional composite elements.

Keywords: Additive manufacturing, polymer composite materials, thermo-mechanical performance, AI-based process optimization, fused deposition modeling.

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RESEARCH ARTICLEOPEN ACCESS

OPTIMISED PLACEMENT OF MICRO-PMUS AND VOLTAGE ESTIMATION IN RADIAL DISTRIBUTION NETWORKS CONSIDERING ZERO INJECTION CONSTRAINTS

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Keywords:
Micro-phasor measurement unit,
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Adaptive Mutated Swarm
Optimization(AMPSO).

ABSTRACT

This project presents a robust and efficient methodology for the optimal placement of Micro-Phasor Measurement Units (μPMUs) in radial distribution networks, with particular attention to Zero Injection Bus (ZIB)constraints and high levels of Distributed Generation (DG).The proposed approach combines mathematical optimization and the Adaptive Mutated Practical Swarm Optimization (AMPSO) algorithm to perform accurate voltage estimation and enhance network observability. By strategically placing μPMUs, the method reduces the number of measurement units needed while still meeting full observability and system monitoring goals. The frame work is validated on the IEEE 33- bus test systems, showing improved performance, reduced computational complexity, and compatibility with renewable energy integration. Results highlight the project's effectiveness in supporting smart grid development through cost-efficient, scalable, and practical solutions.

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I. INTRODUCTION

The active distribution networks, denoted as ADN, have made power distribution networks on account of the fast use of renewable energy resources. This trend brings about new challenges for traditional state estimation (SE) techniques because increased complexity and variability of the network operations [1]. PMUs have recently emerged as an important technology in tackling such challenges with high-resolution real-time time data that improves the capabilities of monitoring and controlling the power grid [2]. The optimal place for the installation of the PMU in order to allow the total system Observability remains a vibrant and thriving area of research. There has been considerable research activity over the 20 years focused on the solution of the transmission network's Optimal PMU placement problem (OPP). However, more work is required in distribution networks. There are indications that Losses occur more in the distribution networks compared to the transmission networks. These include: networks, stressing the requirement for high-level control, monitoring, and reconfiguration of the above-mentioned networks [3], [4]. The use of μPMUs is more economical for the smart grid, as it decreases the amount of smart meters that are needed [5]. Even traditional PMUs are quite expensive and not feasible for extensive distribution networks with multiple buses, μPMUs provide alternatives because of their increased accuracy and sampling rate, which are necessary for the low values of X/R ratios of distribution networks [6]. Such precision is required in order to detect even more subtle variations in the angle and size of state variables. Nevertheless, much still needs to be done in the essential placement of μPMUs in radial-type Distribution networks, especially about ZIBs. In [7], the researchers employed Integer Linear Programming (ILP) for resolving the OPP problem, taking into account the ZIB effect in the context of power transfer networks. Numerous meta-heuristic approaches have been recorded in [8].

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Hybrid Grey Wolf and Cuckoo Search Optimization for Optimal Energy Management in Microgrid Systems

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Abstract

Microgrid (MG) technology has the potential to effectively incorporate a new method to produce renewable energy on a massive scale for the grid-connected system. An Energy Management System is necessary for a microgrid to make the most efficient use of its distributed energy resources in ways that are also intelligent, protected, consistent, and synchronised. In this work, the management of battery energy storage system that is connected to a solar photovoltaic array and wind turbine system in a microgrid, as well as the control of battery charge and discharge operations using a converter based on the demand for the energy has been carried out. The strategy suggested was the daily energy management of a MG system by implementing hybrid grey wolf and cuckoo search

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Performance Enhancement of Photovoltaic Solar Panels by a Cleaning Robot Technique

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Abstract

This paper presents a comprehensive approach to integrating Arduino with a current sensor, voltage sensor, two motors, and a motor driver to monitor the output of a solar panel and control a cleaning bot. Interacting the current and voltage sensors with the Arduino allows continuous solar panel power

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Article

Multi-Agent System-Based Real-Time Implementation of Advanced Energy Management in Hybrid Microgrids

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Abstract

The growing integration of solar, wind and battery energy storage (BES) of the microgrids (MGs) has increased the necessity of real-time energy management, especially in the multi-microgrid (multi-MG) setting, where the generation and the load change stochastically. This paper presents a Java Agent DEvelopment (JADE)-based Multi-Agent System (MAS) for real-time energy management of a low-voltage hybrid multi-MG system incorporating solar photovoltaic (PV), wind generation, and battery energy storage (BES). The proposed framework's novelty lies in its physical campus-scale hardware deployment—validated across four operating scenarios (single MG off-grid, single MG on-grid, dual MG off-grid, and dual MG on-grid)—combined with autonomous inter-MG power sharing, which distinguishes it from existing simulation-only MAS-based microgrid studies. The suggested framework facilitates decentralized communication between interconnected MGs and the utility AC grid to facilitate the proper management of power flow, its exchange, and the reliability of the system. The intelligent agents are used to coordinate solar, wind, BES, and load changes in order to adjust to changing demand conditions. The system is physically implemented on a campus rooftop with two 1 kW solar PV arrays and two 1.5 kW wind turbine generators, each paired with a 24 V, 150 Ah battery bank, operating on a 24 V DC bus. Results across 24 h real operational profiles demonstrate effective power balance maintenance, renewable energy maximization, and constraint-compliant battery operation (SOC is bounded within 20–90%). A direct comparison with a conventional centralized JavaScript-based EMS confirms equivalent dispatch accuracy while demonstrating superior scalability, fault tolerance, and modularity of the proposed JADE MAS architecture.

Keywords: Multi-Agent System; microgrid; JADE; energy management system; solar power and wind power; distributed optimization

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1. Introduction

The increasing electricity demand in the world coupled with the growing concerns about the environment and the decline of conventional fossil fuel has heightened the shift towards renewable energy-based power systems. The hybrid microgrids combining renewable energy sources (RES) like solar photovoltaic (PV) and wind energy and distributed energy storage systems (ESS) have become an effective answer to attain energy efficiency, reliability and sustainability in the grid-connected mode and islanded mode of operation. Microgrids provide a higher level of resilience in the system and less transmission loss and

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M. Padma Lalitha, V. Durga Prasada Rao, S. V. Prayagi, and N. Sivarami Reddy

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Abstract

This paper addresses the concurrent scheduling of machines, tools, and automated guided vehicles (AGVs), within a multi-machine flexible manufacturing system (FMS). It aims to minimize makespan (MKSN) by utilizing fewer copies of each tool category, while accounting for transport times across machines to avoid tool delays. Many machines share a central tool magazine (CTM) for storing tools. AGVs and tool transporters (TT) move jobs and tools between machines. The parallel scheduling problem is inherently complex, as it requires computing the minimum number of tool copies for each type, allocating tool copies and AGVs to job operations (jb-opns), sequencing jb-opns on machines, and managing associated trip operations, including both empty and loaded AGV trip times. This study proposes a crow search algorithm (CSA) based on the crow's intelligence and a nonlinear mixed integer programming (MIP) framework to represent and solve the concurrent scheduling problem. An industrial problem at a manufacturing firm is used to verify the process. The findings indicate that using an extra copy for one tool category, along with a copy for each subsequent tool type, would avoid tool delay and reduce MKSN, and CSA surpasses the performance of the Symbiotic Organisms Search Algorithm (SOSA).

Keywords: Scheduling ▪ FMS ▪ tools ▪ AGVs ▪ no tool delay ▪ optimization techniques ▪ crow search algorithm

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Integrated thermal and battery management for electric vehicles: Experimental validation and simulation-based optimization of lithium-ion batteries

Pujari Harish Kumar[1], Gayathri Raju[2], Mohit Bajaj[3,4,5], Nallolla Chinna Alluraiah[6], Pasala Gopi[6], Sunil Kumar Pulumithi[1], Reshma Gopi Remabhai[7], Rashmi Gangadhar[1] and Ievgen Zaitsev[8]

Abstract

Electric vehicles (EVs) are pivotal in reducing greenhouse gas emissions and achieving sustainable transportation goals. However, lithium-ion batteries (LIBs), the primary energy source for EVs, face critical thermal management, safety, and long-term efficiency challenges. This study proposes an integrated thermal and battery management system that combines a water–ethylene glycol-based liquid cooling mechanism with high-conductivity copper tubing to enhance LIB performance, longevity, and safety. Through COMSOL multiphysics simulations, this study examines LIB thermal behavior under varying operational conditions. The results indicate a 20% reduction in temperature peaks, with the battery maintaining an optimal temperature range of 15°C to 35°C, thus mitigating the risks of thermal runaway. Experimental validation using infrared thermography and thermal imaging confirms the system's efficiency, showing a maximum recorded battery

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A system-level critical assessment of electric mobility integrating electric vehicle powertrains, advanced battery technologies, grid impacts, artificial intelligence, and sustainability

Thenkaraimuthu Mariprasath[1], Kaliappan Esakkiappan[2], Shaik M Ali[3], Muraly Natarajan[4], Basem A Zneid[5] and Oleksandr Rubanenko[6]

Abstract

Electric mobility has emerged as a cornerstone of global decarbonization strategies, with its successful deployment critically dependent on the coordinated integration of vehicle powertrain engineering, advanced battery technologies, charging infrastructure, power grid interaction, and intelligent control systems. This paper presents a comprehensive system-level critical assessment of electric mobility, providing an integrated analytical framework that unifies electric vehicle (EV) powertrains, electrochemical energy storage, grid impacts, artificial intelligence (AI), and sustainability considerations. The study systematically examines EV propulsion architectures, charging technologies, and the operational characteristics of contemporary and emerging battery chemistries, including lithium-ion variants (Nickel–Manganese–Cobalt, Nickel–Cobalt–Aluminum, and Lithium Iron Phosphate), solid-state batteries, and sodium-ion batteries, with particular emphasis on degradation mechanisms, thermal safety, second-life utilization, and recycling pathways. The impacts of large-scale EV charging on power distribution networks are rigorously analyzed

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SUPPORT VECTOR MACHINE BASED MAXIMUM POWER DEGRADATION DETECTION IN PHOTOVOLTAIC MODULES

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ABSTRACT

During five months of operation in a moderately humid atmosphere, this article uses a Support Vector Machine (SVM) classifier to examine the deterioration of photovoltaic (PV) modules in India. There is a maximum nominal power of 270 W for the PV module that was checked. An extensive electrical and environmental dataset was used by the SVM model to successfully categorize the module's performance statuses. During peak irradiation hours, the module operated under cloudy conditions for nearly 30% of the time, leading to noticeable power fluctuations and contributing to degradation effects. According to the analysis of irradiance evolution over time, the peak power delivered during the day reaches about 249 W when solar irradiance ranges from 950 W/m² to 1050 W/m², which is about 92% of the module's nominal power. Heat maps that intuitively show deterioration trends were created using SVM-based classification, providing a diagnostic tool that is clearer and more interpretable than standard analytical approaches. Supporting better monitoring, maintenance, and performance optimization in comparable climatic situations, the findings show that the suggested technique is efficient for identifying deterioration in individual PV modules and may be scaled to PV power plants.

Keywords: deterioration of photovoltaic, support vector machine.

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1. INTRODUCTION

Solar energy is a renewable resource that will never run out of electricity since it is sustainable. Silently converting this energy into electricity, solar panels have zero emissions and little environmental effect when used in both household installations and large-scale solar power plants [1]. Globally, the capacity of photovoltaic (PV) systems increased from zero gigawatts (GW) in 1990 to fifty-five GW in 2018, with a remarkable addition of ten 2.4 GW in 2018 alone [2].

It is crucial to regularly evaluate solar output in order to guarantee systems operate effectively. Some manufacturers even provide extra customer service and technical assistance for solar experts, and modern PV systems come with a wide range of monitoring tools, from simple energy-output tracking to complex home-automation connections [3].

The global deployment of PV modules has seen a substantial increase, driven by the growing importance of solar energy in sustainable energy solutions. Reduced emissions of greenhouse gases and increased energy independence are two benefits of these systems, which convert sunlight into electricity [4-6]. There are a number of degradation factors that may reduce the efficiency and lifespan of photovoltaic modules. Effective maintenance and improvement of solar energy systems requires the identification and classification of various degradation phases.

New AI developments, especially in neural networks, provide encouraging resources for deciphering complicated information. Analyzing visual and operational data from PV modules is a perfect fit for neural networks, particularly deep learning models, due to their promising performance in image and signal processing. Using these technologies, we can create advanced classification systems that can detect PV module deterioration with high accuracy [7, 8].

We used neural networks to examine how a 270W PV module degrades after five months of operation in the moderate and humid climate of India. We also applied neural network classification techniques to evaluate the degradation of the same module after five months of operation in the same climate. We will use numerical inputs and visual data to explore a number of variables affecting deterioration, such as operational metrics and environmental conditions. Improved maintenance procedures, longer PV system lifespans, and more efficient solar energy generation are all outcomes of our research.

Our study aims to show that neural networks can effectively monitor and analyze PV module performance.

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Research Paper

Solar tree-shaped renewable energy storage system with lightning protection

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ABSTRACT

The rapid growth of renewable energy technologies has necessitated innovative solutions to maximize solar power generation while minimizing land use. This Article presents the design and implementation of a tree-shaped solar energy system as an off-grid photovoltaic structure optimized for sustainable power generation. Inspired by natural tree formations, the system arranges solar panels in a vertical framework, enhancing energy absorption efficiency while reducing spatial footprint. The proposed model integrates a 300 W solar array with an intelligent charge controller, battery storage, and an inverter to provide a reliable power supply. By employing optimized tilt angles and strategic panel orientation, the system mitigates shading losses and enhances energy yield. Additionally, a lightning protection mechanism is incorporated to ensure durability in varying environmental conditions. Through simulation and practical implementation, this research demonstrates the feasibility of tree-like photovoltaic structures as a viable alternative to conventional flat-panel solar farms.

1. Introduction

The worldwide energy landscape is seeing a swift shift propelled by rising demand, environmental issues, and the pressing necessity to diminish reliance on fossil fuels. Traditional centralized power generation systems face growing challenges, including transmission losses, grid instability, and restricted access in remote and rural areas [1]. In this setting, decentralized and renewable energy solutions have developed as a sustainable alternative, with solar energy serving a crucial role due to its abundance, scalability, and decreasing cost. Incorporating advanced solar harvesting systems with energy storage solutions is crucial for maintaining a consistent and dependable power source, especially in off-grid and space-limited settings.

Among new photovoltaic designs, solar tree-shaped systems provide a space-efficient and aesthetically versatile alternative to conventional flat-panel installations. These systems replicate the natural configuration of tree branches to enhance sunshine exposure while reducing land utilization, rendering them particularly appropriate for urban environments, institutional campuses, and distributed generation contexts [2]. When combined with energy storage systems, solar trees can deliver continuous electricity by retaining surplus energy produced during peak sunlight hours. The incorporation of lightning protection systems is essential, as the height of solar trees increases their vulnerability to lightning strikes, requiring effective grounding and surge protection measures to guarantee system safety and durability.

Notwithstanding the increasing interest in solar tree arrangements, numerous research gaps still unresolved. Current research frequently lacks thorough quantitative validation of system performance, especially under real-world environmental conditions such partial shade and non-uniform irradiance [3]. Furthermore, there is a paucity of research on integrated analysis that concurrently addresses electrical performance, thermal impacts, and structural stability. The lack of defined design approaches and comparative evaluation frameworks hampers the assessment of solar tree systems relative to conventional photovoltaic systems. Furthermore, the incorporation of lightning protection devices into the overall design is frequently neglected or poorly addressed, resulting in inadequate exploration of essential safety considerations [4].

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Automated Fruit Disease Detection and Smart Irrigation System Using YOLOv8

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Abstract - This project presents a Automated Fruit Disease Detection and Smart Irrigation System Using YOLOv8 for precision agriculture. A USB camera is used to continuously monitor fruits on the trees, and the YOLOv8 deep learning model is employed to detect and track fruit growth and maturity in real time. Along with visual monitoring, a soil moisture sensor is used to evaluate soil dryness, and a pH sensor is used to measure soil acidity or alkalinity to assess soil quality. Based on the sensor readings, the system automatically controls a DC water pump.

When the soil moisture level falls below a predefined threshold, the DC pump is switched ON to provide irrigation, and it is turned OFF once optimal moisture is reached. And GSM is used for message alert. The combined use of image-based fruit monitoring and soil condition analysis enables better crop management, improved yield, and efficient water usage. This system supports intelligent decision-making in smart farming by integrating deep learning, sensor-based monitoring, and automated irrigation.

Key Words: YOLOv8, Automated Fruit Disease Detection, Smart Irrigation System, Precision Agriculture, Deep Learning

1. INTRODUCTION

Agriculture forms the backbone of the economy, and ensuring crop health and efficient resource utilization is essential for improving yield and sustainability. One of the major challenges faced by farmers is the timely detection of fruit diseases and proper irrigation management. Traditional methods depend on manual observation, which is time-consuming, labor-intensive, and often inaccurate. This project presents a Automated Fruit Disease Detection and Smart Irrigation System using YOLOv8 that uses modern technologies like image processing and sensor-based monitoring.

2. LITERATURE SURVEY

This paper reviews various fruit yield prediction methods, including image-based and sensor-based techniques.It highlights the importance of computer vision in improving accuracy and efficiency in agriculture. This paper introduces Faster R-CNN, a deep learning model for accurate object detection using region proposal networks. It improves detection accuracy but requires higher computational resources. This paper presents the YOLO algorithm for real-time object detection using a single neural network. It offers high speed and efficiency compared to traditional detection methods. This study focuses on detecting fruits even when they are partially hidden using advanced segmentation techniques. It improves accuracy in challenging conditions like occlusion. This paper develops a system for detecting and tracking fruits using multi-view cameras and 3D reconstruction. It enhances fruit localization and counting accuracy in greenhouse environments.

3. EXISTING SYSTEM

In traditional farming systems, fruit monitoring and irrigation management are mainly performed manually by farmers. Farmers visually observe the plants to estimate fruit growth, maturity, and health condition. This method depends heavily on the farmer's experience and may not always provide accurate information about fruit development. Similarly, irrigation is often done using manual watering or timer-based irrigation systems without considering the real-time condition of the soil. Soil moisture levels are usually estimated by physical inspection, and soil pH is tested separately in laboratories rather than being monitored continuously in the field. Due to the absence of automated monitoring systems, farmers may face problems such as improper irrigation, water

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Modeling and Reliability Analysis of an Efficient Novel Bridge Type Multi-Input DC Converter for Low Power Applications

Baya Reddy Lomada and V. Naga Bhaskar Reddy

Recently, much research has been done on DC converters to enhance the reliability and minimize the overall cost of the converters. This paper presents a detailed study of a multi-input DC–DC converter (MIC), focusing on its mathematical modelling, design methodology, prototype validation, and reliability assessment for low-power applications such as renewable energy systems and electric vehicles. The proposed converter is designed to operate with multiple energy sources, particularly solar and fuel cells. It uses various switching frequencies to achieve extensive control over the flow of power and output voltage. Steady-state modeling and reliability analysis are established to achieve precise design and analysis. This design ensures reduced voltage stress and a simpler circuit with fewer components, improving efficiency and reliability while achieving a higher voltage gain and an efficiency of 96.4%.

Keywords: Modeling, Validation, Power converter, Reliability, Electric vehicles, Renewable energy

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Times Using Crow Search Algorithm

M. Padma Lalitha, V. Durga Prasada Rao, D. Venkata Ramamurthy, and N. Sivarami Reddy

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Abstract

This paper addresses concurrent scheduling of machines, automated guided vehicles (AGVs), tools, and the tool transporter (TT) in a multi-machine flexible manufacturing system (FMS), considering tool and job transport times to minimize makespan (MKSN). However, due to financial constraints, only one copy of each tool type is offered. These tools are placed in a central tool magazine (CTM), which is shared with numerous machines. The problem is the allocation of machines, tool assignment, job-operation sequencing, and trip operations, including TT and AGVs' empty and laden trip times for MKSN minimization. This study introduces a mixed nonlinear integer programming model to model the problem, and a crow search algorithm (CSA) based on the clever behavior of crows is used to solve it. Results are tabulated, examined, and compared to current algorithms.

Keywords: Machines ▪ AGVs and tools ▪ scheduling ▪ FMS ▪ Makespan ▪ Crow search algorithm ▪ optimization

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STELLA C.S. PORTO, International Journal of High Speed Computing

A real-time and eco-layout platform for optimization of supply/costs for water distribution systems management
Sabrine Atashin, Water Science and Technology: Water Supply, 2022

A Probabilistic Temperature-Reliant Model for Optimally Sizing and Siting of Distributed Generators Coordinated with Distribution Network Switching Considering Weather Conditions

Publisher: IEEE Cite This PDF

Meisam Mahdavi , Amir Bagheri , Francisco Jurado , Augustine Awasthi , Pasala Gopi All Authors

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Abstract:
Optimally siting distributed generations (DGs) and appropriately switching of distribution lines are regarded as the most effective mechanisms for loss mitigation in a distribution network. Power loss curtailment in distribution networks is very essential in power system operation and management since it constitutes the major share of the overall power loss in power systems. Losses in power systems lead to exorbitant network operation costs as well as the distortion of the system's voltage profile. In traditional DG placement and network switching (reconfiguration) mechanisms, the optimal locations and the number of distributed generators and state of switches are optimally determined for ensuring that losses are reduced to the barest minimum in order to meet the power demand of consumers. Load variation in distribution buses leads to different resultant losses in comparison with constant loads. Nevertheless, most of the proposed models for DG allocation and network switching problem have ignored consumers' load variability. While the selected few that considered load variation in their proposed models neglected the impact of ambient temperature change and weather conditions on electrical energy demand and thermal rating of lines which influence appropriate places and DG number, as well as optimal switching plans. Accordingly, the current study evaluates environment's temperature and weather conditions changes impacts on DG allocation and switching solutions to assess environmental temperature and conditions change importance in loss optimization via DG placement and network reconfiguration. In the 16-bus system, the network topology and DG arrangement change with just a 10% rise in environmental temperature. The actual grid of Koprivnica demonstrates greater resilience to temperature increases, maintaining a stable network configuration under various temperature variations. In the 84-bus network, the maximum CPU time is less than 27 seconds, indicating the applicab...

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RESEARCH ARTICLE OPEN ACCESS

SYNTHETIC DATA-DRIVEN ANALYSIS OF ELECTRIC VEHICLE MANUFACTURING IN INDIA USING MACHINE LEARNING

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ABSTRACT

The global trend to Electric Vehicles is crucial in the minimization of carbon emissions in the transportation field. Nonetheless, countries like India have serious analytical difficulties in the change due to the paucity and irregularity of long-term manufacturing data. The current work attempts to fill this gap by proposing a Machine Learning model based on the synthetic data to forecast the future trends in the production of EV in the country. An artificial dataset over the years 2010-2025 was thoroughly constructed based on fifteen selected variables that reflect governmental policy, supply-chain capacity, and significant economic indicators. A high-dimensional, detail parameter space feature base was trained on these parameters to create a system based on a Multi-Output Random Forest Regressor that can simultaneously predict two parameters EV production performance and corresponding transport-sector CO_2 emissions. Projections of the years 2026-2035 have been created with the use of this setup under the three policy and market conditions, namely, Conservative, Base, and Accelerated. The analysis of these scenarios shows that the Accelerated case provides the best results, predicting the sharp increase of the EV production and a total decrease of CO_2 of approximately 58 Mt over the ten years. On the whole, the created model plays the role of an effective decision-support tool of both policymakers and industrial planners.

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I. INTRODUCTION

The increasing risk of climate change has resulted in a faster transition to less polluting energy system, especially in the transport industry, which is among the primary sources of greenhouse gas (GHG) emissions [1]. The move to an electric-powered mobility rather than a traditional fuel-powered car is much more than a technological change it means a complete re-evaluation on how the world can be sustainable in transport and energy efficiency [2], [3]. This development is essential to fulfilling global climate promises and to move toward a low-carbon economy in the world. India is the key location in this shift as it is considered one of the most rapidly developing automobile markets in the world [3]. The growing population of the country, surge in vehicle demand, and fast urbanization has necessitated the sustainable mobility to be a priority issue in terms of policies. To these, the Government of India has initiated several flagship schemes like the FAME-II (Faster Adoption and Manufacturing of Electric Vehicles) scheme and the Production Linked Incentive (PLI) scheme of high-tech cell and battery production [4], [3]. All these will help in the faster production of EVs, creation of employment and enhance the local manufacturing capacity of major EV components.

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An experimental investigation of unique high stepup boost converter for electric vehicle and solar photovoltaic

T. Mariprasath[1]✉, Sujata Shivashimpiger[2], Marco Rivera[3]✉, Patrick Wheeler[3], M. Pala Prasad Reddy[4], Shaik Muqthiar Ali[5], Venkatesh Peruthambi[6] & Jakson Bonaldo[7]

High step-up DC–DC converters are essential in electric vehicle (EV) and photovoltaic (PV) applications, where low-voltage inputs must be efficiently boosted to higher levels. Conventional converters suffer from high switching losses, bulky components, and unstable regulation under dynamic conditions. To address these challenges, this paper proposes a compact transformer based high step-up boost (HGB) converter integrated with an SG3525 PWM controller and an analog proportional–integral (PI) compensation network. The novelty of the design lies in the jointly optimized transformer winding structure (20-gauge/8-turns primary, 32-gauge/176-turns secondary with center tap) and robust analog PI compensation, which together achieve high gain with reduced duty ratio stress and stable voltage regulation. A hardware prototype was developed and tested under both programmable DC source and real PV input conditions. Experimental results confirm that the converter reliably steps up 12 V to 200 V DC, with efficiency consistently close to 90% across load levels from 5.6 W to 40 W. Gate pulses and switching behavior were validated through simulation, showing correct complementary drive at 50 kHz and safe device stress margins. Ripple analysis further shows that inductor current ripple remains below 15%, and capacitor voltage ripple remains below 2%, ensuring smooth operation. The converter also demonstrated strong linear gain response, maintaining duty ratios between 60% (at 8.5 V input) and 40% (at 12 V input). Real-time PV tests confirmed regulated output under fluctuating irradiation, with voltages ranging from 140 V to 225 V. These results establish the proposed converter as an efficient, compact, and experimentally validated solution for renewable energy systems and EV powertrains.

Keywords Boost converter, Electric vehicle, Solar PV system, Efficiency optimization

List of symbols

G_0	Ideal voltage gain of the converter
Vout	Output voltage of the converter
Vin	Input voltage to the converter
D	Duty ratio of the PWM signal
n	Transformer turns ratio
η	Efficiency of the converter
VD	Forward voltage drop of the diode
Kpwm	PWM modulator gain
Vc	Control voltage input to the PWM controller
Vramp	Peak amplitude of the PWM ramp oscillator waveform

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Dynamic modelling and small-signal analysis of an efficient bridge-type multi-input DC converter for hybrid low-power systems

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ABSTRACT

This paper presents the dynamic modelling and small-signal analysis of a bridge-type multi-input DC converter designed for hybrid low-power systems. The converter architecture supports the integration of multiple energy sources such as fuel cells and photovoltaic (PV) arrays, enabling enhanced flexibility and reliability. A CUK-based configuration is employed to achieve continuous input current and reduced voltage stress across the switches. The dynamic behavior of the converter is analyzed through average large-signal and small-signal state-space modelling. Stability is assessed using the Routh-Hurwitz criterion, and steady-state analysis is carried out to support performance evaluation. Experimental results obtained from a 250 W prototype confirm the validity of the developed models and demonstrate the efficiency and suitability of the proposed converter for hybrid renewable energy systems.

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1. INTRODUCTION

A surplus of energy sources is being exploited to meet the rising power demand [1]-[3]. The world's expanding need for electricity can no longer be met by traditional energy sources since they are quickly running out [4]. The use of natural fuels for energy production also has a detrimental effect on the environment, raising concerns about things like air pollution and global warming [5]. The output of electricity derived from renewable energy sources is consequently rising swiftly, particularly in distributed generation [6]. Thus, developing hybrid energy plans that continuously supply power to the right demand through a variety of green technologies is crucial [7].

The huge majority of electric vehicles (EVs) are battery powered, which depends on two important variables: the availability of lithium and the state of the electricity network today [8]. To avoid the aforementioned issues, research and tests on fuel cell-based cars, photovoltaic, and fuel cell hybrid electric cars must be carried out concurrently [9]. For such cars, the paucity of lithium and the contemporary power grid are irrelevant. Hydrogen is best compared to batteries in terms of both energy density and power density [10]–[12]. Due to the high cost of hydrogen, combining fuel cells with photovoltaic (PV) panels offers a practical way to minimize hydrogen usage in vehicles [13], [14]. As shown in Figure 1, the solar PV, fuel cell, inverter, multi-input DC-DC converter & electric motor comprise the primary powertrain components of a hybrid electric vehicle (HEV). A multi-input DC-DC converter has a substantial impact on the overall stability

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RESEARCH ARTICLE

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AN ENHANCED DISTRIBUTION SYSTEM PERFORMANCE WITH OPTIMIZATION TECHNIQUES FOR LOCATION OF ELECTRICAL VEHICLE CHARGING STATIONS

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ABSTRACT

This study introduces a novel strategy for strategically placing of Electric Vehicle Charging Stations (EVCS) within a distribution power network towards minimizing power losses. The proposed methodology leverages the Grey Wolf Optimization (GWO) metaheuristic algorithm, enthused by the grey wolves hunting, to identify the most strategic locations for EVCSs. The effectiveness of the GWO-based approach is rigorously evaluated using the IEEE-33 bus system, a standard benchmark in distribution system analysis. The GWO algorithm's performance is evaluated in comparison to that of the prevalent Particle Swarm Optimization (PSO) methodology. The study analyzes system voltage levels in relation to the nominal voltage, ensuring compliance with operational limits. The results demonstrate the GWO algorithm's superiority in minimizing power losses and enhancing voltage profiles across the distribution network. Furthermore, a probabilistic assessment is conducted to evaluate the robustness of the optimal EVCS placement under uncertain EV charging patterns. This analysis considers the stochastic nature of EV charging behavior, providing insights into the strategy's resilience to real-world variations. The proposed GWO-based optimization strategy offers a significant contribution to make power distribution infrastructure more dependable and efficient in order to handle the growing number of EVs. By minimizing power losses and optimizing voltage profiles, the strategy reduces operational costs and improves the overall stability of the grid. The probabilistic assessment further strengthens the strategy's practicality by accounting for the inherent uncertainties in EV charging demands. This research provides valuable insights for distribution system operators and planners seeking to integrate EVCSs effectively while maintaining system performance.

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I. INTRODUCTION

The increasing global adoption of electric vehicles presents both opportunities and challenges for power distribution systems. While EVs offer a cleaner and more sustainable transportation alternative, their integration into the existing grid infrastructure necessitates attentive scheduling and supervision to guarantee system stability and efficiency [1], [2]. Uncoordinated EV charging may lead towards augmented power losses, voltage deviations, and potential overloads, jeopardizing the reliability of the supply network. Therefore, strategical placement of EV charging stations is crucial for mitigating these challenges and maximizing the benefits of EV integration [3-5]. The optimal placement of EVCSs is a complex optimization problem with multiple conflicting objectives [6], [7]. Minimizing power losses is a primary concern, as it directly impacts the operational efficiency and cost-effectiveness of the distribution system. Maintaining

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RESEARCH ARTICLE OPEN ACCESS

FUZZY LOGIC CONTROLLER – BASED CONTROL FOR FAST EV CHARGING STATIONS IN DC MICROGRID SYSTEMS

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ABSTRACT

This project proposes an advanced fuzzy logic controller (FLC) for fast EV charging stations integrated with DC microgrids. Unlike conventional PI controllers, which struggle with dynamic operating conditions, the FLC adapts in real time using parameters such as battery state of charge, grid conditions, and battery health. In Grid-to-Vehicle (G2V), Grid + Photovoltaic to Vehicle (G+PV2V) modes, the controller ensures efficient fast charging by optimizing current flow, reducing voltage ripples, and maintaining DC-link stability. In Vehicle-to-Grid (V2G) mode, it dynamically regulates battery discharge to enhance grid support while protecting battery life. Simulation results show that the proposed FLC significantly reduces charging time and improves system efficiency, achieving a runtime of 213.3 seconds compared to 317 seconds using a PI controller. Overall, the FLC-based strategy enhances system stability, responsiveness, and adaptability, making it a suitable solution for smart EV charging in modern DC microgrids.

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I. INTRODUCTION

In recent years, electric vehicles (EVs) gained popularity as they are able to decrease the consumption of oil fuels, enhance air purity in metropolitan cities, eliminate noise pollution, and promote eco-friendly transport networks [1]. This has opened up a new era, and thus, EVs are predicted to substitute conventional vehicles with internal combustion engines in the near future. In this regard, to create a uniform charging procedure for EVs, charging standards were developed by the Society of Automotive Engineers and International Electrotechnical Commission based on electrical requirements, charging methods, and charging duration. With respect to charging duration, charging of EVs is classified under three categories, including slow charging (Level 1), which takes more than 8 hours; medium charging (Level 2), which takes 6 hours; and fast charging (Level 3), which takes only 30 minutes to fully charge the EVs' batteries altogether [2].

Level 1 charging is appropriate for residential purpose or charging during night time; nevertheless, the longer charging time makes it unsuitable for daily driving range of traditional vehicles. Level 2 charging supports higher power levels along with faster charging times than Level 1 charging and is still not appropriate as a vehicle onboard charging system owing to time constraints. Rapid charging is thus highly desirable for EVs. Level 3 charging consists of off-board fast-charge connectors of high power levels of 80-240 kW, which facilitates fast charging of the vehicle battery. With the rising use of EVs, the need for a large number of charging stations arises [3]. The planning, placement, and operational impact of EV charging stations on modern power systems have been widely studied [4], [5]. At present, the popular method of charging the EV is by connecting it to 120 V (Level 1) or 240 V (Level 2) AC receptacles as per the SAE J1772 (2010) recommendation [6], [7].

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Review Article

Smart Materials for Crashworthiness and Structural Integrity in Electric Vehicles

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Abstract - *The EV market has seen unprecedented growth, which comes with its unique set of challenges in safety and structure. Their adaptive, self-healing, and energy-responsive properties make smart materials a game-changer for crumple zones and damage control in the Electric Vehicle (EV) world. This paper serves as a thorough investigation into the applications of smart materials in enhancing EV safety. This paper discusses the key applications related to crash energy management, such as shape memory alloys, magnetorheological dampers, self-healing polymers, and some examples from the automotive industry. It also stresses the incorporation of weight-saving composites, piezoelectric sensors, and sustainable coatings for structural health monitoring and durability. This review discusses its current development, obstacles and prospects to illustrate the promise of smart materials to streamline new EV design with a focus on safety, efficiency, and sustainability. This research contributes to advancing the adoption of innovative materials in next-generation EVs, addressing critical safety and performance demands.*

Keywords - *Smart materials, Electric Vehicles, Crashworthiness, Structural integrity, Adaptive composites.*

1. Introduction

Smart materials and structures find several applications in improving the performance and safety of Electric Vehicles (EVs), thus catering for a field with innovative alternatives. These materials can respond dynamically under external stimuli, thereby enhancing the energy absorption in the case of a crash and the structure's durability [1]. Nature-inspired cellular structures have also been explored for the protection of EV batteries, showing a high specific energy absorption of 35kJ/kg [2]. Structural batteries, combining energy storage and load-bearing capacities, have the potential to reduce EV weight [3, 4]. The ongoing development of sustainable, flame-retardant composites is a potential solution for two high-priority issues in EVs: weight and fire safety. Carbon fibre-reinforced composites and other form factors are being assessed for structural battery applications. Challenges still exist for addressing crash scenarios closer to real-world crashes and other contributing factors to EV safety more generally [5]. Although many smart material technologies have been broadly innovated for electric vehicle applications, a big missing link exists in combining impact toughness and structural integrity. For the most part, existing studies are developed for either lightweighting or energy absorption, but little attention is paid to multifunctional smart materials such as adaptability, self-healing, and sensing properties. In addition, practical applications of EVs usually involve partial and scattered use, or remain in the prototype stage, suggesting that real-life applications have not been fully studied where the cutting-edge materials meet the applications.

The present research attempts to fill this gap by rigorously investigating the potential of smart materials regarding the advancement of both crash energy management and structural design for EVs. The originality of the work lies in its dual focus: (1) a real-world automotive application of smart materials rather than a theoretical development, and (2) direct connections between material performance and structural safety and the life of EVs. Fulfilling this gap provides a more comprehensive view that facilitates the design of safer, more robust electric vehicles. This paper explores the role of smart materials in enhancing crashworthiness and structural integrity in EVs. It highlights key materials, their applications, and the technological innovations that are shaping the future of EV safety.

2. Overview of Smart Materials

Smart materials are modern engineering materials that have an adaptive response to external stimuli like stress, temperature, pressure, magnetic fields, and electric fields. This makes them ideal for the electrical safety and

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Thermal Performance of Erythritol-Based Biochar Composites for Medium-Temperature Energy Storage Applications

Energy Storage • Article • 2025 • DOI: 10.1002/est2.70276

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Abstract

The present study focuses on the development of erythritol-based activated biochar composite phase change materials (PCMs) targeting medium-temperature energy storage applications, including waste heat recovery, solar desalination, and solar thermal energy storage. The activated biochar composites were produced from coconut shell using pyrolysis. The fabricated samples were characterized using X-ray diffraction (XRD), differential scanning calorimetry (DSC), and Fourier-transform infrared spectroscopy (FTIR) to evaluate the phase composition, thermal properties, and functional group analysis of the composites. Biochar composites exhibited enhanced thermal energy storage properties and thermal stability compared to pure PCM. TGA was employed to assess weight changes during controlled temperature increase to analyze thermal stability and decomposition. The degradation kinetics for both materials were evaluated to determine the activation energy needed for degradation processes using Kissinger–Akahira–Sunose (KAS), Flynn–Wall–Ozawa (FWO), and Starink models. The results indicate that the activation energies for pure PCM, determined using the KAS, FWO, and Starink methods, are 82.81, 88.04, and 83.54 kJ/mol, respectively. For PCM + 0.25% G +

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Exploring the mechanical response of aluminum composites reinforced with SiN and ZrO_2: a novel hybrid microwave sintering approach

CONDENSED-STATE PHYSICS Published: 28 August 2025

Volume 68, pages 1065–1071 (2025) Cite this article

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Abstract

The present study investigates the mechanical behavior of AA7075-based hybrid metal matrix composites reinforced with silicon nitride (SiN) and zirconium dioxide (ZrO_2), fabricated by a novel hybrid microwave sintering technique. Composites are developed with the constant SiN content of 7 wt.% and the ZrO_2 content varying between 1 and 4 wt.% to understand the influence of dual-phase ceramic reinforcement. The microstructural analysis shows a uniform dispersion of reinforcement at a lower ZrO_2 content, contributing to the improved tensile strength and hardness through such

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Fatigue Life Prediction and Optimization of AA2219 Using Taguchi and Regression Analysis

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Abstract

In the present study, the fatigue life of aerospace-grade AA2219 aluminium alloy was systematically evaluated under varying cyclic loading conditions using a combined Taguchi experimental design and regression analysis. AA2219, widely deployed in cryogenic tanks and structural aerospace components, exhibits sensitivity to fatigue damage due to its precipitation-hardened microstructure. A two-factor, three-level Taguchi L9 orthogonal array was implemented, considering maximum stress level and loading frequency as critical input parameters. Experimental fatigue tests were conducted per ASTM E466, and the resulting fatigue lives were analysed through ANOVA to identify dominant influencing factors. The maximum stress level emerged as the most significant factor, contributing 6.83% to fatigue life variation, while loading frequency exhibited a secondary effect. A second-order polynomial regression model was developed and validated, exhibiting excellent accuracy with an R^2 of 0.9997 and RMSE of 183.86. SEM-based fractography confirmed distinct fatigue mechanisms under low and high stress regimes, including striation development and brittle fracture morphologies. A confirmation experiment demonstrated only 2.15% deviation between predicted and experimental fatigue life, validating the model's reliability. The proposed methodology offers a predictive and optimization framework to enhance the fatigue performance of AA2219, reducing experimental workload while providing actionable insights for aerospace structural design.

Major Findings: *Maximum stress level emerged as the key parameter influencing fatigue life, contributing 6.83% to the total variation observed. A robust second-order regression model (R^2 = 0.9997) was developed, predicting fatigue life with only a 2.15% deviation from actual experiments, proving its reliability. SEM-based fractographic analysis revealed a clear transition: fine fatigue striations dominated at low stress, while brittle, quasi-cleavage features took over at higher stresses.*

Keywords: *AA2219, Fatigue Life Prediction, Fractographic Analysis, Regression Analysis, Taguchi Method*

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Thermomechanical Buckling Response of Homogeneous and Functionally Graded Aluminium Beams Using Reddy's Higher-Order Theory

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Abstract

This study aims to investigate the thermal buckling behaviour of thick homogeneous and functionally graded aluminium-based beams using Reddy's higher-order shear deformation theory. Recognising the limitations of classical and first-order theories in capturing shear effects and temperature-induced material degradation, a refined numerical model was developed to assess the stability of aluminium beams reinforced with Al_2O_3 and TiC under thermal loading. The material properties were assumed to vary through the beam thickness according to a power-law distribution, and temperature-dependent stiffness degradation is incorporated to mimic realistic high-temperature conditions. Three beam configurations, viz. a homogeneous aluminium beam, an Al-Al_2O_3 FG beam, and an Al-TiC functionally graded beam, were analysed over a temperature range of 30°C to 430°C and multiple gradation indices. The core novelty lies in the unified application of Reddy's higher-order shear deformation theory combined with temperature-sensitive gradation to evaluate and compare the thermal buckling response across these three configurations. The results revealed a clear decline in critical buckling load with rising temperature across all cases. Functionally graded beams demonstrated superior buckling resistance compared to the homogeneous counterpart, with the Al-TiC configuration showing the highest critical buckling load values due to the high stiffness and thermal resilience of TiC. Among all gradation profiles, a lower power-law index ($k = 1$) emerged as optimal, offering up to 246% enhancement in critical buckling load. This work underscored the advantages of material gradation in enhancing thermal stability and validated the effectiveness of Reddy's higher-order shear deformation theory in modelling thermomechanical instability in advanced composite beams. The insights gained can enhance the design of high-temperature structural components for aerospace, energy, and defence applications.

Major Findings: *The study proved that functionally graded beams reinforced with TiC demonstrated 246% more thermal buckling resistance than homogeneous aluminium beams. Optimal performance was observed at lower gradation indices ($k = 1$), where ceramic content near the compressive region enhanced stiffness. Reddy's higher-order shear deformation theory proved effective in accurately capturing nonlinear shear effects and temperature-dependent material degradation.*

Keywords: *Alumina, Aluminum, Functionally Graded Beam, Reddy's HSDT, Thermal Buckling, Titanium Carbidey*

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Microstructural Characteristics of Friction Stir Welded AZ91 and AZ31B Magnesium Alloys

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Abstract

In this work, AZ91 (MGAL) and AZ31B (MGNC) magnesium alloys were formulated by incorporating calcium and nano-alumina reinforcements. The understanding of material response in secondary processes such as friction welding and hot forming is explored. The deformation characteristics and friction behaviour of the magnesium alloy at the nano scale are examined. A design of experiment using central composite design with L9 orthogonal array was carried out to underpin the ideal parameters for the friction stir welding. The joint efficiencies achieved for the friction stir welding MGAL and MGNC alloys were found to be 93.6 % and 92% respectively. The microstructural analysis discovered that failure took place at the weld region as well as away from the weld region matching the expected behaviour of variation in the welding parameters and associated quality. The defects in the welding zone were improved with less friction time and low speed, leading to an improved tensile strength of the friction stir welded joining of MGAL and MGNC alloys. © 2025. Carbon Magics Ltd.

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Eco-friendly composites from waste materials

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ABSTRACT

Rising agricultural and plastic wastes pose a severe environmental problem, as the plastic and agricultural wastes need to be valorized in sustainable ways. Recycled sources of low-density polyethylene (LDPE) were used in this experiment as a matrix, whereas rice husk powder, groundnut shell powder, and recycled high-density polyethylene (HDPE) flakes were used as fillers. Agricultural fillers were treated using alkali (NaOH) to offer improvement in adhesion as well as dispersion in the polymer matrix and the interfacial adhesion. The process of making composites was carried out through blending using mechanics, after which they were subjected to compression molding. Detailed characterization was performed in order to determine the mechanical, thermal, and morphological behavior of the developed composites. By using the test/mechanical test by ASTM specifications, it was noted that the alkali-treated fillers resulted in substantially better tensile strength, flexural strength, impact resistance, and Shore D hardness as compared to the untreated group. Stability to thermal and crystallinity tests was determined by carrying out by thermogravimetric analysis (TGA) and differential scanning calorimetry (DSC), respectively, where results showed that the composites treated had increased decomposition temperatures and crystallization behavior. These results were also supported by scanning electron microscopy (SEM) that showed homogeneous dispersion of fillers as well as increased bonding between the filler and the sample as a result of alkali treatment. WAB, measured according to ASTM D570, indicated a lower uptake on treated composites, and this indicated the existence of a more compatible filler-to-matrix system. Also, an upfront life cycle assessment (LCA) showed probable decreases in carbon footprint and resource utilization because of the incorporation of waste-based fillers. This paper finds that the hybrid filler systems, made of agricultural and plastic waste, when treated, can be utilized as a simple modality to achieve a high-performance, sustainable polymer composite performance that can be used for structural and packaging purposes.

Keywords: recycled LDPE, agricultural waste fillers, alkali treatment, polymer composites, mechanical properties, thermal stability.

INTRODUCTION

Industrialization and urbanization have affected the world by generating solid waste that has placed a dire, serious challenge on the environment and health of the population. Lignocellulosic by-products that the waste stream includes are post-consumer plastic waste and agricultural residues, including rice husk, coconut shells, groundnut shells, and other forms of agricultural by-products, which make up a significant part of the global solid waste streams. Most of these wastes

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Experimental Investigation and Analysis of Friction Stir Welding on Dissimilar Materials (Cu and Al-6063)

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Abstract

Friction Stir Welding (FSW) is an automated process that belongs to the category of solid-state welding processes. In this study, FSW was performed on copper to aluminium materials using three different tool designs. In this experiment, proper selection of input rubbing welding parameters is necessary in order to control weld distortion and subsequently increase the efficiency of the process. In order to achieve a high-quality weld and manage weld distortion, it is essential to regulate the input welding parameters. In this study, tests need to be conducted on AA6063 and copper alloy of 6mm thickness using the friction welding method with different shaped tools. The studies compared different tools with various samples of dimensions 100×100×6mm, using the same set of process parameters, including rpm, feed and axial force. With multiple profiles analysed using consistent parameters, a very smooth finish was achieved on cylindrical and threaded tool profiles. Rough bead texture and slight porosity could be seen on the triangular tool edge. The highest tensile strength reached 28.85N/mm^2 with a cylindrical 6mm tool profile pin. During this investigation, copper and

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RESEARCH ARTICLE

OPEN ACCESS

GLITCH-FREE CLOCK DISTRIBUTION USING FLIP-FLOP–CONTROLLED CLOCK GATING IN A 32-BIT RISC-V ARCHITECTURE

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ABSTRACT

Clock distribution contributes significantly to the dynamic power consumption of contemporary embedded processors, especially in low-power 32-bit RISC-V cores. The continuous toggling of the clock signal during idle and stall cycles not only contributes to higher switching power consumption but also poses the risk of potential clock glitches, which can impact timing correctness. In this paper, a glitch-free clock distribution scheme using flip-flop-controlled clock gating is presented for a 32-bit RISC-V processor. Unlike existing approaches based on latch-controlled clock gating, the proposed scheme uses an edge-triggered flip-flop to synchronize the clock gating signal, thus making gating decisions in a timing-safe manner only at the clock edges. The gating logic is selectively applied to the address generation unit, register file, and pipeline stages to avoid unnecessary switching activity. The proposed architecture is described in Verilog HDL and implemented using standard CMOS technology. Experimental evaluation shows a dynamic clock power reduction of approximately 30-35% with less than 2% area overhead and without degrading the critical path delay (4.765 ns total delay with positive slack). The proposed approach strikes an optimal balance between power savings, timing correctness, and ease of implementation, making it highly attractive for low-power embedded RISC-V platforms.

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I. INTRODUCTION

With the rapid growth of applications that consume a lot of power, such as the Internet of Things (IoT), wearable technology, and embedded systems, low-power processor design has emerged as a highly relevant area of research. RISC-V is an open-source instruction set architecture that has gained immense popularity due to its modularity, scalability, and suitability for low-power custom designs. Clock distribution remains one of the primary sources of power consumption in RISC-V processors, despite being simple. In synchronous digital systems, the clock network continues to switch on and off regardless of what else is happening in the system. This results in a significant amount of dynamic power dissipation. This issue is most pronounced in address generation units and pipelining, where clock transitions continue to occur even when the system is idle or is stuck in a pipeline.

The traditional clock gating techniques, which are normally latch-controlled enable signals, can reduce the switching activity, but if not designed properly, they can introduce clock glitches and timing errors. This paper proposes a flip-flop-based clock gating technique to overcome these issues. The proposed technique enables safe and glitch-free clock distribution in a 32-bit RISC-V processor. The proposed technique utilizes flip-flops to synchronize the clock enable signals, which implies that clock gating decisions are made only at the clock edges. This eliminates false transitions. Moreover, the address generation unit and clock gating logic are tightly coupled, which enables fine-grained control of clock enabling. In order to make the design suitable for low-power embedded RISC-V processors, the primary objective of this research is to minimize dynamic power dissipation while retaining the optimal area and delay properties.

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RESEARCH ARTICLE

AN EFFICIENT DEEP LEARNING FRAMEWORK FOI DIABETIC RETINOPATHY DETECTION USING O(

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Keywords:
Diabetic Retinopathy,
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Medical Image Classification,
ROAD Dataset.

ABSTRACT

Diabetic retinopathy (DR) is a leading cause of vision in diabetes, making early detection and accurate severity gra intervention. This work proposes an automated deep l detection and classification of diabetic retinopathy using Angiography (OCTA) images from the ROAD dataset. T of three main stages: image preprocessing, deep fea classification. In the preprocessing stage, image resizin score normalization, and Contrast Limited Adaptive Hist employed to enhance retinal microvascular structures an Deep features are extracted using convolutional neural ResNet and EfficientNet variants, and optimized using classifier is then utilized to categorize OCTA images int Non-Proliferative Diabetic Retinopathy, and Proliferative performance of the proposed framework is evaluated usin precision, and F1-score metrics. Comparative analysis de + Softmax model achieves superior performance, with an 97.26%, specificity of 98.54%, precision of 98.66%, and results confirm the effectiveness and robustness of the pr

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I. INTRODUCTION

Diabetic retinopathy (DR) is one of the most common microvascular complications of dial

RESEARCH ARTICLE | MAY 21 2026

Adaptive video processing through intelligent optimization for enhancing transmission quality

Shaik Karimullah ✉; Ramireddy Lakshmi Narasimha Reddy; Mudassir Khan; Vasi Lakshmi Narasimha; Mavillapalle Nanda Kishore; Patan Mohammed Aasif Khan; Fahimuddin Shaik

+ Author & Article Information

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In response to rapid high-definition video proliferation and increasing needs for efficient streaming solutions, older techniques for video compression have become increasingly inefficient in quality versus the optimized bandwidth. The study presents the Optimized adaptive video compression (OVC) model that improves entropy, boosts throughput, and maximizes PSNR, adjusting dynamically according to changing error probabilities. We compare our proposed method with traditional video compression standards like H.264/AVC, HEVC/H.265, VP9, AV1, and MPEG-4. The results of OVC were compared to conventional compression, with OVC providing an approximate 1. 49 bits of entropy (1. 5x higher) compared to other models and also providing 0. 98 of throughput with a PSNR of 40 dB in comparison to traditional methods with respect to quality and transmission efficiency. The optimization is completed and adapts the parameters for encoding on real-time network conditions so as to abate data loss and thereby reduce retransmissions. Conclusions support the notion that proposed compression models can take over existing means of compressing in, video conferencing, high-def video streaming, real-time broadcasting, and telemedicine.

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Review Article

Performance Analysis of Intra-Pulse Modulation Recognition of Radar Signals Via Hand-Crafted Feature Extraction and Classification

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Abstract *- Recognizing intrapulse-modulated signals is crucial for electronic warfare and reconnaissance systems since it involves identifying certain modulation patterns under weak and noisy signals. Recently, advances in feature extraction and signal processing have powered new techniques that greatly increase the identification speed and identification rate. Most approaches still only use crafted features and time-frequency representations for analyzing and classifying radar signals. In this article, we review the performance of such systems designed using handcrafted features and based on the recognition of different intra-pulse modulation. Most handcrafted systems still use the raw digital signal or the processed images of the time-frequency representation as feed for their algorithm. In this regard, we take the lead in the discussion by proposing a system for signal processing that transforms the raw signal into a time-frequency representation image to be processed. After the image is computed, it is passed on for a fixed feature set, followed by a set of standard classifiers for identification. In various test situations, our constructed pipeline showed consistent and significant improvement over established methods in terms of identification precision and overall accuracy.*

Keywords *- Intra-Pulse Modulation, Radar Signals, Feature extraction, Hand-crafted features, Classification.*

1. Introduction

The Intra-Pulse Modulation (IPM) recognition serves as the foundation of modern radar processing, allowing analysts to identify different sources of radar while distinguishing the subtle differences in the pulse patterns of each emitter. Engineers decompose incoming waveforms into several components, looking for patterns of signatures marked within the pulse for automation in supporting electronic warfare, border patrol, and sea supervision as part of the automation engines. Because of the operation of embedded pulse IPM, reviewers have to rely on extensive scanning and variation modulation databases, which help to identify families of radar and their mission profiles [1]. When used with other classification methods, IPM profiling enhances discrimination, allowing operators to discern innocuous traffic from latent threats. These entire procedures show how meticulous, chronological, and routine analysis of radar returns provides considerable insights into the possible military and civilian purposes, along with the actionable strategies. Intra-Pulse Modulation (IPM) recognition serves as the foundation of modern radar processing, allowing analysts to identify different radar sources while distinguishing subtle differences in the pulse patterns of each emitter [2]. Radar signal processing involves analyzing radar echoes and their features to extract useful information. The unobtrusive, yet vital, role of radar signal processing has been revolutionizing, and in a large number of cases, ensuring the safe and smooth execution, namely, guidance of military drones in hostile territories, air traffic control, and guidance of airplanes in and around heavily congested airports [3]. One of the most specialized functions in radar signal processing, radar emitter identification, attempts recognition of the novel signal by juxtaposing it against a catalogue of signal fingerprints - the inter-pulse modulation, or IPM pattern. Once an IPM pattern has been clearly established, reliable source identification and tagging can be made, which is so critically valuable for surveillance, and for defensive and offensive electronic warfare [4]. More general signal sorting, in terms of behaviour patterns, primitives, timing, jamming-resistant frequencies, and average power levels, needs to be done to allow systematic identification, like a librarian sorting signal reception into fiction, history, and reference. Once general sorting has been done, signal data is clean for systematic work to be done for IPM recognition, and intermediate coarse categorization translates into identification of probable emitters. Here, the technique of pulse compression, which is


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Review

A Comprehensive Review of Memory Architectures and Network Interfaces and Advancements in High-Bandwidth and Low-Latency Systems

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Abstract: This review discusses the significant advances in the architecture of memory systems, the enhancement of which has been among the most significant concerns in the process of creating systems with high bandwidth and low latency requirements. It has analyzed various fields that include virtually pipelined systems, millimeter-wave interface, and enhanced memory controllers, which would meet the requirements of high-performance computing (HPC). Among all the developments put in place, die-stacked DRAM (Dynamic Random Access Memory) systems offer a high bandwidth boost with the networks-on-chip scalable and meant to address the issues of congestion and incoherence in interconnecting cores. The literature survey also identifies some of the major developments in the mechanism of passing messages and memory management optimizations in distributed systems that have been found to be critical towards useful data transfer and processing in massive parallel computer systems. The advanced multi-port memory controllers are also observed to improve the bandwidth and efficiency in utilizing the resources. The review, however, points out some of the challenges that are still there, including the limitation of scalability of the centralized memory system, the latency issues of high-radix interconnects and the integration problems of heterogeneous computing systems. The evaluation highlights the need for new ways to tackle the limitations of current memory management techniques. Research will center on the possibilities of using machine learning to anticipate workloads and applying adaptive hybrid memory allocators to allocate across memory types dynamically. The goal of these techniques is to increase performance, bandwidth, latency, and energy efficiency in high-performance computing systems.

Keywords: Networks-on-Chip; Optimized Memory Management; Memory Controllers; Die-Stacked DRAM; Distributed Systems; Latency; Heterogeneous Computing Environments

1. Introduction

The increasing needs of data-intensive and compute-intensive applications are driving high-performance computing (HPC) systems, which demand memory architectures that are high-bandwidth, low-latency, and energy-efficient. Conventional memory hierarchies are effective for general-purpose computing but cannot meet the performance needs of modern workload classes such as machine learning, scientific simulations, and real-time analytics. Therefore, innovations across the entire memory subsystem are necessary. Hardware improvements include more advanced memory controllers and optimized interconnects that allow for faster access, improved contention, and throughput of data. Emerging memory technologies like die-stacked DRAM, non-volatile memory (NVM), and resistive RAM (ReRAM) represent potential solutions to bandwidth and latency performance issues in traditional

PeerJ Computer Science

An optimal diagnosis model for pancreatic cancer prediction based on deep learning method

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ABSTRACT

Carcinoma of the pancreas is one of the deadliest malignant neoplasms due to its late detection, high mortality rate, and poor prognosis. Pancreatic tumors show significant variation in location, size, and shape, complicating accurate diagnosis. Moreover, they are often small and embedded within tissues of similar intensity in computed tomography (CT) images, making differentiation from healthy tissue difficult. Since biopsies and other pathological tests are not routinely performed in clinical settings, there is a growing need for non-invasive and repeatable diagnostic solutions. In current practice, CT images used for pancreatic cancer analysis require manual outlining, which is both time-consuming and subjective. Manual segmentation is inefficient for clinical use, thus emphasizing the need for a robust automated segmentation system. Both radiologists and existing algorithms struggle to accurately identify cancerous regions due to the visual similarity between tumor and normal tissue in CT scans. To address these challenges, this study proposes an automated pancreatic cancer detection system that integrates deep learning with optimization-based segmentation. This combined approach enhances threshold selection and improves segmentation accuracy in complex tumor regions. Specifically, multilevel thresholding guided by an optimization technique is applied to detect pancreatic cancer at an early stage, thereby helping reduce mortality rates. The optimization strategy is used to identify optimal parameters for maximizing the prediction rate using a deep learning classifier such as convolutional neural networks (CNN). The proposed system achieved an accuracy of 95.92%. Additionally, evaluation metrics including peak signal-to-noise ratio (PSNR), sensitivity, specificity, and mean square error (MSE) were calculated and compared with those of existing systems. This study demonstrates that the proposed particle swarm optimization (PSO)–CNN–based automated system offers a promising approach for reliable early detection and improved diagnostic accuracy in pancreatic cancer.

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Original Article

Performance Evaluation of Error Correction Techniques in 6G Quantum Communication

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Abstract *- In upcoming generations of wireless communication (6G), Quantum Information Technology (QIT) will be integrated for high computational speeds and unprecedented security features. Quantum states are very delicate and may be lost or suffer from excessive noise as a result of decoherence during transmission. This especially applies to long-distance quantum links that are required for a global 6G network. The use of Quantum Error Correction (QEC) techniques will be necessary in order to achieve fault-tolerant quantum communication. In this work, the most actionablle QEC and hybrid (quantum-classical) error correction techniques are analyzed, especially with respect to the difficult channel conditions and high Key Performance Indicators (KPI) regarding 6G. In particular, the error suppression, qubit overhead, and decoding time required for various codes (Surface Code, Steane Code, hybrid Reed-Solomon (RS)/Turbo Codes, etc.) will be analyzed in the context of a 6G quantum channel (free-space or noisy fiber) to provide 6G. In the wireless 6G network, the simulation will show that while high-distance QEC codes provide the best ultimate logical error suppression, the enormous resource costs and 6G's strict latency requirements will lead to the first proposed hybrid classical-QEC.*

Keywords *- 6G, Quantum Information Technology (QIT), Quantum Error Correction (QEC), Decoherence, Fault-Tolerant Quantum Communication.*

1. Introduction

The development of Sixth-Generation (6G) wireless communication networks is expected to change telecommunications by offering higher data rates, lower delays, and more connections, all while enhancing security features. Current aspirations for 6G technologies target futuristic applications like holographic telepresence and semantic communications. However, meeting the performance and security needs of these applications will require more than the classical communication paradigm. 6G communication will need the complete integration of Quantum Information Technologies (QIT), including Quantum Key Distribution (QKD) and quantum-enabled processing, and the other 6G technologies. Such technologies will offer communication that is secure by the very fundamentals of quantum mechanics and will provide powerful computational capabilities [1].

Practically, quantum communication for 6G networks using ground and satellite systems and terrestrial networks encounters dual challenges: the practical use of quantum technologies and the noisy quantum channels. Quantum decoherence, loss of photons, and environmental disturbances lead to channel errors of bit-flips, phase-flips, and combinations of all quantum errors. Quantum states will lose computational utility, and secure quantum communication will be compromised if mitigation techniques are allowed to fail. Therefore, fault-tolerant quantum communication will depend on the adoption of advanced error correction techniques to cut error rates below the critical limits for quantum state preservation [2].

Development in Quantum Error Correction (QEC) techniques, such as surface codes and hybrid quantum-classical codes, lays the groundwork for preserving coherence and developing scalable quantum networks for 6G. The surface codes showed high error thresholds, but 6G will involve more dynamic and unpredictable noisy environments, and extensive evaluations of error correction codes will be necessary, including logical error rates, qubit overhead, and latency in decoding and levels of fault-tolerance. Such evaluations will need to be aligned to inform the quantum 6G hardware, decoding algorithms, and system-6G protocol design [3].

A critical research gap in 6G quantum communication lies in the latency-overhead trade-off of Quantum Error Correction (QEC) when integrated into Ultra-Reliable Low-Latency Communication (URLLC) frameworks. While 6G targets sub-millisecond end-to-end latency (specifically 0.1

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Engineering, Technology & Applied Science Research

Enhanced DR Screening Using DiabDHS-Net: A Deep Learning Approach with FGK Clustering and Morphological Processing

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Corresponding author: Fahimuddin Shaik

Abstract

Diabetic Retinopathy (DR) develops as a microvascular diabetes complication that affects the retinal blood vessels and causes vision loss that could become permanent unless diagnosed and treated appropriately. Research on deep learning-based detection of DR has gained extensive popularity due to improvements in medical image processing and neural network designs. The

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Automated Left Ventricle Segmentation in MRI Using U-Net Architecture

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(IC3IA 2025)

M. Venkata Dasu, C. Venkatesh, L. Sivayamini, M. Shivani, M. Penchalamma, N. Sandhya, P. Raju & M. Ravi Kiran

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Abstract

Accurate diagnosis and therapy planning in cardiovascular disorders depends on automated left ventricle (LV) segmentation using cardiac magnetic resonance imaging (MRI). The research outlines an effective automatic left ventricle segmentation system based on the U-Net architecture which runs on MATLAB platforms. A chosen dataset containing MRI left ventricle images and their corresponding ground truth segmentations forms the starting point of this procedure. The advanced semantic segmentation network U-Net receives optimized training through extensive hyperparameter optimization and data augmentation methods applied to this specified dataset. The approach enables precise left ventricle segmentation while maintaining total processing speed suitable for clinical use. The proposed approach resolves LV segmentation challenges through its implementation of robust U-Net architecture and MATLAB image processing tools to yield precise and dependable research findings. Research results show that deep learning algorithms possess vast potential for automated medical image processing which will advance non-invasive cardiovascular testing.

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Expert Systems with Applications

Volume 285, 1 August 2025, 128116

Enhanced multi-grade diabetic retinopathy detection and classification via ensembled deep learning model from retinal fundus images

Peddapullaiahgari Hariobulesu [a b], Fahimuddin Shaik [b]

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Abstract

Diabetic retinopathy (DR) represents a primary cause of vision impairment, highlighting the importance of early and precise detection to reduce its advancement. This study presents DiaRetULS-Net, an innovative Ensembled model developed for the automated detection and classification of diabetic retinopathy severity utilizing retinal fundus images. The proposed methodology utilizes advanced preprocessing techniques, such as Contrast Limited Adaptive Histogram Equalization (CLAHE) for image enhancement, alongside robust feature extraction methods including Discrete Wavelet Transform (DWT) and Local Binary Patterns (LBP) to effectively capture essential frequency and texture-based features. The DiaRetULS-Net architecture combines U-Net for accurate segmentation of retinal abnormalities, the Liquid Time Constant Neural Network (LTCN) for the extraction of dynamic spatial and temporal features, and a Multi-Class Support Vector Machine (SVM) for precise classification of diabetic retinopathy severity levels. The model was assessed using the Messidor-2 dataset and a 5-fold cross-validation approach, resulting in notable performance metrics: 98.83% accuracy, 98.87% specificity, and 99.21% sensitivity. Comprehensive analyses, such as the Receiver Operating Characteristic (ROC) curve, confusion matrix, and error histogram, substantiate the model's reliability and efficiency.

Previous Next

Keywords

Diabetic Retinopathy; Retinal Fundus Images; U-Net; Liquid Time Constant Neural Network; Multi-Class Support Vector Machine; Local Binary Patterns; Image Segmentation; Feature Extraction; Temporal Feature Modeling;

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ARTICLE

LinBGN-Net: A Unified Linguistic Framework for Multi-Task Text Classification in Telugu Using BERT, GCN, and Naive Bayes

Asif Hussain Shaik [1*], *Fahimuddin Shaik* [2], *Karimullah Shaik* [2*], *Sureshbabu G* [3]

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ABSTRACT

Despite the growing interest in Natural Language Processing (NLP), linguistically grounded multi-task modeling for low-resource languages like Telugu remains underexplored, particularly across semantically complex tasks such as sentiment, emotion, hate speech, sarcasm, and clickbait detection. This study aims to address this gap by conducting a comprehensive linguistic analysis of Telugu texts through the lens of computational modeling. To that end, we propose LinBGN-Net, an innovative ensemble deep learning framework that integrates BERT for contextual embedding, Graph Convolutional Networks (GCN) for structural understanding, and Naive Bayes (NB) for statistical grounding. The model is trained on five well-balanced Telugu datasets (totalling over 250,000 sentences) from Hugging Face, covering diverse label spaces (2 to 5 classes), thus facilitating an in-depth linguistic study across varied text genres and expressions. LinBGN-Net achieves macro-F1 scores of 0.86 (Sentiment), 0.84 (Emotion), 0.93 (Hate Speech), 0.92 (Sarcasm), and 0.95 (Clickbait), outperforming standard baselines such as Naive Bayes, SVM, LSTM, and even standalone BERT by margins of 2–8% across tasks. The results not only demonstrate the effectiveness of LinBGN-Net as a high-performing multi-task model, but also offer valuable linguistic insights into how Telugu expressions of sentiment, emotion, intent, and persuasion can be computationally modeled and understood—contributing significantly to both linguistic research and real-world NLP

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Research Articles

Covid-19 diagnosis using privacy-preserving data monitoring: an explainable AI deep learning model with blockchain security

K. Bala, K. Ashok Kumar, D. Venu, Bhanu Prakash Dudi, Siva prasad Veluri & V. Nirmala

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Abstract

The COVID-19 pandemic emphasised necessity for prompt, precise diagnostics, secure data storage, and robust privacy prot

Accept all al Reject all iostic systems often suffer from limited transparency, inadequate performance, and challenges in ensuring data security and privacy. The research proposes a novel privacy-preserving diagnostic framework, Heterogeneous Convolutional-recurrent

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REVIEW

A Comprehensive Review on Plant Leaf Disease Detection Systems Using Machine Learning and Deep Learning Techniques

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ABSTRACT

The problems of plant leaf disease are rather serious in the world agricultural industry, leading to a significant decrease in crop quantity and quality, consequently, resulting in a huge loss in the economy and food insecurity. Detection and successful classification of plant diseases at the initial stage is essential to further agricultural output and the quality production of food. The recent improvements in the field of artificial intelligence (AI), specifically, machine learning (ML) and deep learning (DL), have shown significant prospects in automating and enhancing methods of diagnosing plant leaf diseases by using a wide variety of ML and DL algorithms. This review article presents an in-depth analysis of thirty novel methods created by researchers to diagnose and classify plant leaf diseases. They are such conventional classifiers as Support Vector Machines (SVM), Random Forests (RF), and K-Nearest Neighbors (KNN), along with some advanced DL architectures, such as Convolutional Neural Networks (CNN), VGG16, ResNet50, InceptionResNetV2, EfficientNet, and various hybrids. The review analysis takes into consideration the methodologies applied, performance metrics, and insights in practice, as well as the strengths and weaknesses of both. The most crucial findings of the review show that deep learning models, and CNNs in particular, tend to be more accurate, robust, and feature extractors than traditional models of MLs. The performance of classification is also enhanced by numerous hybrid models that will

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A ROBUST FRAGILE WATERMARKING APPROACH FOR IMAGE TAMPERING DETECTION AND RESTORATION UTILIZING HYBRID TRANSFORMS

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ABSTRACT

This project is aimed at ensuring that digital images are not tampered with or altered in the wrong manner. Mathematical techniques of Schur decomposition and Discrete Wavelet Transform (DWT) are used to add a special watermark to the image. This is with the help of the watermark, which checks whether an individual has manipulated the original image even when he or she does not have the original copy of the image. Any changes can be detected only with the help of a secret key. In case some sections of the image are severed or edited, the system can restore the sections and repair it based on the concealed data within the image. The technique is convenient when storing images securely and making them authentic. It may be applied in such significant spheres as medical imaging, police or forensic investigation, and prevention of copyrights abuse. The method is set to be precise and effective with an additional consideration of experimental evaluation using Peak Signal-to-Noise Ratio (PSNR) and Structural Similarity Index Measure (SSIM) demonstrates high watermark imperceptibility, with PSNR values consistently exceeding 40 dB.

Keywords: *Digital Image Authentication, Blind Fragile Watermarking, Discrete Wavelet Transform (DWT), Schur Decomposition, Tamper Detection and Recovery, Image Integrity Verification, Secure Image Watermarking*

I. INTRODUCTION

This is because the recent advancement of digital imaging technologies and online content sharing has raised considerably the importance of authenticity and integrity of digital images. The use of images is extensively applied as vital sources of information in such sensitive fields as medical diagnosis, forensic investigation, law enforcement, journalism, and copyright management. However, the tools of image editing of today allow making advanced manipulations that are usually impossible to see with the naked eye, and it is hard to understand whether an image has been manipulated in an ill intent. Consequently, tampering of images is dangerous and can lead to misinformation, legal and decision making issues [1], [9], [17].

Digital image authentication methods have been widely researched in order to overcome these difficulties and digital watermarking has become one of the potential solutions. Watermarking is a process of attaching a hidden message to an image so as to confirm the authenticity and integrity of the image. Contrary to the standard practises in cryptography where the original image is frequently referred to to effect the verifying process, watermarking only requires verification using the image that has been watermarked [2], [6].

Blind fragile watermarking is one of the watermarking methods that have been widely studied over the past few years. Blind watermarking enables authentication with no reference to the original image whereas fragile watermarking prohibits that minimal alterations are made to the image but they are detected at the same time [1], [10]. The recent research points out that blind fragile watermarking is especially applicable in tamper detection and localization in distributed and cloud-based scenarios [7], [12].

Transform-domain watermarking algorithms are found to be more robust and more secure than the spatial-domain ones. Specifically, Multi-resolution representation and close correspondence to the human visual system have predisposed the Discrete Wavelet Transform (DWT) to wide adoption [3], [4]. DWT splits

an image into frequency sub-bands thus making it possible to embed watermarks in perceptually less sensitive areas. Recent publications demonstrate that DWT-based watermarking can be highly imperceptible and at the same time can be reliably detected [7], [14].

Simultaneously, the methods of matrix decomposition are also studied to make watermarking more accurate and numerically stable. Embedding control and resistance to attacks are enhanced in methods based on matrix factorization [15]. Some of these methods include stability and effective representation of the structure of matrices which are the strengths of Schur decomposition. Recent findings show that a combination of matrix decomposition and the transform-domain watermarking is more effective in improving the authentication accuracy and localizing tampering [5], [15]. Although these are the advantages, the joint DWT and Schur decomposition of blind watermarking has little exploration.

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Federated deep reinforcement Q-learning for secure and energy-efficient data routing in internet of things networks

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Abstract

Internet of Things (IoT) enabled wireless sensor networks face severe issues in secure and energy-efficient data routing, which are associated with dynamic topology, limited node energy, non-independent and identically distributed data, and malicious routing. The traditional centralized routing methods have a high communication overhead, a lack of scalability and privacy. In this research, secure routing is developed as a federated multi-agent deep reinforcement Q-learning network to collaboratively optimize energy efficiency, delay, throughput, and routing security. Security is implemented as a reward or penalty for malicious path choice; the abnormal packet drops and unstable links. The potential inference search algorithm is employed to perform cluster formation, and the hybrid human memory golden jackal optimization algorithm is employed to optimize cluster-head selection. federated learning allows learning policies without exchanging raw data, which makes it decentralized, minimizing privacy risks and communication overhead over centralized Deep Reinforcement Learning (DRL). NS3 simulations of 100 nodes indicate that the proposed approach attains 325 kbps throughput, 8 ms delay, 175 J energy consumption and 55% of the residual energy, which

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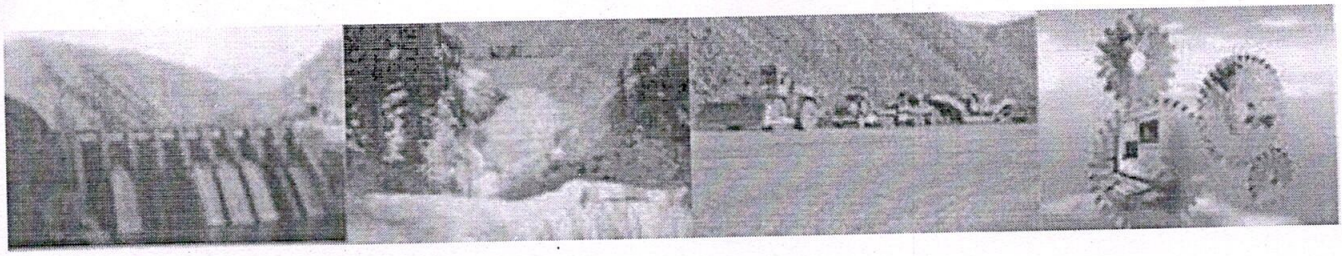

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Comparative analysis of advanced shielding techniques for crosstalk mitigation in multi-walled carbon nanotube TSVs

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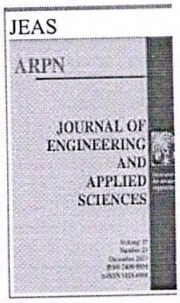
Abstract

This study introduces an innovative approach to minimise crosstalk interference, power consumption, Power Delay Product (PDP), and Energy Delay Product (EDP) in multi-walled carbon nanotube (MWCNT)-based through-silicon vias (TSVs) using polymer dielectric liners. The proposed TSV design integrates MWCNT bundles as conductive channels and employs low-k polymer liners, such as polyimide, polypropylene carbonate (PPC), and benzocyclobutene (BCB), as insulating dielectrics. An equivalent electrical circuit model is developed to analyse crosstalk behaviour in coupled TSVs driven by a ternary inverter. Simulation results obtained with the HSPICE tool demonstrate that BCB-based TSVs achieve significant performance improvements, up to 30.21% compared to single-walled carbon nanotube (SWCNT) TSVs, particularly at reduced TSV heights. Additionally, BCB-lined TSVs exhibit exceptional crosstalk suppression at wider TSV pitch values, offering approximately 40.03% enhancement in the 0.5–3 µm pitch range over SWCNT counterparts. The analysis also shows that BCB reduces crosstalk delay by 43.8% compared to conventional SiO_2 liners. Overall, the results confirm that polymer liners-particularly BCB-significantly enhance signal integrity, lower power loss, and boost overall performance, making them a highly effective and reliable alternative for next-generation 3D integrated circuit (3D-IC) technologies.

Back



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Trust-Aware Federated Learning with Differential Privacy for Secure AIoT in Critical Infrastructures

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Abstract

Federated learning offers a scalable solution for distributed intelligence in Artificial Intelligence of Things (AIoT) systems, yet privacy leakage, adversarial attacks, and system heterogeneity remain persistent challenges in critical infrastructures such as smart cities, agriculture, and forestry. This paper proposes PriSec-FedGuardNet, a trust-aware federated learning framework that integrates differential privacy, homomorphic secure aggregation, and graph neural network–based trust evaluation to safeguard both data and model updates. The framework preserves sensitive information by perturbing gradients with calibrated noise, encrypts local updates for aggregation without decryption, and assigns trust scores to filter unreliable participants. Experimental validation on ToN-IoT, Bot-IoT, and real-world sensor datasets demonstrates that PriSec-FedGuardNet maintains above 97.3% relative utility under strict privacy budgets, improves anomaly detection F1-scores by up to 18% under poisoning attacks, and reduces device-level energy overheads to less than 12%. Domain-specific evaluations across Indian smart city, agricultural, and forestry deployments further highlight the adaptability and efficiency of the framework. By balancing privacy, security, and utility, PriSec-FedGuardNet establishes a robust paradigm for secure federated learning in AIoT-driven critical infrastructures. © 2025 Kadiyala Ramana et al., licensed to EAI.

Author keywords

AIoT; Critical Infrastructures; Differential Privacy; Federated Learning; Graph Neural Networks; Homomorphic Encryption; Trust-Aware Aggregation

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Research Article

Forecasting Crypto Currency Prices with Deep Learning: Short to Long Horizon

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Abstract

The fast-evolving cryptocurrency markets present both special opportunities and challenges. The risk involved in investing in cryptocurrency assets is very high because exchange prices can change on a day-to-day basis. The study uses powerful machine learning techniques to forecast the value of cryptocurrencies. In comparison to the other seven models with fewer errors, neural networks achieved the best forecasting and validation performance. In order to predict future trends, LSTM (Long Short-Term Memory) neural networks were used. Complex relationships in financial data can be effectively analyzed using the LSTM model. Overall, more than fifty cryptocurrencies were subjected to Exploratory Data Analysis (EDA), which began with the collection of historical data and continued with feature engineering, integrative binning, data preparation, and standardization. The most successful ones were identified based on price movement, market size, and trading volume. The LSTM-based model was coded in Python and applied to 90-day price movement data to examine the existence of complex patterns and correlations. The performance indicators used to monitor the model were RMSE and MAE. These results corroborate the Adaptive Market Hypothesis (AMH), which posits that changes in investor and market behavior impact the dynamic efficiency of cryptocurrency markets. As shown in the paper, machine learning models have significant potential in financial economics and can be beneficial for investment decision-making processes and risk management approaches.

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I. INTRODUCTION

The secretive Satoshi Nakamoto introduced Bitcoin, a new financial innovation [19], [5]. When Bitcoin was released in 2009, it heralded the commencement of a decentralized digital currency that allowed for safe peer-to-peer transactions [19]. After the introduction of Bitcoin, a number of other cryptocurrencies, such as Ethereum, Ripple, and Litecoin, emerged. These are now widely used in many areas of the economy, including banking, game development, and supply chains [6]. The rapid growth and volatility of this decentralized market necessitate the use of complex predictive models to forecast price trends and finely tune risks [1]. Machine learning, especially LSTM networks, is applied in the prediction of sequential data because traditional linear models cannot capture the complex nonlinear dynamics of financial time series [14], [26].

Research has demonstrated that LSTM models are superior to ARIMA and other conventional models in forecasting cryptocurrency and stock prices [16], [29]. Recent studies also emphasize the success of these models due to their reliance on data preprocessing and model settings [10].

In this research, seven models are used to determine the most effective one in terms of minimum error and highest precision, and the LSTM neural network is selected for 90-day cryptocurrency price prediction [3], [29]. The research aims to strengthen forecasting accuracy through advanced feature engineering, normalization, and validation, thereby contributing valuable insights into machine learning applications in dynamic financial markets [21].

II. LITERATURE REVIEW

An LSTM-based model was utilized by Suedumrong et al. (2021) [1] to forecast Bitcoin price changes. Using historical pricing data, an accuracy rate of 72.4% was achieved. Performance was poor during periods of high market volatility. Zhang *et al.* (2022) [2] introduced a transformer-based long-term dependency learning paradigm and reported a 78.6% accuracy rate on Bitcoin price data. It requires high processing power, and the advantage over LSTM is not significant. Cao *et al.* (2022) [3] developed a multivariate forecasting GRU model with an added attention mechanism. An accuracy of 91.3% on cryptocurrency datasets was achieved. However, the model had the drawback of high memory consumption. Ahmed et al. (2023) [4] proposed an LSTM model optimized with GWO for short- and medium-horizon predictions, achieving an accuracy of 89.7%. However, it had a long training time and slow convergence. A hybrid CNN-GRU model proposed by Li *et al.* (2024) [5] designed for short-term forecasting and achieved an accuracy of 92.4%. However, long-horizon prediction performance was low and incurred higher computational costs.A comparison of ensemble and deep learning models was conducted by Bouteska *et al.* (2024) [6]. GRU and LightGBM achieved up to 90.1% accuracy. However, none of the models proved to be the most suitable across all prediction horizons. Farooq *et al.* [7] developed a Temporal Fusion Transformer model for multi-horizon prediction. It achieved 85.6% long-term and 93.2% short-term accuracy but was limited by model complexity and high training costs.

III. CONTRIBUTION OF THE PROPOSED WORK

The available literature focuses on predicting the price of a single cryptocurrency and is primarily oriented toward short-term forecasts. Most studies use complex models that require longer training times, incur higher costs, and cannot be applied effectively to long-term prediction [28]. This project employs a basic LSTM model to forecast 90-day price changes for multiple cryptocurrencies. Through appropriate data analysis and feature processing, the model achieves high accuracy while maintaining lower complexity, making it applicable to real-world scenarios. The available literature primarily concentrates on short-term predictions of individual cryptocurrencies and often relies on complex models that are time-consuming and costly, limiting their effectiveness for long-term forecasting. In contrast, this project applies a basic LSTM model to predict 90-day price movements of multiple cryptocurrencies [29]. With proper data analysis and feature processing, the model remains both accurate and less complex, enhancing its practical applicability.

IV. METHODOLOGY

In order to make accurate predictions, a deep-seated approach that has been validated was employed to analyze potential market trends and patterns of cryptocurrencies [8]. The study process is illustrated in Figure 1 [3].

A. Data Collection

The procedure begins with the systematic collection of historical Bitcoin exchange data from reliable financial providers [17]. This data collection is based on an understanding of the decentralized nature of cryptocurrencies, as described in the seminal research on Bitcoin and blockchain technology, which explains how digital assets function and how they are structured [19]. Studies on market interconnections and cryptocurrency volatility highlight the importance of obtaining reliable and consistent data for modeling purposes [1]. For widely used cryptocurrencies such as Bitcoin, Ethereum, Ripple, and Bitcoin Cash, the dataset includes open, close, high, low, volume, and market capitalization data points [6]. Recent studies exploring the relationship between cryptocurrency prices and trading volumes emphasize the need to capture nonlinear relationships in rapidly evolving markets [2].

B. Data Acquisition

They were first gathered using a Python-based selection of the top 50 cryptocurrencies from CoinMarketCap and Yahoo Finance[23] (https://finance.yahoo.com/markets/crypto/all/).

C. Data Preprocessing

The raw data must undergo considerable preprocessing before it can be used in deep learning models [10]. Financial time-series data often contain missing values due to exchange failures or difficulties in data retrieval [17]. Studies on predictive modeling highlight the importance of applying interpolation or value propagation methods in a systematic manner to address such discrepancies [8]. According to conventional statistical normalization methods, normalization is conducted to scale all numerical values to a comparable range after the data has been cleaned [12]. To identify temporal dependencies, the data must be transformed into sequential windows [16]. This sliding window approach

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Structure and Dielectric Behavior of $Mn_xZn_{1-x}TiO_3$, (x = 0.1, 0.3, & 0.5) Ceramics for Microwave Applications with Enhanced Permittivity.

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Abstract:

The microstructure and dielectric properties of manganese-doped zinc titanate ($Mn_xZn_{1-x}TiO_3$) ceramics were systematically studied for varying manganese concentrations (x = 0.1, 0.3, and 0.5). X-ray diffraction analysis confirmed the formation of a single-phase ilmenite-type hexagonal structure, reflecting the structural evolution with dopant concentration. Dielectric measurements revealed that the dielectric constant increased significantly with both manganese doping and temperature, while it decreased with increasing frequency. Similarly, dielectric loss exhibited a temperature-dependent rise and frequency-dependent decline. Notably, the partial substitution of Zn^{2+} by Mn^{2+} ions led to enhanced dielectric behavior, with the dielectric constant increasing by up to ~80%. These improvements underscore the material's potential for use in high-performance dielectric and electronic applications.

Keywords: *Zinc titanate; Ilmenite hexagonal structure; Dielectric constant; Loss tangent; Mn doping concentration.*

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Research

Optimization of Lightweight Polymer Composites Using Finite Element Analysis Machine Learning and Topology Optimization Techniques for Aerospace Applications

A. Arunkumar[1]*, Jyothhi Yarlagaddaa[2], I Sreevani[3], Boopathy G.[4], Mohit Tiwari[5], Avinash Kumar[6], L. Ganesh Babu[7], T. Venkatajalapathi[8]

Abstract

The advancement of aerospace engineering depends on lightweight polymer matrix composites (PMCs) because they help decrease weight while improving fuel efficiency and payload capacity together with increased structural integrity. Research developed a computer program comprising FEA with ANN and TO optimize high-performance PMCs through integrated design approaches. The combination of Python-controlled LS-DYNA simulations measured hybrid composite laminate resistance to impact while an ANN model obtained data from simulations to forecast projectile velocities across different reinforcement patterns. The utilization of TO allowed researchers to reduce material mass by 28% while maintaining 92% of stiffness properties and increasing energy absorption by 25%. The research established that Kevlar/Epoxy and hybrid composite materials outperform other options as aerospace blocking components due to their excellent ability to resist impacts. The study proves that using computational intelligence and optimization techniques will produce effective aerospace-grade composites in the next generation.

Keywords: Polymer matrix composites, finite element analysis, artificial neural networks, topology optimization, impact resistance

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INTRODUCTION

The aerospace industry speeds up its development through continuous advancement of performance and fuel consumption improvement and environmental protection strategies. The industry depends on lightweight materials for these goals because weight losses result in improved cargo capacity which reduces fuel consumption and raises operational effectiveness [1]. Livermore Laboratory reports that PMCs represent a revolutionary choice because they provide specific engineering requirements such as exceptional strength-to-weight ratios and thermal stability along with property adjustments [2]. Made of a sequential polymer matrix containing particles or fibers that provide mechanical stability and light-weight properties for use in the aerospace industry in fuselage and turbine blade sections and suspension elements [3]. PMCs deliver more than their weight-saving abilities

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Abstract

Smart Polymer Composites with Multifunctional Capabilities Integrating Electroactive Polymers Conductive Nanofillers and Flexible Electronics for Advanced Sensing and Actuation Systems

A. Arunkumar[1*], Jyothhi Yarlagaddaa[2], I. Sreevani[3], Boopathy G.[4], Mohit Tiwari[5], Avinash Kumar[6], L. Ganesh Babu[7], T. Venkatajalapathi[8]

Abstract

Smart polymer composites have gained significant attention to their ability to integrate polymer matrices with conductive nanofillers, offering tunable electrical, mechanical, and electroactive properties. These composites are highly responsive to external stimuli such as electrical fields, mechanical stress, and temperature variations, making them ideal for applications in flexible electronics, soft robotics, and adaptive sensing systems. This research investigates the effect of nanofiller dispersion on the performance of polymer composites, optimizing nanofiller concentration to enhance electrical conductivity, mechanical strength, and flexibility. A one-way ANOVA was used to analyze the significance of material composition, particularly nanofiller concentration and polymer type, on composite properties. The long-term environmental stability of EAPs, such as polypyrrole (PPy) and polyvinylidene fluoride (PVDF), was examined to improve their reliability. The integration of flexible electronics through conductive inks and screen printing was explored to enhance the mechanical compliance and durability of these composites in wearable devices and robotics. ML models, including Random Forest, Support Vector Machines (SVM), and Neural Networks, are employed for multi-property optimization, predicting and improving composite performance. The study also addresses the scalability and cost-effectiveness of fabrication techniques to ensure the commercial viability of these advanced materials. The potential for incorporating biodegradable or environmentally friendly materials into smart polymer composites was explored to meet the growing demand for sustainable technologies. This research aims to advance the design, optimization, and application of smart polymer composites, paving the way for their widespread use in next-generation electronic and robotic systems.

Keywords: Smart Polymer Composites; Electroactive Polymers; Carbon Nanotubes; Graphene Nanoplatelets; Flexible Electronics; Machine Learning Optimization.

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ORIGINAL PAPER

Rare earth and transition metals (Gd–Ni) codoped CeO_2 nanopowders: synthesis, structural, optical and magnetic properties

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Abstract: In this research work, the solid-state reaction method was used to synthesize (Gd, Ni) doped cerium oxide $Ce_{(2-(x+y))}$ $Gd_xNi_yO_2$ powder samples. The Characteristics of annealed sample powders and the effect of annealing on these properties were investigated. XRD confirmed the cubic structure. Due to the Gd–Ni content, the crystallite size varied from 38.95 to 25.71 nm, while the lattice parameters improved from 5.431 to 5.501 Å. Surface morphology (SEM) was almost spherical, and particle diameter grew with Gd–Ni concentration. Elemental studies (EDAX) confirmed that O, Ce, Gd, and Ni achieve the desired atomic ratio. According to the optical investigations, the optical band gap of the powders increases from 2.712 to 3.150 eV. The photoluminescence (PL) analysis of pure and $Ce_{(2-(x+y)}$ $Gd_xNi_yO_2$ nanopowders at excitation wavelengths of 407 nm displayed indigo, green, orange, and red emission in the 425–800 nm range. From the Vibrating Sample Magnetometer (VSM) studies, the magnetic characteristics revealed for nanopowder samples present paramagnetic properties. The magnetic moment of pure and Gd–Ni doped samples varies from 0.0047 to 0.0635 emu/g, with a coercive field ranging from 16.34 to 2.94 Oe. The outcome observed is analyzed and deliberated upon in this study.

Keywords: Diluted magnetic semiconductors; Transition (Ni) and rare earth elements (Gd); Room temperature; Solid state reaction; Magnetic properties

1. Introduction

Dilute magnetic semiconductors, especially those that are magnetic, magneto-optical, and magneto-electrical, CeO_2, and In_2O_3, have been studied. Such dilute magnetic oxides (DMOs) offer charge characteristics and transport control through the spin degree of autonomy in altered metal doping solid semiconductors consisting of ZnO, TiO_2, and SnO_2 [1]. Because of its potential use in gas sensors, UV radiation detectors, electrochromic devices, and catalysis, cerium oxide (CeO2) has drawn the interest of scientists in recent generations [2]. It also has a cubic structure with a lattice characteristic identical to Si, implying that CeO_2 devices are strong enough to target ordinary-based electricity for silicon [3]. In recent years, a great deal of study materials science devices occupied space on the nanoscale, way of the goal of creating nanoscale electric constituents that are greater in effectiveness and precise than current devices. However, semiconductors are employed to create microprocessors that can process data at high speeds, and magnetic materials are used to store data. DMSs (diluted magnetic semiconductors) are urgently needed to reduce the continuous transit evidence beginning semiconductors enroute for magnetic composites and then construct nearer, inexpensive, as well as extra energy-efficient systems. Attempts have been made to produce minor, DMSs with RTFM (room temperature ferromagnetism) to create a novel category of spintronics devices that utilize turn degrees of freedom rather than only the charge of an electron [4]. A possible approach for generating ferromagnetism is to dope a host semiconductor

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Influence of Film Thickness on Surface Morphology of Nanostructured Azo Thin Films Deposited by Rf Magnetron Sputtering

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Abstract:-

Nanostructured Aluminum doped Zinc Oxide thin films were deposited on glass substrates by RF magnetron sputtering in an Ar + O2 gas mixture using commercially available Zn metal (99.999% purity) and Al (99.99% purity) targets. Scanning Electron Microscope (SEM) images of AZO thin films reveal that the optical transmittance depends on the thickness of the film, whereas the grain sizes are between 20 and 44 nm.

Keywords AZO Thin films; RF magnetron sputtering; structural properties.

1. Introduction

Impurity doped ZnO semiconductor materials have attractive properties due to their large direct band gap (3.37eV), abundance of raw materials, environmental friendliness, and strong radiation resistance. At room temperature, its exciton binding energy of 60 meV is greater than the thermal energy [1–3]. Al, Ga, and In doped ZnO thin films are group III elements that have shown great promise for use as transparent electrodes in optoelectronic devices. ZnO films doped with Group III elements exhibit high transmittance and low resistance. According to numerous studies of the doping's effects because of its benefits, Al appears to be the most successful and promising element in ZnO with impurities. Al is the dopant that produces high-quality, low-resistivity thin films of AZO. Chemical vapor deposition, spray pyrolysis, pulsed laser deposition, magnetron sputtering, and the sol-gel process are some of the deposition methods used to create ZAO thin films [4–9]. To meet the requirements for commercializing all transparent conducting oxide films, including high-rate and large-area

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A Perspective of Recent Progress in Zn_3P_2 (II-V) Diluted Magnetic Semiconductors for Spintronic Applications

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Abstract

Recently, the addition of impurities or dopants has significantly altered the properties of Zn_3P_2. Doping has led to enhancements in various applications, including electrical, spintronic, optoelectronic devices, and lithium-ion batteries. Due to its direct band gap energy, luminescence, and room-temperature ferromagnetic behavior, Zn_3P_2 has shown improved performance in different forms such as single crystals, thin films, powders, and nanostructures. This review highlights the current theoretical and experimental understanding of ferromagnetism in Zn_3P_2 and other II-V diluted magnetic semiconductors, with a particular focus on the properties of Zn_3P_2-based diluted magnetic semiconductors. The transition elements influence the host (Zn_3P_2) system and magnetic order at low dopant concentrations. We explained the Zn_3P_2 system's theoretical and experimental studies on how it is influenced by spintronic applications. We talk about the various uses of the Zn_3P_2 system in the future as well as the impacts of magnetic interactions. Moreover, we discussed recent literature on Zn_3P_2 and its results, with the key directions of development, serving as beginning, an orientation, and stimulation for upcoming research.

Keywords

Magnetism; Semiconductors; Spintronic materials; Zn_3P_2 system and II-V alloy

1. Introduction

The discovery of spin-dependent electron transport channels in solid-state devices in the 1960s provided the impetus for the creation of spintronics as a field of research. A recent field called spintronics combines the intrinsic spin property of electrons with charge. Today, dilute magnetic semiconductors (DMSs) are popular for spintronics device materials. The most common DMS materials fall into the II-IV, IV-VI, and II-VI classifications [1]. It is possible to create these diluted magnetic semiconductors by doping host semiconductor material with transition metal and rare earth elements such as Fe, Mn, Ni, Gd, Nd, etc. Diluted magnetic semiconductors require room-temperature ferromagnetism to operate. These days, versatile and sophisticated electronic devices are crucial due to their affordability and mobility. "Spintronics," which was

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ADMINISTRATIVE DYNAMICS AND NARRATIVE PSYCHOMETRICS: EXPLORING INSTITUTIONAL TRUST, RESILIENCE, AND PSYCHOLOGICAL CONSTRUCTS THROUGH ENGLISH LITERATURE

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Abstract
Understanding the interplay between administration, governance, and human psychology requires innovative methods that capture lived experience beyond traditional metrics. This study introduces *narrative psychometrics*, an interdisciplinary approach that leverages novels as empirical tools to examine psychological and institutional dynamics. Focusing on Sylvia Plath's *The Bell Jar*, Ken Kesey's *One Flew Over the Cuckoo's Nest*, and Arundhati Roy's *The God of Small Things*, the research investigates how literature reflects and shapes perceptions of institutional trust, alienation, and resilience. Using a mixed-method design that combined thematic literary analysis with a reader-response survey of 120 participants, results showed strong patterns: depressive experiences were consistently identified in *The Bell Jar* (78%), perceptions of institutional oppression in *One Flew Over the Cuckoo's Nest* (65%), and resilience and trauma recovery in *The God of Small Things* (71%). These findings complement traditional psychometric assessments while revealing nuanced cultural and administrative insights. By situating literary narratives within the study of governance, narrative psychometrics offers a novel framework for exploring the psychological dimensions of administration, informing policy, and enhancing understanding of institutional-human dynamics.

Keywords: Self-Governance;administrative dynamics, Narrative psychometrics, institutional trust, resilience, literary analysis, applied psychology.

1. Introduction

Self-governance depends not only on the efficiency of institutions but also on the psychological and cultural trust that citizens place in them. Local governance structures succeed when communities experience resilience, when institutions are perceived as legitimate, and when alienation is minimized. Yet conventional psychometric tools, though precise, often fail to capture the cultural narratives that underpin citizen experiences of governance.

This paper argues that literature, particularly novels, can serve as testing environments for governance-related psychological constructs. Through the emerging methodology of *narrative psychometrics*, we demonstrate how novels reflect institutional trust, alienation, resilience, and well-being, providing novel insights for both psychology and governance studies. Unlike traditional psychometric approaches, literature offers rich, immersive

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THE IMPACT OF TECHNOLOGY ON ENGLISH SPELLING & LANGUAGE LEARNING

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ABSTRACT:
The present article examines the profound impact of technology on English spelling, focusing on how digital communication has reshaped language practices. It identifies key influences such as the rise of abbreviations, phonetic spelling, and the blending of languages due to globalization. The article also discusses the informal communication styles prevalent in digital platforms and their implications for literacy and language learning. It proposes strategies including enhanced education and awareness, critical thinking in language use, and the promotion of digital literacy to address these changes. Ultimately, the article emphasizes the need for a comprehensive approach to effectively navigate the evolving landscape of English spelling in the digital age.

Keywords: Phonetic Spelling, Literacy Implications, Digital Era, Digital Communication, Globalization,

INTRODUCTION:

The advent of technology, especially in the realm of communication, has transformed our daily interactions and the way we convey information and the evolution of digital communication platforms such as social media, texting apps, and instant messaging has drastically altered the landscape of written language, particularly English spelling. In the past few decades, technological advancements have facilitated instantaneous communication across vast distances, enabling people to connect with others in real-time. This shift from traditional forms of writing like letters and face-to-face conversations to digital formats has introduced new conventions and practices that prioritize speed and convenience. As a result, individuals often gravitate toward simplified forms of language, which includes a notable decline in adherence to conventional spelling rules.

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Social Milieu in Aravind Adiga's Novels

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Abstract:

The Present paper generally explains that these focal centers are a ton of related to all different sorts of social issues, which are imparted in the Novel of Aravind Adiga's Between the Assassinations. This assessment showed that the social issues similarly as the issues are never unquestionable and immense yet these right meds or leads are needed for specific agreeable issues, which are a great deal of perceptible in this Between the Assassinations. Adiga tended to the contemporary and the high level India. He tended to the social similarly as political milieu. Moreover, he tended to this state of the art India by giving various kinds of models which join different sorts of gross demonstrations of disregard, which are at this point practiced in the larger part rule. This investigation found that any message in this novel generally revolves around sadness similarly as poverty of India and it explained all the severe similarly as socio-political of the contemporary India.

Keywords: Social Issues, investigation, Novels, Between the Assassinations, Contemporary

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TEACHERS' INSIGHTS ON MATHEMATICS AND ENGLISH AS LANGUAGES

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Abstract:

English signified as a world language and Mathematics, as the language of science, also plays a Major role in daily life. Although both are perceived as languages, English and mathematics are generally regarded as separate disciplines.

First examine English and mathematics through the lens of language, highlighting their similar features and functions. The present paper conducted interviews with mathematics and English teachers—to explore their perspectives on language characteristics, teaching methods, and challenges related to anxiety and collaboration between the two subjects

The interviews reveal notable commonalities in how teachers perceive the relationship between English and mathematics. Interestingly, the intersection of these disciplines appears to challenge conventional teaching practices, prompting educators to reconsider and reflect on their methods of instruction.

Keywords:

Teacher education, mathematics and English, global languages, teachers' beliefs

Introduction

English is an international language that makes communication across cultures and contexts, while mathematics as the language of science. Beyond its scientific role, mathematics also functions as a medium for communication and for describing daily situations. Though both English and mathematics can be understood as languages, educational institutions typically treat them as separate disciplines.

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Artificial Intelligence And Vocabulary Acquisition: Transforming English Language Learning In Higher Education

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Abstract

Vocabulary acquisition plays a pivotal role in language learning and communicative competence. Traditional vocabulary teaching methods often fail to engage learners effectively and provide individualized learning experiences. The emergence of Artificial Intelligence (AI) in education has transformed language instruction by offering adaptive, interactive, and learner-centered approaches to vocabulary development. This paper explores the role of Artificial Intelligence in enhancing vocabulary acquisition among English language learners in higher education. It examines AI-powered tools such as intelligent tutoring systems, chatbots, machine learning applications, gamified language platforms, and natural language processing technologies. The study highlights how AI facilitates personalized learning, contextual understanding, retention, pronunciation improvement, and autonomous vocabulary practice. Furthermore, the paper discusses the pedagogical implications, advantages, challenges, and future prospects of AI-integrated vocabulary instruction. The findings suggest that AI significantly enhances learners' vocabulary competence, motivation, and engagement, thereby reshaping the future of English language teaching and learning.

Keywords: Artificial Intelligence, Vocabulary Acquisition, English Language Teaching, AI-Based Learning, Language Learning Technologies, Higher Education

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Artificial Intelligence–Mediated Vocabulary Development: An Empirical Investigation into Lexical Enhancement among Engineering Students

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Abstract

Vocabulary knowledge constitutes a fundamental component of communicative competence, particularly for engineering students who must engage with complex technical discourse and global professional environments. Despite years of formal instruction, many students exhibit limited lexical proficiency due to traditional pedagogical approaches that emphasize rote memorization over contextual learning.

Artificial Intelligence (AI) has emerged as a transformative force in education, enabling adaptive, learner-centered, and data-driven instructional models. This study examines the impact of AI-powered tools on vocabulary acquisition among engineering students. A quasi-experimental design involving control and experimental groups was employed over an eight-week intervention period. Quantitative data were collected through standardized pre- and post-tests, while qualitative insights were gathered through questionnaires and interviews.

The results reveal statistically significant improvements in vocabulary acquisition, retention, and contextual usage among students exposed to AI tools. The study demonstrates that AI-based learning environments foster autonomy, engagement, and deeper cognitive processing. The findings underscore the necessity of integrating AI technologies into language pedagogy to enhance learning outcomes in technical education.

Keywords

Artificial Intelligence (AI); Vocabulary Acquisition; Engineering Students; Adaptive Learning; Language Learning; Lexical Development; Educational Technology; Blended Learning

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INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

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Reimaagining HUMAN–NATURE RELATIONSHIPS: AN ECO-SPIRITUAL STUDY OF GUN ISLAND

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Abstract:

Using a Hindu eco-spiritual framework, this paper analyses Amitav Ghosh's Gun Island to investigate how traditional cosmological ideas shed light on current environmental issues. Ghosh describes the disruption of sacred human-nature ties in both colonial and postcolonial contexts, building on the legends of Bonduki Sadagar and Manasa Devi. This study examines how the novel depicts environmental deterioration, human moral failing, and ecological mutual dependence using a threefold conceptual lens of karma, dharma, and ecology derived from Hindu philosophy. Karma, the rule of cause and effect, is used to illustrate how human exploitation results in ecological collapse, climate migration, and natural calamities. Dharma is a concept that promotes responsibility for the environment and human-nonhuman cooperation. In order to speak out against the environmental degradation of capitalist modernity, this dissertation contends that Ghosh skillfully combines Hindu metaphysics with modern ecological science. The novel's portrayal of floods, Venice's collapse, and the worldwide refugee crisis dramatizes karmic repercussions, and its connection to the merging of myth and science presents a vision of holy interdependence. In the end, this essay comes to the conclusion that Gun Island offers an urgent eco-spiritual model for rethinking planetary ethics and reacting to the Anthropocene via spiritual duty, humility, and relationships.

Keywords: Gun Island, eco-spirituality, Amitav Ghosh, Hindu environmental ethics, myth.

1. Introduction

Amitav Ghosh is one of the most celebrated contemporary Indian English writers, known for blending history, culture, migration, and environmental concerns in his fiction. His novel Gun Island (2019) is a powerful work of climate fiction that combines mythology, migration, and environmental concerns. The story follows Deen Datta, a rare-book dealer, as he investigates the legend of the Gun Merchant in the Sundarbans and gradually uncovers connections between ancient folklore and contemporary ecological crises. The book tackles modern environmental issues such ecological imbalance, rising sea levels, animal migration, and climate change. Ghosh makes a connection between traditional beliefs and contemporary ecological realities through the story of Bonduki Sadagar, often known as the Gun Merchant. A helpful foundation for comprehending the novel's ecological perspective is provided by the ideas of Karma (activity and its repercussions) and Dharma (moral obligation and righteous conduct). According to the story, environmental catastrophes are the result of humanity's disrespect for nature, but ecological stewardship can bring people and the natural world back into balance. Through themes of climate change, human displacement, biodiversity, and ecological interconnectedness, *Gun Island* highlights the urgent need for environmental awareness and presents nature as an active force shaping human destiny.

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The Self Between Two Worlds: Diaspora, Memory, and Identity in The Namesake and Midnight's Children

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Abstract- This article looks at the complicated nature of diasporic identity and cultural memory in The Namesake and Midnight's Children. It focuses on how individuals navigate life across different cultures. Both novels feature main characters whose identities are shaped by migration, historical changes, and the search for belonging in a globalized world. In The Namesake, Gogol Ganguli's experiences as the son of Bengali immigrants highlight the emotional and cultural challenges of living between two cultures. His struggle with his name and connections to his ancestry reflects the broader issues of diasporic identity. Individuals must balance family traditions with new social and cultural settings. Lahiri's story emphasizes the critical role of memory, family relationships, and cultural continuity in shaping the immigrant experience. While Rushdie's Midnight's Children does not focus as much on diaspora, it examines a unique type of cultural displacement through the historical changes in postcolonial India. Saleem Sinai's life serves as a metaphor for the nation, as his story represents the diversity and dispersal of Indian society after independence. Rushdie combines magical realism with historical allegory to show how a nation's collective memory impacts personal identity. This study argues that the mix of memory, history, and cultural movement creates a postcolonial identity. Both novels illustrate how people find meaning and a sense of belonging through complex social interactions, highlighting that identity is always changing due to experiences of living across cultures and time periods.

Keywords: Diaspora, Postcolonial Identity, Cultural Memory, Migration, Cultural Hybridity.

I. Introduction:

The complexities of identity formation in communities shaped by colonial histories, migration, and cultural change often appear in postcolonial literature. Identity is no longer a fixed or singular concept in a world that is becoming more interconnected every day. Instead, it is constantly challenged, fluid, and fragmented. The Namesake by Jhumpa Lahiri and Midnight's Children by Salman Rushdie are two significant literary works that explore this topic in depth. These novels provide unique yet connected views on identity, showing how personal experiences and larger historical factors shape individuals.

Midnight's Children frame's identity within national history and political change. In contrast, The Namesake focuses on the diasporic experience of Indian immigrants in the United States, highlighting cultural dislocation and generational conflict. Gogol Ganguli and Saleem Sinai, the main characters, represent two different aspects of postcolonial identity. Gogol, who struggles to balance his Indian heritage with his American upbringing, embodies the diasporic individual caught between two cultures. Saleem, on the other hand, symbolizes the postcolonial person whose identity is closely linked to the country's past, particularly during India's independence.

This article argues that identity in both novels arises from the interplay of memory, history, and cultural displacement rather than being something one is born with. It examines how Lahiri and Rushdie depict

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PREDICAMENT OF FEMINIST CONCIOUSNESS IN THE SELECT NOVELS OF TONI MORRISON

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Abstract : Toni Morrison deals with themes of love, friendship, beauty, ugliness and death. Her heroines as well as heroes struggle to understand aspects of the human conditions, both good and evil. Like Alice Walker, Paul Marshall, Toni Bambara and others, she also has contributed her best to uplift these Blacks. She is no doubt a writer with commitment as the problems highlighted in her novels make the wide audience think and find a solution. The present paper -Predicament of The feminist consciousness in the Select Novels of Toni Morrison attempts to show how Morrison has artistically expressed these problems in each of her work.

IndexTerms- **African – American, feminist consciousness, oppressed, Euro-centred, inequality, marginalized**

I.INTRODUCTION

Toni Morrison has brought to limelight various problems of the Blacks through her series of master pieces. These Blacks are members of the marginalized community, and they are people who lack social, spiritual, psychological, historical and geographical place or centre. As pointed out earlier, the problems of these Blacks are many, and Morrison has artistically expressed these problems in each of her work. In fact, Morrison incorporates Black men into the framework of her family with a view to render justice to the Black race. It is very clear that she confined not merely to the issues of improving the lot of the Black Americans, but is concerned with mankind in general.

DISCUSSION AND INTERPRETATION:

Toni Morrison dealt with various themes like the feminist consciousness, racial consciousness, theme of alienation and repression and the quest of self and identity. The feminist consciousness in the novels of Toni Morrison need special attention, as in almost all her novels the protagonists are women. Toni Morrison was quite aware of this distinction and her feminist – consciousness is different from the feminist consciousness of others, especially of White women. Being an African – American writer, Toni Morrison has projected African – American feminist consciousness in her writings.

It is an apprehension that one is a victim just because one is female, poor and African – American. African – American women have a distinct place in American life and literature. Morrison is aware of this position of Black women, and thus, through her works, has projected the different dimensions of Black women. In the case of White women, they have support and can lean back upon. Morrison claims that a Black woman's predicament is worse than that of White women, as she has nothing to lean back "not maleness, not whiteness, not lady hood, not anything. And out of the profound desolation of her reality she may very well have invented herself" (Indian Journal, 35).

To Morrison, a Black woman is a feminist, if she takes the initiative to trust herself, accept herself and her self-confidence as it is futile to expect love and affection from the people of the new world.

A Black woman must love herself. She, having been a victim of American society, should try to live up to the standard that she wants to create for herself. The ability to develop a positive self-image is what Morrison expects in a Black woman and that is what she terms as African – American feminist consciousness. Black women are alienated from the White patriarchical society including their husbands as they are coloured and female, and so considered as inferior to others.

A Black woman is a feminist, if she tries to liberate herself, though at a painful cost from the most immoral and unjust world where justice and self-respect could not be restored. Morrison wants Black women to be self-dependent and asserts that they have the potentiality to be so. It is also essential to include in this study the definition of marginality as the Blacks are considered as the members of the marginalized community.

Morrison is quite aware of the fact that Black women, unlike others, are suppressed to a great extent in a White – dominant society. Through the victimization of Pecola and Geraldine of The Bluest Eye and Nel of Sula, she advocates Black women to respect their own self. She asserts the importance of self-esteem of an individual as it is self-esteem alone that helps the individual to withstand. Black women, especially, have to transcend beyond the dictating terms of the White society as well as her own community. These oppressed women, Morrison claims, have immense power in them and it is pitiable that they themselves are unaware of their own potentialities.

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Postcolonialism in the Works of Arundhati Roy's *The God of Small Things* and *The Ministry of Utmost Happiness*

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Abstract:

This Paper delves into the complex interplay between postcolonialism and identity in Arundhati Roy's works, with a focus on her renowned novels, *The God of Small Things* (1997) and *The Ministry of Utmost Happiness* (2017) and her non-fiction writings which examine how Roy portrays identity formation within a postcolonial framework, illustrating the influence of colonial legacies, social structures, and cultural intersections on both individual and collective identities in modern India. By analyzing her characters and their socio-political settings, the study reveals how Roy critiques the lingering impact of colonialism, especially concerning caste, gender, and family dynamics. Furthermore, it explores Roy's innovative use of language and narrative techniques to challenge dominant ideologies and give voice to marginalized perspectives. It emphasizes Roy's significant role in postcolonial literature by showcasing how identity shifts and adapts amid historical and cultural transformations. Ultimately, it seeks to deepen the understanding of how colonialism continues to shape personal and political identities in contemporary Indian society.

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Enhancing Vocabulary among Tertiary Level Learners Using Artificial Intelligence: A Pedagogical and Theoretical Exploration

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Abstract

Vocabulary acquisition is a cornerstone of second language proficiency, particularly at the tertiary level where learners engage with academic discourse, discipline-specific terminology, and complex communicative tasks. Traditional approaches emphasize rote memorization rather than contextual application, semantic elaboration, or cognitive engagement.

Artificial Intelligence (AI) has introduced adaptive, interactive, and personalized learning environments capable of transforming vocabulary pedagogy. This paper presents a theoretical and pedagogical exploration of AI-supported vocabulary instruction, drawing on constructivist learning theory, depth of processing theory, and adaptive learning principles.

It examines the pedagogical potential of AI-driven tools—such as intelligent tutoring systems, chatbots, adaptive quizzing, automated feedback mechanisms, and multimodal AI assistants—to facilitate deep lexical processing, contextual understanding, and long-term retention. Drawing upon recent empirical studies and theoretical models, the paper highlights how AI fosters learner autonomy, engagement, motivation, and cross-disciplinary application, while addressing the cognitive demands of tertiary-level vocabulary acquisition.

The study concludes with implications for curriculum design, ethical considerations, and future research directions, emphasizing AI as a complementary tool to enhance human-mediated instruction in higher education.

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Data Article

Design, Synthesis and Anticancer Evaluation of amide derivatives of oxazole-pyridine linked quinazolines

Sai Kumar Perla [a b c], I Pugazhenthi [c], Laxminarayana Eppakayala [d]

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Abstract

A new series of oxazole-pyridine linked quinazolines amide derivatives (**12a-j**) were designed and prepared and its chemical structures were confirmed by ^{1}HNMR, ^{13}CNMR and mass spectral data. Further, the *in vitro* anticancer effects of the newly prepared compounds **12a-j** were screened for their anticancer activity against four human cancer cells. The results were compared with the known chemotherapeutic agent as etoposide. According the results most of the derivatives were exhibited good anticancer activity as compared with positive control.

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Section snippets

Rational

Nitrogen-based fused heterocyclic moieties have been consistently recognized over decades as pivotal core units in the innovation and development of novel therapeutic drug candidates within

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Interplay of layered Aurivillius structure and nanoscale morphology in Bi_3TiNbO_9 nanoparticles for ferroelectric and photocatalytic applications

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HIGHLIGHTS

- Phase-pure orthorhombic Bi_3TiNbO_9 (B2cb) nanoparticles were obtained with crystallite size ≈32 nm and lattice parameters a ≈5.43 Å, b ≈ 5.41 Å, c ≈ 25.0 Å.
- Rietveld refinement yielded excellent agreement factors ($R_{wp} \approx 3.19\%$, $R_p \approx 7.01\%$, $\chi^2 \approx 1.12$), confirming high structural reliability and phase purity.
- FESEM analysis shows an average particle size of ~181 nm with mesoporous type IV BET isotherm and adsorption volume ~35–38 $cm^3\ g^{-1}$ (STP).
- Well-saturated ferroelectric loop achieved with $P_{max} \approx 20\ \mu C\ cm^{-2}$, $P_r \approx 10\ \mu C\ cm^{-2}$, and Ec ≈ 20 kV cm^{-1} under ±100 kV cm^{-1} applied field.
- Photocatalytic degradation efficiencies reached 68% (AF), 63% (MB), 49% (RhB), and 39% (MO), following pseudo-first-order kinetics with k = 0.00373–0.00163 min^{-1}.

ABSTRACT

Single-phase Bi_3TiNbO_9 nanoparticles were successfully synthesized via a sol–gel route and systematically characterized to elucidate their structural, morphological, ferroelectric, dielectric, and photocatalytic properties. X-ray diffraction and Rietveld refinement confirm an orthorhombic Aurivillius structure (B2cb) with well-ordered layered $(Ti/Nb)O_6$ perovskite slabs interleaved by $(Bi_2O_2)^{2+}$ layers, while Raman spectroscopy reveals Bi^{3+} $6s^2$ lone-pair-induced off-centering and octahedral tilting, indicative of nanoscale lattice distortion and non-centrosymmetry. Field-emission SEM shows uniform, quasi-spherical nanoparticles (~181 nm) with mesoporous architecture, corroborated by BET analysis, yielding a specific surface area of ~20.6 m^2. g-1 and enhanced surface reactivity. Polarization–electric field measurements demonstrate robust ferroelectric behavior ($P_{max} \approx 20\ \mu C/cm^2$, $P_r \approx 10\ \mu C/cm^2$) with low hysteresis loss, further supported by low leakage current density (~10^{-7} A cm^{-2}) and reduced dielectric loss (tan δ < 0.25), indicating excellent insulating characteristics and suppressed charge carrier conduction. The intrinsic ferroelectric polarization together with the mesoporous framework synergistically enhances photocatalytic degradation of organic dyes (MO, RhB, MB, and AF) through efficient charge separation and accelerated interfacial redox reactions. The combined structural stability, nanoscale morphology, low dielectric loss, ferroelectricity, and high surface reactivity establish Bi_3TiNbO_9 as a promising lead-free multifunctional material for dielectric, ferroelectric, photocatalytic, and environmental applications.

1. Introduction

Aurivillius-type layered perovskite oxides have attracted significant scientific interest due to their unique crystal architecture, consisting of alternating perovskite-like slabs and fluorite-type $(Bi_2O_2)^{2+}$ layers, which impart strong structural anisotropy and intrinsic ferroelectric

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RESEARCH PAPER

Computational Modelling and Structural Optimization of Hybrid Composite Materials for Lightweight Mechanical Components

Dr. Jugulkar Lalitkumar Maikulal[1*], Dr. Marripalli Pavani[2], Dr. Shivaji Suryabhan Aher[3], Dr.S.Rajanarayanan[4], Dr. Rajendra Himmatrao Shinde[5], Dr. Navneetsinh Shivkumar Yadav[6]

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Abstract

Hybrid composite materials are a potential path to achieving lightweight structural components with high performance, and this research disseminates a computational framework based on Python to model and optimize carbon–glass hybrid laminates. By micromechanics and Classical Laminate Theory, lamina moduli of 98.48 GPa for carbon/epoxy and 49.25 GPa for glass/epoxy were derived and used in the model of an eight-ply symmetric laminate. The baseline laminate, under an in-plane tensile load of 50 kN/m, showed mid-plane strains of 0.0015 in the axial direction, axial stresses of 141.68 MPa in carbon plies and 70.15 MPa in glass plies, and a maximum Tsai–Wu failure index of 0.009, thus confirming safe elastic behavior. The comparative evaluation revealed that the hybrid laminate had a modulus of the axial direction of 66–70 GPa, which is a value between those of all-glass (49.62 GPa) and all-carbon (98.91 GPa) structures, while the mass-per-area was less than that of glass laminates. A discrete optimization search of 256 designs for the best sequence ["G"/"C"/"C"/"G"]_s led to the achievement of an improved axial modulus of 74.26 GPa, the reduction of the mass to 2.14 kg/m², and the uniform Tsai–Wu index of −0.038 in all plies. The findings provide evidence that hybrid laminate design through computation can not only stiffen the laminate-to-weight ratio but can also lower the risk of failure and decrease the need for physical prototyping extensively in the field of lightweight structural applications.

Keywords: - Hybrid composite laminates; Carbon–glass composites; Structural optimization; Computational modelling; Lightweight mechanical components

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1. Introduction

Lightweight mechanical parts are becoming more and more necessary in sophisticated engineering systems like aerospace structures, high-performance cars, marine vessels, components for renewable energy, and robotic mechanisms. Such applications require materials that offer high strength-to-weight ratios, energy absorption capabilities, and resistance to multi-axial loading. One of the most significant developments in the field of materials science to meet these demands is the use of hybrid fiber-reinforced composites, which in essence, combine the advantages of different fiber types to provide an optimized mechanical properties balance. Carbon/glass hybrid laminates, in particular, have been able to attract a lot of attention due to their capability of combining the high stiffness of carbon fibers with the toughness and relatively low-cost of glass fibers. The earliest work has shown that hybrids have better tensile properties and microstructural stability upon change to single-fiber laminates which emphasize the necessity of systematic design and performance prediction of such systems [1].

Beyond that, developments in hybrid laminate technology have considered several alternatives for mixing carbon and glass layers to get better mechanical performance. For example, Mohammed et al. demonstrated that the mechanical behavior of hybrid laminated nanocomposites under different types of loading is enhanced due to the balanced carbon and glass layers, which means that the hybrid effect can be further amplified by nano-scale reinforcement [2]. Bending behavior is a next very important factor to

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Research JoPC

Modeling of MHD Hybrid Nanofluid Flow with Radiation and Chemical Reaction Effects for Advanced Composite and Energy Applications

M. Parvathi[1], J. S. Sukanya[2], Sudhakaru Komera[3], P. Chandra Reddy[4*], N. Udaya Bhaskara Varma[5]

Abstract

Hybrid nanofluids reinforced with polymer-based matrices and nanoparticles have emerged as promising working fluids for advanced composite processing and thermal management systems. Their superior thermo-physical properties enable efficient cooling and energy transport, making them suitable for applications in polymer extrusion, composite curing, thermal insulation coatings, solar energy devices, electronic packaging, and nuclear system cooling. In this study, we investigate the heat and mass transfer behavior of magnetohydrodynamic (MHD) hybrid nanofluid flow over a stretching surface embedded in a porous medium, incorporating the combined effects of radiation and chemical reactions. The governing nonlinear partial differential equations are transformed into ordinary differential equations through similarity transformations and solved numerically using the shooting technique in MATLAB. The influence of key parameters such as the magnetic field, radiation, and chemical reaction rates on velocity, temperature, and concentration distributions is examined. Engineering performance measures including skin friction, Nusselt number, and Sherwood number are evaluated. The findings provide deeper insights into hybrid nanofluid transport phenomena with direct implications for polymer nanocomposite fabrication, advanced heat exchanger design, and energy-efficient composite material processing.

Keywords: Hybrid nanofluid, polymer composites, stretching surface, chemical reaction, heat and mass transfer

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INTRODUCTION

The landscape of thermal engineering has been transformed by an innovative development: hybrid nanofluids. These advanced materials have captured researchers' attention by outperforming traditional nanofluids in heat transfer applications. At their core, nanofluids are engineered by dispersing nano-sized particles throughout common base liquids such as water, engine oil, or kerosene. The addition of these tiny particles can significantly alter the base fluid's fundamental characteristics, enhancing their thermal, electrical, and mechanical performance. From cooling electronics to powering solar collectors and improving lubrication systems, nanofluids have proven their versatility across multiple industries. The scientific community's understanding of these materials continues to evolve. Carbon nanotubes (CNTs) have emerged as particularly promising

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ORIGINAL PAPER

Check for updates

Magnetohydrodynamic double-diffusive heat and mass transfer over a semi-infinite inclined porous plate with internal heat generation, thermal radiation, and dufour effect

Kotha Raghavendra[1] · Charankumar Ganteda[2] · Obulesu Mopuri[3] · Ramesh Babu Kalya[4] · Satish Kumar Singh[5] · Rajyalakshmi Kottapalli[6] · Farkhod Rakhmonov[7] · Nainaru Tarakaramu[8]

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Abstract

The unsteady two-dimensional MHD free convective heat and mass transport pour of a viscous and incompressible optically thin liquid over a semi-infinite permeable shield taking into account species and heat absorption, radiation, radiation absorption, and the Dufour outcome is considered in this study. Solutions were analysed through MATLAB and the governing equations are non-dimensional as they calculate with an explicit finite difference method (FDM). Some key parameters such as heat absorption, radiation, magnetic field, inclination angle, and chemical reaction are investigated. It is found that Dufour effect and absorption of radiation stimulate the temperature while higher Schmidt number and reactions of the substance decrease attentiveness. Dufour effect is shown through its extensive graphical and tabular results which enhances both heat and mass transfer rates.

Keywords Diffusion thermo effect · MHD · Thermal radiation · Radiation absorption · Heat absorption

List of symbols

C	Species concentration of the fluid $K.mol.m^{-3}$
C_{∞}^{*}	Species concentration of the fluid far away from the plate $K.mol.m^{-3}$
C_{w}^{*}	Species concentration of the fluid near the plate $K.mol$
C_p	Specific heat at constant pressure $J.Kg^{-1}.K^{-1}$
D_M	Chemical molecular diffusivity $m^{-2}.s^{-1}$
ρ	Density of the fluid $kg.m^{-3}$
g	Acceleration due to gravity $m.s^{-2}$

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Research

Hybrid Numerical–Artificial Neural Network Study of Chemically Reactive MHD Nanofluid Flow Incorporating Thompson–Troian Slip and Stefan Blowing

S. Harinath Reddy[1], R. Chandra Sekhar Reddy[2], Aruna Ganjikunta[3], P. Ramakrishna Reddy[4], P. Chandra Reddy[5*]

Abstract

Boundary layer behaviour in chemically reactive nanoliquid is significantly affected by surface conditions, magnetic fields, heat and mas transfer mechanisms. However, the combined impact of Stefan blowing and nonlinear Thompson–Troian slip under inclined magnetic fields remains mostly unexplored, particularly in mixed convection flows. In this research work, the flow of a chemically reactive nanoliquid over a permeable surface is investigated by considering the Troian slip, inclined magnetic fields, Stefan blowing, and mixed convection. The Buongiorno nanofluid model is utilized to incorporate Brownian motion and thermophoretic diffusion. By similarity transformetions, the governed expressions are simplified into ordinary differentials and solved using a hybrid approach, such as shooting and an Artificial Neural Network (ANN) technique. The ANN guesses show sturdy pact with numerical outcomes, yielding a maximum error of 6.113×10^{-10} for skin friction, Nusselt, and Sherwood numbers. Findings indicate that Stefan blowing decreases fluid velocity while increasing the layer of temperature. Brownian motion and thermophoresis significantly enhance thermal and solutal profiles, whereas surface slip mitigates these effects. The inclined magnetic field reduces flow velocity and skin friction due to the Lorentz force but boosts heat and mass transfer rates. Mixed convection enhances momentum exchange at the wall, while the chemical reaction reduces nanoparticle concentration.

Keywords: Inclined magnetic field, mixed convection, chemically reactive nanofluid, Thompson-Torian slip, Stefan blowing, Numerical-ANN Approach.

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INTRODUCTION

Nanofluids have been raised with recognition as a critical-edge mode of working because of their greater competences compared with heat transfer of conventional base fluids. Solid nanoparticles, typically smaller than 100 nm, are distributed into base liquids like water, oil, or ethylene glycol to form these fluids. Nanofluids are attractive for use in solar energy systems, electronic cooling, and biomedical thermal applications because of this mixture's notable increase in thermal conductivity. In order to improve the thermal conductivity of traditional heat transfer fluids by dispersing nanoscale solid particles, Choi and Eastman [1] initially proposed nanofluids. Das *et al.* [2] later demonstrated that verified that temperature and nanoparticle properties had a significant impact on

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ORIGINAL RESEARCH ARTICLE

Impact of Gd-Cu Co-Doping on the Structural, Optical, and Magnetic Characteristics of CeO_2 Nanopowders Synthesized by Solid-State Reaction

G. Chinna Venkata Subbaiah[1] · Nasina Madhusudhana Rao[1] · Nakka Praveenkumar[2]

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Abstract

This work reports the pure matrix (CeO_2) and synthesis of $Ce_{(1-(x+y))}Gd_xCu_yO_2$ (x = 0.02, y = 0.02, 0.04, and 0.06) nanopowders using the solid-state reaction method. X-ray diffraction (XRD) analysis confirmed a cubic crystalline phase, with crystallite sizes decreasing from 39.03 nm to 25.76 nm as doping levels increased. Correlations between Gd and Cu doping and lattice expansion were found; lattice parameters increased from 5.427 Å to 5.462 Å. Energy-dispersive x-ray spectroscopy (EDAX) verified the expected stoichiometry of O, Ce, Gd, and Cu. Optical studies demonstrated a progressive increase in bandgap energy, ranging from 2.734 eV to 3.143 eV. Photoluminescence (PL) spectra, recorded under 315 nm excitation, exhibited broad emissions in the indigo, green, orange, and red regions, spanning a wavelength range of 325–580 nm. Magnetic properties, characterized using vibrating-sample magnetometry (VSM), indicated weak ferromagnetism, with magnetic moments ranging from 0.00261 emu/g to 0.00347 emu/g and coercive fields between 122.41 Oe and 120.50 Oe. This study systematically examines and presents the structural, optical, and magnetic alterations induced by Gd-Cu co-doping.

Keywords CeO_2 nanopowders · Gd-Cu co-doping · magnetic properties · optical bandgap · solid-state reaction

Introduction

Dilute magnetic semiconductors (DMSs) such as CeO_2 and In_2O_3, alongside materials exhibiting magnetic, magneto-optical, and magneto-electrical properties, have been the focus of extensive research. Through metal doping of solid semiconductors such as ZnO, TiO_2, and SnO_2, dilute magnetic oxides (DMOs) have emerged as a material for controlling spin dynamics and manipulating charge characteristics.[1] Among these, cerium oxide (CeO_2) has garnered significant attention for its applications in gas sensing, UV detection, catalysis, and electrochromic devices.[2] Its cubic lattice structure, closely resembling silicon, positions CeO_2 as a promising material for integration into silicon-based electronic systems.[3] Advancements in materials science have accelerated the development of nanoscale electronic components, where semiconductors are vital for optimizing microprocessor performance, and magnetic materials are essential for data storage. To improve device efficiency and minimize energy consumption, DMSs play a pivotal role by combining magnetic and semiconducting properties. Achieving room-temperature ferromagnetism (RTFM) in DMSs is critical for spintronics applications, as these devices leverage spin mobility rather than electron charge for operation.[4] A widely adopted strategy to induce ferromagnetism involves doping host semiconductors with transition metal (TM) elements, exploiting the unpaired electrons in their d-orbitals. Experimental evidence has shown that such doping can result in ferromagnetic behaviour at ambient temperatures, although the mechanisms behind RTFM remain poorly understood and are often inconsistent across studies.[5,6] This research has driven the exploration of spin-based devices, including spin field-effect transistors, magneto-optical systems, and light-emitting spin diodes. However, the realization of robust

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ORIGINAL PAPER

Electrochemical and structural evaluation of Poly(VTZ-co-GMA)/ZrO_2 nanocomposite coatings for corrosion protection of mild steel

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Abstract

Corrosion of metallic materials remains a persistent challenge in industrial environments, resulting in substantial economic losses and safety concerns. Developing efficient and durable protective coatings is, therefore, a key scientific and engineering priority. This study hypothesizes that incorporating zirconia (ZrO_2) nanoparticles into a Poly[(4-methyl-5-vinylthiazole)-co-glycidyl methacrylate] [Poly(VTZ-co-GMA)] matrix will enhance the coating's structural integrity and electrochemical corrosion resistance on mild steel. Accordingly, Poly(VTZ-co-GMA) and its nanocomposites containing various loadings of ZrO_2 were synthesized via in-situ solution polymerization and systematically characterized using Fourier-transform infrared spectroscopy (FT-IR), X-ray diffraction (XRD), scanning electron microscopy (SEM), and transmission electron microscopy (TEM). Electrochemical behavior was evaluated using potentiodynamic polarization and electrochemical impedance spectroscopy (EIS) in a 3.5% NaCl solution. Results revealed that bare mild steel (MS) exhibited the highest corrosion rate (0.71190 mm/yr), whereas Poly(VTZ-co-GMA) coatings substantially reduced corrosion (0.07092 mm/yr) with an increase in polarization resistant (R_p) and a positive shift in corrosion potential (E_{corr}). Notably, the Poly(VTZ-co-GMA)/ZrO_2 (2.0 wt%) nanocomposite achieved the lowest corrosion rate (0.00354 mm/yr), with high R_p (31.79×10^4 Ω), charge transfer resistance (R_{ct}) (2067 Ω·cm^2), low double layer capacitance (C_{dl}) (1.023×10^{-6} F·cm^{-2}), and a protection efficiency exceeding 96%. The superior protection is attributed to the homogeneous dispersion of ZrO_2 nanoparticles, which improve the coating's barrier performance and reduce ionic diffusion pathways. Overall, the study demonstrates that ZrO_2 incorporation into Poly(VTZ-co-GMA) offers a promising route for developing advanced nanocomposite coatings with enhanced structural stability and electrochemical corrosion resistance.

Keywords Polymer · Electroactive · Optically active · Nanocomposites · Coatings

Introduction

Corrosion is a complex electrochemical process that leads to the gradual degradation of metals and alloys, with severe economic, environmental, and safety implications. It has been estimated that corrosion-related damage accounts for 3–4% of global GDP annually, underscoring its critical industrial relevance (Bender et al. 2022; Zehra et al. 2025). The problem is particularly pronounced in infrastructure exposed to harsh environments such as marine systems, oil and gas pipelines, automotive and aerospace structures, and chemical processing plants (Adumene et al. 2023). In such applications, uniform corrosion, pitting corrosion, and stress corrosion cracking are the most common forms of degradation, often leading to catastrophic material failure if not properly mitigated (Vakili et al. 2024).

A variety of corrosion mitigation techniques have been explored, including cathodic protection, alloying, inhibitors, and protective coatings. Among these, corrosion inhibitors are attractive due to their cost-effectiveness and ease of integration into existing systems. These inhibitors function primarily through adsorption onto metal surfaces, thereby suppressing electrochemical activity and localized corrosion (Zehra et al. 2022; Farh et al. 2023). However,

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Dielectric and optical properties of poly(4-methyl-5-vinylthiazole) and its zirconia nanocomposite: a novel heteroaromatic system

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ABSTRACT

In this study, a novel electroactive material, poly(4-methyl-5-vinylthiazole)/zirconia nanocomposite (PVTZ/ZrO_2), was successfully synthesized *via* *in situ* solution polymerization. Structural characterization of the resulting nanocomposite was carried out using Fourier-transform infrared spectroscopy (FT-IR), and X-ray diffraction (XRD) studies confirming the incorporation of zirconium dioxide (ZrO_2) nanoparticles into the PVTZ matrix. The optical properties were investigated through UV-Visible spectroscopy, revealing insights into the material's absorption behaviour. Surface morphology and dispersion of nanoparticles were examined using field emission scanning electron microscopy (SEM) and transmission electron microscopy (TEM). Furthermore, the dielectric properties of both pristine PVTZ and its ZrO_2 nanocomposite were studied over a frequency range of 100 Hz to 100 kHz at room temperature, demonstrating enhanced dielectric performance with the incorporation of ZrO_2. These results highlight the potential of PVTZ/ZrO_2 for applications in dielectric and optoelectronic devices.

1. Introduction

The advancement of modern technologies such as flexible electronics, sensors, organic photovoltaics, and photonic devices relies heavily on the development of functional materials with tunable dielectric and optical properties [1,2]. Among these, polymers are particularly attractive due to their processability, flexibility, and structural versatility. However, achieving high dielectric performance alongside desirable optical characteristics remains challenging, especially in heteroaromatic systems [3].

Poly(4-methyl-5-vinylthiazole) (PVTZ) is an underexplored polymer that offers strong dipolar character, high polarizability, and π-electron delocalization arising from its thiazole ring containing sulphur and nitrogen atoms. These features promote efficient charge storage and interfacial polarization, while the 4-methyl substitution allows modulation of the electronic structure and optical bandgap. Compared with conventional matrices such as polyvinylidene fluoride (PVDF), polymethyl methacrylate (PMMA), and poly(vinyl imidazole), PVTZ provides superior filler–matrix interactions and enhanced dielectric response through combined dipolar and space-charge effects, positioning it as a promising candidate for next-generation optoelectronic and energy-related applications.

Incorporating ZrO_2 nanoparticles into PVTZ is expected to further enhance performance. ZrO_2, known for its high dielectric constant, thermal stability, and chemical inertness [4], can introduce interfacial polarization and modify optical absorption through electronic interactions at the polymer–filler interface. The resulting PVTZ/ZrO_2 nanocomposite is anticipated to exhibit improved dielectric and optical properties relative to the pure polymer [5].

Despite this potential, systematic studies on the dielectric and optical behaviour of PVTZ/ZrO_2 nanocomposites are lacking. This work addresses that gap by synthesizing PVTZ/ZrO_2 *via* *in-situ* polymerization and performing comprehensive structural and morphological characterization. It is hypothesized that incorporating ZrO_2 nanoparticles into the PVTZ matrix will significantly enhance dielectric and optical performance through strong interfacial polarization, improved charge carrier dynamics, and tunable electronic structure. The study seeks to validate this hypothesis and provide valuable insights for designing multifunctional polymer nanocomposites for next-generation dielectric, optoelectronic, and flexible electronic applications.

2. Materials & methods

ZrO_2 nanoparticles and 4-methyl-5-vinylthiazole were purchased from TCI, India. Solvents such as chlorobenzene, chloroform and radi-

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ORIGINAL RESEARCH ARTICLE

Structural, Optical, and Photoluminescence Properties of Cadmium-Doped Zinc Phosphide Nanoparticles Synthesized by Solid-State Reaction

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Abstract

In this work, the solid-state technique was used to fabricate cadmium-doped Zn_3P_2 ($Zn_{(3-x)}Cd_x P_2$, $x = 0.00$, 0.03, 0.05, and 0.09) nanoparticles. The impact of the dopant on the structural, morphological, optical, and photoluminescence (PL) properties was investigated using x-ray diffraction (XRD), scanning electron microscopy (SEM), energy-dispersive x-ray spectroscopy (EDX), ultraviolet–visible/near-infrared radiation spectroscopy (UV–Vis–NIR), and PL spectroscopy. From XRD studies, the Zn_3P_2 and Zn_3P_2:Cd nanoparticles were found to have a single-phase tetragonal structure. The lattice parameters increased with Cd concentration from $a = 8.0245$ Å, $c = 11.0910$ Å to $a = 8.1968$ Å, $c = 11.1398$ Å. The microstrain and dislocation density increased with Cd concentration as well. SEM analysis revealed particle agglomeration and increased particle size, in the range of 500 nm, post-doping. The purity of the fabricated samples was verified by EDX, which revealed that the only elements present were cadmium, phosphorus, and zinc. Diffuse reflectance spectroscopy was used to examine the optical characteristics using the Kubelka–Munk function. It was discovered that the bandgap value increased from 1.422 eV to 1.449 eV with doping. PL experiments showed ultraviolet, violet, and blue emission at varied intensity, with an excitation wavelength of 248 nm.

Keywords II-V semiconductors · Cd-doped · solid-state reaction route · room temperature · optical bandgap

Introduction

Diluted magnetic semiconductor (DMS) crystals have broad bandgaps above 3 eV and magnetic characteristics. Modern semiconductor materials are particularly suitable for spintronic applications due to the fundamental nature of electron spin as a physical property. The electron spin states reflect exchange interactions between magnetic ions and charge carriers within the semiconductor's band structure. This dual control of spin and charge degrees of freedom establishes magnetic semiconductors as promising candidates for magnetoelectronic applications.[1] Substituting transition

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THERMAL RADIATION AND MHD EFFECTS ON ENTROPY GENERATION IN CASSON–WILLIAMSON HYBRID NANOFLUID FLOW OVER A ROTATING DISK

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Abstract

This research will focus on the entropy Generation of a magnetohydrodynamic (MHD) flow using Casson Willams hybrid nanofluid under flowing rotating disk with consideration of thermal radiation. It is a combination of three items of interest (i) von Kampankan swirling flow made possible by the rotation of the disk, (ii) hybrid nanofluid suspensions, more conductive of heat and better behaved in heat transfers than classical coolants, and (iii) converged non-Newtonian Casson (yield stress) and Williamson (viscoelastic relaxation). There is a generalization of the analysis of entropy-generation into heat-transfer, fluid-friction and Joule heating through the second law of thermodynamics. The Bejan number is used to a certain degree of distributing something irreversible.

The mathematical model includes Rosseland approximation of thermal diffusion and Lorentz approximation that represents the MHD. Open slows of partial differential equations are simplified using transformations of a like manner into nonlinear ordinary differential equations, which are solved numerically. A parameter study is directional in such a way as to select the influence of the magnetic interaction parameter, the radiation parameter, the Casson parameter and the Williamson parameter. It is found that thermal radiation amplifies the wall heat flux with the reduction of temperature gradients far far disk and changes the distribution of entropy. Stronger MHD effects inhibit radial velocity and enhance Joule dissipation, meaning that the Bejan number is wastier. Reduced Casson parameter decreases shear stresses, decreases viscous entropy, and Williamson viscoelasticity redistribes entropy outside of the wall region.

The paper builds on the current literature on non-Newtonian nanofluids, however, extending the area with a hybrid model, the CassonWilliamson in rotating disk geometry with MHD and radiation. The results give an understanding on minimization of irreversibility in rotating machines, biomedical devices, and power systems in advanced working fluids and electro-magnetic control measures are critical.

Keywords: Thermal radiation, Magnetohydrodynamics (MHD), Entropy generation, Casson fluid, Williamson fluid, Hybrid nanofluid, Rotating disk flow, Bejan number, Non-Newtonian rheology.

1. Introduction

1.1. Background and motivation

Rotating disk flows are classical benchmarks in fluid dynamics, first studied by von Kármán in 1921, and have become canonical models for three-dimensional boundary layers. Such flows appear in rotating machinery, power-generation turbines, and advanced cooling technologies, where accurate control of thermal and momentum transport is critical (Anwar Bég et al., 2021; Dufour & Soret, 2019). With the rapid growth of miniaturized devices and high-heat-flux equipment, efficient thermal management has become an urgent challenge. Nanofluids, engineered suspensions of nanoparticles in base liquids, have emerged as promising coolants because they exhibit improved thermal

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Revolutionizing English Language Teaching: The Role of Connected Learning Initiative In Bridging Educational Gaps Through Digital Innovation

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Abstract- This study examines the role of the Connected Learning Initiative (CLIx) in transforming English Language Teaching (ELT) through digital innovation, particularly in underserved regions of India. The research explores the following question: How does CLIx contribute to bridging educational gaps in ELT through ICT-enabled Open Educational Resources (OER)? The primary aim of this study is to evaluate the effectiveness of CLIx in enhancing student learning outcomes and teacher professional development through interactive, technology-enabled pedagogies. The objectives include analysing the impact of blended learning and constructivist methodologies on English language acquisition, assessing CLIx interventions' scalability, and understanding the collaborative networks' role in sustaining digital education initiatives. This research adopts a qualitative methodology, incorporating a detailed analysis of CLIx reports and secondary sources about the CLIx implementations in government schools across Chhattisgarh, Mizoram, Rajasthan, and Telangana. Data collection methods include document analysis of curriculum materials and policy reports. The study also engages with secondary sources, including reports from the Tata Institute of Social Sciences (TISS). The findings indicate that CLIx successfully integrates digital tools with pedagogical frameworks to foster communicative competence in English, critical thinking, and 21st-century skills. The initiative's emphasis on multilingual delivery and constructivist approaches enhances accessibility and engagement, particularly for students from marginalised communities. The research highlights the effectiveness of teacher training programs in equipping educators with digital competencies, thereby promoting sustainable pedagogical innovation. Leveraging ICT-enabled resources, CLIx serves as a scalable model for equitable and technology-driven ELT interventions in developing educational contexts.

Keywords: Connected Learning Initiative, English Language Teaching, Digital Innovation, ICT in Education, Teacher Professional Development

I. Introduction

Integrating digital technologies in education has emerged as a transformative force in addressing persistent disparities in learning outcomes, particularly in English Language Teaching (ELT). Despite global advancements in educational technology, marginalised communities in developing nations continue to face significant barriers, including limited access to quality instruction, inadequate teacher training, and insufficient digital infrastructure. In India, where linguistic diversity and socioeconomic inequalities further complicate educational delivery, innovative solutions are imperative to bridge these gaps. The Connected Learning Initiative (CLIx), a collaborative venture between the Tata Trusts, the Tata Institute of Social Sciences (TISS), and the Massachusetts Institute of Technology (MIT), represents a pioneering effort to leverage digital innovation for equitable ELT. This study investigates CLIx's role in revolutionising

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The Contribution of Youth in Nation Building: A Case Study on Young Indians' Initiative

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Abstract- The above quotation by Nelson Mandela clearly declares that the youth of any nation are the pillars of its future. Youth play a pivotal role in the dynamic transformation of society by driving social, cultural, and technological advancements. In the 21st century, young people are increasingly involving in reshaping the societal norms, contributing to economic development, and influencing political movements. Their inherent adaptability to change technological fluency, and innovative thinking make them as the key agents of progress in a rapidly evolving world. This paper examines the 'Young Indians' Initiative' (We Can, We Will), launched by the Government of India in 2002, which serves as a platform for young leaders to actively participate in India's development." The program focussed on the specified areas that include education, skill development, health care and environment. Furthermore, the present study examines the impact of the Young Indians' initiative, its limitations and challenges in navigating the current scenario in India.

Keywords: youth, Innovative Thinking, Young India Initiative, Government of India.

I. INTRODUCTION

The role of youth in social advancement is undeniable, as they bring fresh perspectives, energy, and innovation. India, with its large and dynamic youth population, stands at a critical juncture in its developmental trajectory. Youth have the potential to drive change, shape policy, and participate in global economic and social dialogues. One of the most significant movements aimed at empowering the youth in India was the Young Indians' Initiative (YII), launched in 2002 by the Confederation of Indian Industry (CII). The initiative sought to harness the potential of young individuals that lead to country's socio-economic development, facilitating their involvement in governance, entrepreneurship, and societal upliftment.

Yi was designed with an agenda to engage the youth in contributing to national development by providing them with opportunities for leadership and innovation. Through this initiative, young people were encouraged to take active roles in India's economic and social development, ensuring that the future of the nation is driven by a young, energetic, and forward-thinking workforce.

II. A CASE STUDY ON YOUNG INDIAN'S INITIATIVE

The Young Indians' Initiative catalysed a leadership renaissance among young people. Prior to its inception, young Indians were often excluded from mainstream decision-making processes. By providing young people with platforms for leadership, economic and technological innovation, social responsibility and volunteerism, cultural and social changes the Yi empowered the youth to challenge the status quo. Through this platform many youth-driven organizations, movements, and startups are flourished, and this empowerment

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A CRITICAL STUDY OF RACE, GENDER, AND IDENTITY IN THE NOVELS OF TONI MORRISON

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Abstract : The novels of Toni Morrison occupy a central position in African American literature because of their profound engagement with race, gender, memory, and identity. Morrison's fiction interrogates the historical and psychological consequences of slavery, racial oppression, patriarchal domination, and cultural displacement. Her protagonists frequently encounter existential and social predicaments that arise from systemic racism, fractured familial structures, gender violence, and the search for selfhood within oppressive social frameworks. This paper critically examines the multidimensional predicaments represented in Morrison's major novels, particularly Beloved, The Bluest Eye, Sula, and Song of Solomon.

Through a postcolonial and feminist lens, the study explores how Morrison reconstructsAfrican American identity while exposing the destructive effects of white supremacy and internalized racism. The paper argues that Morrison transforms individual suffering into collective cultural memory and resistance, thereby redefining identity and empowerment in Black literature.

IndexTerms - Race, Gender, Identity, African American Literature, Slavery, Feminism, Trauma, Cultural Memory, Toni Morrison

INTRODUCTION :

African American literature emerged as a powerful medium for articulating the experiences of Black people marginalized by slavery, segregation, and racial violence. Among the major literary voices of the twentieth century, Toni Morrison stands out for her unique ability to intertwine historical consciousness with psychological depth. Her novels portray the struggles of African Americans in a society shaped by racism, sexism, and economic exploitation. Morrison's works not only document oppression but also reveal the emotional and spiritual consequences of historical trauma.

Morrison's literary world is populated by characters who grapple with identity crises, alienation, and fractured selfhood. Her narratives examine how race and gender intersect to produce complex forms of suffering, especially for Black women. The predicament of Morrison's characters often arises from their inability to reconcile personal desires with social realities. Through memory, folklore, oral tradition, and myth, Morrison reconstructs Black history from the perspective of the oppressed.

This paper examines the major predicaments in Morrison's novels with special emphasis on race, gender, and identity. It seeks to analyze how Morrison critiques dominant social structures while simultaneously envisioning possibilities for healing and self-definition.

Discussion and interpretation:

Race and the Predicament of Black Existence -Race occupies the central thematic position in Morrison's fiction. Her novels expose the dehumanizing effects of racism and the psychological trauma inflicted upon African Americans. In The Bluest Eye, Morrison portrays the devastating impact of white beauty standards on Black identity through the tragic figure of Pecola Breedlove. Pecola's longing for blue eyes symbolizes her internalized racism and self-hatred. The novel demonstrates how racial oppression extends beyond physical discrimination and penetrates the psyche of Black individuals.

Pecola's predicament reflects the destructive power of a society that equates whiteness with beauty, innocence, and value. Morrison critiques the cultural mechanisms that marginalize Blackness and produce feelings of inferiority among African Americans. Pecola becomes a victim not only of white racism but also of a Black community that unconsciously reproduces oppressive standards.

Similarly, in Beloved, Morrison explores the lingering trauma of slavery. The character Sethe embodies the psychological scars of enslavement. Her act of killing her child to save her from slavery illustrates the extreme predicament faced by enslaved mothers. Morrison presents slavery not merely as a historical institution but as a haunting psychological reality that continues to affect future generations.

The ghost of Beloved symbolizes repressed memories of slavery that refuse to disappear.

Morrison suggests that racial trauma cannot be erased unless it is confronted and acknowledged. The novel transforms personal suffering into collective memory, emphasizing the need for historical remembrance.

RESEARCH PAPER

Machine Learning Enabled IoT Framework for Early Diagnosis and Targeted Drug Delivery

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ABSTRACT

Machine Learning (ML) with the Internet of Things (IoT) represents a paradigm shift in their combination for early diagnosis and targeted drug delivery, an approach that can fundamentally transform the healthcare sector. To introduce a framework using IoT-enabled devices and predictive analysis of data, this paper proposes a framework providing constant surveillance and the use of ML models. This combination of sensors and machine learning algorithms allows the detection of medical conditions at an early stage, with a tailored drug delivery system. The suggested system offers an effective, accurate, and scalable answer to enhance healthcare outcomes. Experiments illustrate the ability of the framework in the early detection of diseases and therefore providing treatment in a specialised way, which leads to better patient care. Issues like privacy of data, system integration, and real-time processing are also discussed. The framework has the potential to transform the healthcare system and provide direction towards individualized and proactive healthcare.

Keywords: Machine Learning, Internet of Things, Early Diagnosis, Targeted Drug Delivery, Healthcare Framework, Predictive Analytics, Precision Medicine, IoT Sensors, Data Integration, Medical Monitoring.

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Conflict of interest: None

1. Introduction

Healthcare industry has been experiencing a lot of problems, especially in the sphere of early diagnosis and delivery of specific drugs. Early diagnosis is important in enhancing the outcomes of the patient and most diseases mainly chronic such as cancer, cardiovascular diseases and diabetes are usually recognized at a later stage in life upon their progression to complicated stages. Failure to intervene in time leads to more deaths and expenses in healthcare[1]. Besides diagnosis, other significant challenges include the delivery of drugs in a more precise and individualized way. The conventional way of drug delivery might fail to factor in personal disease process and reaction to treatment, resulting in the lowering of optimal outcomes of treatment[2]. This leads to the increasing necessity of more sophisticated mechanisms which will be able to offer early diagnosis and personalized therapy depending on the particular patient.

With the surfacing of the Internet of Things (IoT) and Machine learning (ML), they have played a considerable role in handling these healthcare issues. It has the potential to provide useful information about the health of the patient, but IoT with its capacity to gather real-time data using different, connected devices can provide it[3]. Vital signs, biomarkers and environmental conditions can be constantly monitored by

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Research paper



Exploring Financial Innovation Through Cryptocurrency: A Global Systematic and Bibliometric Analysis

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Abstract

A growing number of financial institutions are showing interest in Cryptocurrency, prompting a need to understand its role in the current financial system. This article, using a narrative literature review, highlights both the benefits and drawbacks of Cryptocurrency adoption. Key concerns include security risks, privacy issues, price volatility, lack of regulatory oversight, potential for criminal misuse, high energy consumption, and governmental restrictions. Despite early resistance, cryptocurrencies like Bitcoin and Ether have gained legitimacy, especially among corporations. However, environmental concerns remain, as crypto mining consumes vast energy, contributing to carbon emissions and climate change. Using data from 2013 to 2024, the study examines how publicly traded U.S. companies account for Cryptocurrency holdings. It finds that while corporate adoption is growing, the landscape lacks transparency and standardized reporting norms. Companies differ in how they report crypto assets, with a shift toward treating them as indefinite-lived intangible assets over time. Reporting practices vary in terms of fair value assessments and impairment testing assumptions. These inconsistencies highlight the challenges in understanding corporate crypto exposure. This study offers a concise overview for scholars and practitioners, shedding light on the evolving intersection of Cryptocurrency and mainstream finance.

Keywords: *Crypto currencies, Finance, Bitcoin, Financial Innovation, Systematic Analysis.*

1. Introduction

Cryptocurrencies are a new kind of digital currency that uses cryptography for security and the blockchain for distributed ledger technology. Since the launch of the first Bitcoin (BTC) in 2008, Cryptocurrency has been at the centre of heated debate. Cryptocurrencies, in the eyes of its supporters, represent a game-changing technology with the ability to decentralize financial systems, make institutions more accountable, make records more auditable, and provide a stable and indestructible store of value. Bitcoin and other cryptocurrencies have been met with skepticism from some who see them as a tool for criminals and speculators that is bad for the environment. In contrast to its meteoric rise during the COVID-19 pandemic, when it exploded to a high of $3 trillion in November 2021, the Cryptocurrency (or "crypto") market had a relatively steady size in prior years. The value of cryptocurrencies and tokens has fallen along with the rest of the asset market in 2022, but the overall market capitalization of the over 21,000 different cryptocurrencies and tokens traded today is still close to $1 trillion. Firms are entering this space by crypto mining/staking, accepting crypto payments, allocating cash to crypto assets as an investment or diversification strategy, or providing crypto trading/lending services, demonstrating that despite controversy and value fluctuations, the crypto market continues to be appealing to individuals, corporations, and institutions. In the wake of the 2008 financial crisis, people had trouble putting their faith in traditional banking institutions. In particular, the bankruptcy filings of investment banks Bear Stearns and Lehman Brothers on March 16, 2008, marked the beginning of the global economic crisis (Wilson, 2019). Industrial output, private investment, and exports all fell in Finland during the crisis (Söderlund & Kestilä-Kekkonen, 2014). Most banks and international financial institutions in China were shut down, and those that remained ceased hiring (I. Abubakar et al., 2024).

1.1 Europe – MiCA Regulation (EU, 2023–2024)

In Europe, the regulatory framework for cryptocurrencies has advanced significantly with the introduction of the Markets in Crypto-Assets (MiCA) Regulation by the European Union. As the world's first comprehensive legislation dedicated to crypto assets, MiCA provides uniform rules across all 27 EU member states. It addresses issues such as stablecoin regulation, licensing requirements for exchanges and wallet providers, and safeguards against market abuse. By balancing investor protection with financial innovation, the EU has positioned itself as a global leader in shaping standards for the responsible development of digital assets.

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Impact of Cultural Factors on Consumer Behavior: A Cross-cultural Study

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Abstract: This cross-cultural study examines the impact of cultural factors namely cultural traditions, cultural beliefs, and cultural values on consumer behavior patterns across selected cities. With globalization influencing consumption habits, understanding how deeply rooted cultural dimensions shape purchasing decisions has become increasingly important for businesses and marketers. Drawing upon a sample of 450 respondents, the study employs a structured questionnaire to capture insights into consumer behavior influenced by diverse cultural backgrounds. Statistical tools such as reliability analysis, exploratory factor analysis (EFA), and regression analysis are used to validate constructs and identify significant relationships. The findings reveal that cultural beliefs and values play a substantial role in shaping consumer preferences and decision-making processes, while cultural traditions influence brand loyalty and consumption frequency. The study provides valuable implications for marketers aiming to tailor their strategies to culturally distinct consumer segments and highlights the necessity of incorporating cultural sensitivity in marketing practices across different regions.

Keywords: Cultural Traditions, Cultural Beliefs, Cultural Values and Consumer Behavior.

1. Introduction

In an increasingly globalized marketplace, understanding consumer behavior across cultures has become critical for businesses aiming to develop effective marketing strategies and product offerings. Consumer behavior is influenced by a multitude of factors—psychological, social, personal, and cultural. Among these, cultural factors play a particularly significant role as they shape individuals' values, beliefs, preferences, and buying patterns (Kotler & Keller, 2016). Culture encompasses the shared values, norms, and customs that guide the behavior of members of a society. It acts as a lens through which individuals interpret the world and make consumption decisions (Hofstede, 2001). Differences in cultural values, such as individualism versus collectivism or high versus low power distance, can lead to varying consumer preferences, decision-making styles, and brand perceptions across countries (Hofstede, & Minkov, 2010).

Cross-cultural studies have revealed that cultural backgrounds significantly influence how consumers perceive advertising messages, assess product quality, and evaluate customer service (De Mooij, 2019). For example, consumers in Western cultures often prioritize self-expression and personal achievement, while those in Eastern cultures may focus on group harmony and social acceptance in their consumption choices (Triandis, 1995). As businesses expand globally, adapting marketing strategies to align with local cultural norms becomes essential to gaining competitive advantage and customer loyalty. Therefore, examining the impact of cultural factors on consumer behavior through a cross-cultural lens offers valuable

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Research paper



Impact of Capital Structure on The Performance of Non-Financial Firms in Emerging Markets: Evidence from The Bombay Stock Exchange Using GMM Estimation

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Abstract

This study investigates the effect of capital structure on the performance of 289 non-financial firms listed on the Bombay Stock Exchange (BSE) from 2018 to 2023. Capital structure, defined as the mix of debt and equity, significantly influences firm value. Unlike earlier studies focusing mainly on ROA or ROE, this research includes net profit and gross profit margins. Using the two-step Generalized Method of Moments (GMM) to address endogeneity, the study incorporates Modigliani and Miller's theory, agency theory, and the pecking order theory. Results show a negative relationship between long-term debt and firm performance. Firm size positively impacts efficiency, while a higher dividend payout negatively correlates with ROE. Sales growth enhances firm performance, and asset tangibility negatively affects efficiency. The study is limited by its regional scope and five-year period, suggesting future research should include more countries and extended timeframes for broader insights.

Keywords: *Capital Structure; Firm Performance; Generalized Method of Moments; Leverage; Emerging Markets.*

1. Introduction

Corporate policies of firms include capital structure, dividend policy, cash and asset management, level of cash holding, and working capital management. Capital structure is the combination of debts and equity of a firm. Debts include short-term debts, which are part of working capital, and long-term debts, which arise with debentures and bonds; on the other hand, equity comes from the issuance of shares from the company, and stockholders are the owners and possess retained earnings (Isaac & Ayodeji, 2024).

Capital structure is a significant element of a firm's wealth and performance. So, this study aims to check the impact of ownership structure on firms' performance and efficiency in India (Gnanaprasuna et al., 2025). Capital structure is to be said debt to equity ratio because this ratio denotes shows how an entity funds its operations and the proportion of debt and equity. Research on capital structure started after 1958 with the postulation of Modigliani and Miller, namely "Irrelevance theory of capital structure, "who suggested that the assumption of perfect market capital structure has no impact on firms' performance and faced criticism by many scholars as perfect market existence is difficult in the actual era. Afterward, four theories on capital structure arose: agency theory, pecking order theory, trade-off theory, and market timing theory.

Their assumption is different when comparing Modigliani and Miller's theory with other capital structure theories related to imperfect market conditions. However, they stand that capital structure is relevant to firms' value. Hence, no one theory perfectly explains the relationship of the subject. Ali (2013) suggested that the literature does not prove the exact relation of capital structure on firms' performance, instead spending more than fifty years of research. However, he claimed that recent research is more critical than Modigliani and Miller's simple assumption. Besides, the research did not find the exact combination of capital structure, i.e., the ratio of debts and equity. However, they proved some relation between capital structure and the firm's value, performance and efficiency, and governance.

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Triple Bottom Line Approach To Business: Balancing Profit, People And Planet Through Effective Management

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Abstract

In the wake of efforts geared toward sustainability, corporations have largely traversed the traditional course of profit maximization to broader considerations of social and environmental issues alongside economic performance. The concept of Triple Bottom Line (TBL), developed by John Elkington in 1994, sees organizational success being measured in terms of three interrelated pillars: the people dimension (social equity), the planet dimension (environmental stewardship), and profit (economic viability). The study looks into the operational relevance, trends of adoption, and managerial philosophies of TBL in modern business. The study draws upon and synthesizes secondary data, academic literature, and industry reports from 2015 to 2025 to highlight how companies balance TBL imperatives, tensions, and synergies between the dimensions, and what it means for their long-term competitiveness. The study findings reveal that while TBL adoption increases worldwide, disparities between regions, inconsistencies in reporting and reports, and gaps in verification still remain at large. A quantitative approach demonstrates the positive interrelationship between sustainability disclosure and financial outcomes, whereas qualitative case studies point to pathways.

Keywords: *Triple Bottom Line, Profit, People, Planet, Effective Management*

1. INTRODUCTION

In the past, the business world was mainly oriented towards generating financial gains, with shareholder returns being the only measure of success. Now with rising climate change, widened inequality, and mounting stakeholder expectations, there are calls for business models that intertwine profit with responsibility. Within this emerging framework, the Triple Bottom Line has become one of the most predominant tools for evaluation. Whereas, with its criterion of people, planet, and profit, TBL redefines corporate accountability and argues in favor of a holistic approach to management [1]. Global trends offer confirmation of TBL's growing relevance. According to the KPMG Survey of Sustainability Reporting (2024), 95% of the world's top 250 companies disclose carbon reduction targets-a rise from 80% in 2022, it also declared that 71% of N100 companies and 77% of G250 companies apply its standards in sustainability reporting. These numbers make it clear that sustainability is no longer an option that an organization can decide on but is central to its wide legitimacy and resilience. Global trends speak of the increasing focus on TBL [2]. According to the KPMG Survey of Sustainability Reporting (2024), 95% of the global top 250 companies set out to disclose targets for carbon reduction as compared to 80% in 2022. In celebration of such efforts, the recorded that 71% of N100 companies and 77% of G250 companies utilize its standards in sustainability reporting. This is evidence that sustainability is no longer an optional side concern, but rather, a core dimension of organizational legitimacy and resilience [3]. In fact, conflict persists behind TBL considerations. Often, companies face trade-offs with risks of confused policy directions along the TBL spectrum: shareholder returns vis-a-vis investment in carbon neutrality, or employee well-being programs juxtaposed with cost structures [4]. These topics are investigative: How

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A Study on Fund Flow Analysis with Reference to Sriman Finance Limited, Rajampet

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Abstract: The study on Fund Flow Analysis focuses on examining the movement of funds within an organization over a specific period. It helps in understanding how funds are generated from various sources and how they are utilized in different business activities. The analysis is mainly based on financial statements such as the balance sheet and profit and loss account to identify changes in working capital and overall financial position.

The study aims to evaluate the liquidity, solvency, and financial efficiency of the organization by analyzing sources and applications of funds. It also helps management in making effective financial decisions, planning, and controlling resources. The findings of the study indicate that proper management of funds leads to better financial stability and improved performance.

Keywords: Statement of changes in working capital, Fund from operations, Fund flow statements

1. Introduction

Funds flow analysis is a financial management tool used to examine the movement of funds within an organization over a specific period. It provides insights into how financial resources are generated and utilized, helping businesses and financial analysts understand the underlying causes of changes in financial position.

This analysis is essential for assessing liquidity, evaluating financial stability, and making strategic decisions. By tracking the inflows and outflows of funds, businesses can identify trends, pinpoint inefficiencies, and ensure optimal allocation of resources.

2. Literature Survey

- **Varma (2013):** He highlighted that proper working capital management is important to avoid excess investment in current assets.
- **Roy and Bhattacharyya (2014):** They concluded that proper financing of current assets ensures financial stability.

3. Research Methodology

3.1. Need of the Study

- To understand the movement of funds
- To analyze changes in working capital
- To evaluate financial management
- To assist management decisions
- To identify sources and applications of funds
- To assess the long-term financial position
- To help creditors and investors
- To supplement financial statements

3.2. Objectives of the Study

- To study the movement of funds

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A Study on Financial Performance With Special Reference to Union Bank of India.

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Abstract: This study focuses on analyzing the financial performance of Union Bank of India with special reference to its Rajampet (Boyanapalli) branch. Financial performance plays a vital role in evaluating the efficiency, profitability, and overall financial health of a banking institution. The study is based on secondary data collected from annual reports, financial statements, and other relevant sources. Various financial tools, such as ratio analysis, including gross profit ratio, net profit ratio, operating expense ratio, current ratio, quick ratio, and return on assets, have been used to assess the bank's performance over a period of five years. The analysis reveals that the bank has shown significant improvement in profitability and asset utilization, as indicated by the increasing net profit ratio and return on assets. However, certain challenges, such as declining gross profit margins and low liquidity levels, were also observed. The study highlights the importance of effective financial management, cost control, and efficient utilization of resources in improving financial performance. Overall, the findings suggest that the bank has maintained a stable financial position with scope for further improvement in specific areas.

Keywords: Financial Performance, Ratio Analysis, Profitability, Liquidity, Banking Sector, Net Profit Ratio, Gross Profit Ratio, Return on Assets, Financial Statements.

1. Introduction

The performance of the firm can be measured by its financial results, i.e., by its size of earnings Riskiness and profitability are two major factors which jointly determine the value of the concern. Financial decisions which increase risks will decrease the value of the firm and on the other hand, financial decisions which increase the profitability will increase value of the firm. Risk and profitability are two essential ingredients of a business concern. There as been a considerable debate about the ultimate objective of firm performance, whether it is profit maximization or wealth maximization. It is observed that while considering the firm performance, the profit and wealth maximization are linked and are effected by one-another. A company's financial performance therefore is normally judged by a series of ratios or figures, however there are following the ratio parameters which can be used to know the performance of the company. Financial statements are prepared primarily for decision-making. They play a dominant role in setting the framework of management decisions. But the information provided in the financial statements is not an end in itself as no meaningful conclusions can be drawn from this statement alone. The information provided in the financial statements is of immense use in making decisions through analysis and interpretation of financial statements. Financial analysis is "the process of identifying the financial strengths and weaknesses of the firm by establishing relationship between the items of the balance sheet and the profit and loss account" there are various methods or techniques used in financial analysis such as comparative balance sheet statements, trend analysis, common size statements, schedule of changes in working capital, funds flow analysis, cost volume-profit analysis, ratio analysis

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EXPLORING EMPLOYEE SATISFACTION IN COMPOSITE MANUFACTURING: INSIGHTS FROM TRIOVISION COMPOSITE TECHNOLOGIES, KADAPA

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Keyword:
Employee Satisfaction, Composite Manufacturing, Organizational Behaviour, Human Resource Practices, Workplace Environment.

ABSTRACT

This study aims to explore the determinants of employee satisfaction within the composite manufacturing sector, with specific reference to Triovision Technologies. The research problem centres on understanding how organizational practices influence employee attitudes in a technically demanding and process-driven industry. The primary objective is to identify key factors contributing to employee satisfaction and assess their impact on overall workplace morale and productivity. A descriptive research design was adopted for this study. Primary data were collected from a sample of 120 employees using a structured questionnaire. The survey included variables such as work environment, compensation, career growth, management support, and work-life balance. Statistical tools such as descriptive analysis, correlation, and regression analysis were applied to interpret the data and identify significant relationships among variables. The findings reveal that work environment, managerial support, and opportunities for career advancement are the most influential factors affecting employee satisfaction. Compensation and work-life balance also show a moderate but significant impact. The study highlights that employees value transparent communication and recognition alongside financial rewards. The implications of this research are valuable for both academia and industry. It contributes to the limited literature on employee satisfaction in composite manufacturing while offering practical insights for managers to design effective HR strategies. Organizations can enhance productivity and retention by focusing on employee-centric policies.

INTRODUCTION

Employee satisfaction has emerged as a critical factor influencing organizational performance, particularly in manufacturing sectors where efficiency, precision, and workforce stability are essential.

The composite manufacturing industry, characterized by advanced materials and technology-driven processes, demands a skilled and motivated workforce to maintain quality standards and competitiveness. In this context, understanding the factors that contribute to employee satisfaction becomes increasingly important for sustaining productivity and reducing employee turnover.

Despite the growing significance of employee-

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EMPLOYEE MOTIVATION STRATEGIES IN THE CEMENT SECTOR: EVIDENCE FROM ULTRATECH CEMENT, TADIPATRI, ANDHRA PRADESH

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Keywords:
Employee motivation; cement manufacturing; HRM in industry; Two-Factor Theory; workforce engagement.

ABSTRACT

The manufacturing sector, particularly cement production, faces persistent challenges in retaining and motivating a largely blue-collar, labour-intensive workforce. This study investigates the nature and effectiveness of employee motivation strategies adopted at UltraTech Cement, Tadipatri plant, Andhra Pradesh, with the aim of identifying factors that significantly influence employee motivation levels. A quantitative, cross-sectional survey design was adopted. Primary data were collected from 202 employees using a structured questionnaire grounded in Herzberg's Two-Factor Theory and Maslow's Hierarchy of Needs. Descriptive statistics, reliability analysis (Cronbach's Alpha), Pearson correlation, and multiple linear regression were employed for data analysis. Results reveal that salary and compensation, recognition and rewards, growth opportunities, and working conditions are the four key predictors of employee motivation. Salary emerged as the strongest predictor ($\beta = 0.412$, $p < 0.001$), followed by recognition ($\beta = 0.298$, $p < 0.001$). The regression model explained 67.3% of the variance in motivation ($R^2 = 0.673$). Findings offer actionable insights for HR practitioners in heavy manufacturing industries in Tier-II cities of developing economies. The study enriches motivation theory literature by providing sector-specific empirical evidence often absent in mainstream research.

INTRODUCTION

The cement industry is among the most labour-intensive manufacturing sectors in India, employing millions of workers across production, logistics, and support functions. Despite its economic significance — India being the world's second-largest cement producer — human resource management in this sector remains understudied compared to services and technology industries. UltraTech Cement, a flagship enterprise of the Aditya Birla Group, operates a major plant in Tadipatri, Andhra Pradesh — one of the largest cement manufacturing clusters in South Asia. Managing and motivating a diverse, largely blue-collar workforce in such an environment poses distinct challenges for management. Employee motivation is a central concern in organisational behaviour and human resource management. Motivated employees demonstrate higher productivity, lower absenteeism, greater commitment, and enhanced willingness to contribute to organisational goals (Bhatt & Bhatt, 2021). However, in capital-intensive manufacturing

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A Study on Customer Retention With Reference to Kottha's Foods, Kadapa

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Abstract:

Customer retention is a business's ability to keep existing customers and continue to generate revenue from them. Companies use different tactics to convert first-time buyers into repeat shoppers. In other words, customer retention allows a business to increase the profitability of an existing customer and maximize their lifetime value (LTV).

Customer retention is a process where a business aims to convince existing customers to keep purchasing its products or services. Since a customer has already made a purchase, it's different from lead generation, which is the effort involved in capturing contact information of businesses or individuals who are likely to buy a product or service.

Instead, customer retention is focused on existing customers. The goal is to increase repeat purchases by building customer loyalty through excellent customer service, product value, and a distinct advantage over similar products or services.

Customer retention requires a series of initiatives and processes designed to build trust and enhance customer loyalty. It helps structure the fulfillment of brand promises through the consistent delivery of value.

Keywords: Customer retention rate, churn , lifetime value, loyalty programs, net promoter score.

1. Introduction

A customer is someone who buys products or services. In sales, commerce, and economics, a customer (sometimes known as a client, buyer, or purchaser) is the recipient of a good, service, product, or an idea, obtained from a seller, vendor, or supplier via a financial transaction or an exchange for money or some other valuable consideration. Retention is the ability to keep or continue having something.

2. Literature Review

Kotler P., Keller K.L. (2006): Measuring customer satisfaction and the factors responsible. It is one of the important activities for any firm. It has been stated that the highly satisfied customer stays loyal and longer, buys more products repeatedly, and gives less attention toThe competitor brand is less sensitive to price.

Kumar et al. (2009): Mentioned that "high quality of service will result in high customer Satisfaction and will result it into increases in customer loyalty. In the study, it is observed that there are four major factors: tangibility, reliability, convenience, and competence. These all have Substantial difference between expectations and perceptions, with tangibility havin the smallest gap and convenience having the largest gap.

Mohd. J. et al. (2015): Researcher throws light on the impo tance of customer satisfaction in any industry. Good quali service and improved customer satisfaction will lead to hance the number of customers. Good service providers also save the money required for different promotions and keting activities, as satisfied customers will always end these brands.

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A STUDY ON INVENTORY MANAGEMENT WITH REFERANCE TO HINDUSTAN COCA COLA BEVERAGES PRIVATE LIMITED ,SRIKALAHASTHI

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Abstract

This study examines inventory management practices at Hindustan Coca-Cola Beverages Private Limited, focusing on maintaining an optimal balance between supply and demand. It analyzes key techniques such as ABC analysis, Economic Order Quantity (EOQ), and inventory turnover ratio using secondary data from annual reports. The findings show that efficient inventory control helps reduce costs, improve profitability, and ensure smooth production and distribution. ABC analysis highlights the importance of prioritizing high-value items, while turnover ratios indicate effective utilization of inventory. The study concludes that proper inventory management is essential for operational efficiency and competitive advantage.

Keywords: Inventory Management, ABC Analysis, EOQ, Inventory Turnover Ratio, Cost Control, Profitability, Working Capital

INTRODUCTION

Inventory management is very important area of production management and plays a vital role in the economic operations of concern. It has been defined in a variety of ways and most of the definitions stress the importance of control element in achieving cost effectiveness, irrespective of range of particular discipline which the functional fields in meeting the needs of individual situation.

Inventory management can be defined as "the sum total of those activities necessary for the acquisition, storage, disposal or use of inventory.

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A Study on the Impact of Digital Marketing on Lead Generation and Conversion with Reference to Bajaj Two-Wheeler Showroom, Rajampeta

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Abstract: This study focuses on analyzing the impact of digital marketing on lead generation and conversion with reference to a Bajaj two-wheeler showroom in Rajampeta. The research examines how digital platforms influence customer awareness, interest, inquiry generation, and final purchase decisions. Data was collected from 125 respondents using a structured questionnaire and analyzed through percentage methods. The findings reveal that while digital marketing plays a significant role in creating awareness, its effectiveness in generating leads and converting them into actual sales is limited. A large number of respondents reported low visibility of digital advertisements, poor engagement, and lack of relevance in marketing content. Additionally, issues such as weak social media presence, low website interaction, delayed response time, and ineffective follow-up systems negatively impact conversion rates.

The study also highlights that customers are more influenced by factors such as online reviews, offers, and direct communication channels like email and SMS rather than traditional digital advertisements. Moreover, inconsistency between online information and showroom experience reduces customer trust. The research concludes that digital marketing, although important, is currently underutilized and requires strategic improvements in content quality, targeting, personalization, and customer engagement to enhance lead generation and conversion effectiveness.

Keywords: Digital Marketing, Lead Generation, Lead Conversion, Customer Engagement, Social Media Marketing, Online Advertising, Consumer Behavior, Automobile Industry, Two-Wheeler Market, Conversion Rate, Customer Experience, Marketing Effectiveness.

1. Introduction

In today's digital era, marketing strategies have undergone a significant transformation from traditional methods to technology-driven approaches. Digital marketing has emerged as a powerful tool for businesses to reach potential customers through platforms such as social media, search engines, websites, and mobile applications. It enables organizations to create awareness, engage customers, and influence purchase decisions in a more targeted and measurable manner.

In the automobile industry, particularly in the two-wheeler segment, digital marketing plays a crucial role in influencing customer behavior. Customers increasingly rely on online platforms to gather information about vehicle models, compare prices, read reviews, and evaluate alternatives before making purchase decisions. This shift has made digital marketing an essential component of business strategy for dealerships.

Lead generation and conversion are key objectives of digital marketing. Lead generation involves attracting potential customers and capturing their interest, while conversion refers to turning these leads into actual buyers. However, generating leads alone is not sufficient; effective follow-up, communica-

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A STUDY ON CASH MANAGEMENT WITH REFERENCE TO UNION BANK OF INDIA, NEW BOYANAPALLI BRANCH, RAJAMPETA.

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INTRODUCTION

Cash is an important asset for the operations of the business. Cash is the basic input needed to keep the business running on a continuous on a continuous basis; it is also the ultimate output expected to be realized by selling the service or product manufacturing by the firm. Cash, the most liquid asset, is of vital importance to the daily operations of the business. while the proportion of corporate asset held in the form of cash is very small, often between 1 and 3 present. In view of its importance, it is generally referred as the "life blood" of business enterprise. Cash management is the process of monitoring, analysing, and controlling cash flow. The aim of cash management is to ensure that the entity has enough cash to meet all obligations. Cash management for businesses involves optimizing cash and other liquid assets, investing in the right channels and minimizing operational and overhead costs.

It is multidimensional and complex, involving multiple stakeholders, timelines and large amounts of money. Cash management refers to managing a business's cash flow to make sure that it has enough funds to function in its daily operations. It suggests the utilisation of cash to ensure maximum liquidity and profitability. Cash management is concerned with monitoring, analysing, and managing cash inflows, outflows, and cash balances held by the firm at a certain

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Impact of Product Packaging on Consumer Buying Decision with Reference to Kottha's Foods, Kadapa

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Abstract: Product packaging is highly competitive today since self-service has improved and consumer lifestyles have changed .Every business concentrate on packaging since it is the primary means of promoting sales. In addition to increasing the company's market share and lowering its advertising expenses, product packaging influences consumers and their hast purchasing decisions. With an emphasis on kottha 's foods, this study investigates the relationship between product packaging and consumer purchasing decision in the sector. According to the survey, packaging attributes like aesthetic appeal, material quality, branding, eco-friendliness, and practicality affect consumer preferences and purchasing decisions. One hundred two customers' comments were gathered using a survey approach, which shed light on how they view packaging's influence on purchasing decisions. The results of the correlation research show that the aspects of loyalty and kottha' s foods purchasing decision are positively correlated. This study offers valuable information for enhancing packaging techniques and helpful information for managers and marketers working . It is advised that more studies be done to examine how particular package components affect consumer decision across various product categories and demographic groups

Keywords: Product Packaging, Branding, Eco-Friendly Design, Packaging Innovation, Customer Satisfaction, Consumer Loyalty.

1. Introduction

Packaging has evolved far beyond its traditional role of simply protecting products. In today's competitive market, it acts as a powerful marketing tool that influences consumer decisions, builds brand identity, and enhances product appeal. With rising consumer awareness, brands are now investing in innovative, sustainable, and visually appealing packaging to attract buyers. The way a product is packaged can significantly impact purchasing behavior, as elements like color, design, material, and functionality play a crucial role in shaping consumer perceptions. Modern consumers, especially younger buyers, are drawn to packaging that not only looks good but also aligns with their values—whether that's convenience, sustainability, or premium quality. The growing demand for eco-friendly options has also put pressure on companies to adopt sustainable packaging solutions. As businesses compete for attention on crowded shelves and digital marketplaces, packaging has become an essential element of brand storytelling, directly influencing how customers interact with and perceive a product.

2. Literature Survey

- **Steenis et al. (2017):** Found that consumers associate durable, sustainable, and eco-friendly packaging with better overall product quality.
- **Auliandri et al. (2018):** Showed that young consumers have a positive attitude toward green packaging, with a

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EVALUATING FINANCIAL PERFORMANCE IN MANUFACTURING SECTOR: EVIDENCE FROM CHAITANYA CHEMICALS, KADAPA

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Keywords:
Financial Performance;
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Ratio Analysis;
Liquidity Management;
Profitability Evaluation.

ABSTRACT

The study aims to evaluate the financial performance of the manufacturing sector with specific reference to Chaitanya Chemicals, Kadapa. The research problem centres on understanding how financial indicators reflect operational efficiency and sustainability in a competitive environment. The objective is to analyse profitability, liquidity, and solvency to assess the overall financial health of the firm.The research adopts a descriptive and analytical design. Secondary data were collected from published financial statements of Chaitanya Chemicals over a five-year period. Key financial ratios—including profitability, liquidity, leverage, and efficiency ratios—were computed. Comparative analysis was conducted to identify trends and patterns, while ratio interpretation was used to evaluate strengths and weaknesses in financial management.The results indicate that Chaitanya Chemicals maintains moderate profitability with stable revenue growth, though margins are constrained by rising input costs. Liquidity ratios suggest adequate short-term solvency, but working capital management requires improvement. Leverage analysis shows a balanced capital structure, minimizing financial risk. Efficiency ratios highlight satisfactory asset utilization, though inventory turnover remains below industry benchmarks. Overall, the company demonstrates financial stability but faces challenges in cost control and operational efficiency.Academically, the study contributes to literature on financial performance evaluation in the Indian manufacturing sector. Practically, it provides managers with insights into improving cost efficiency and liquidity management. Policy wise, the findings emphasize the need for supportive measures to strengthen small and medium sized manufacturing firms in regional markets.

INTRODUCTION

The manufacturing sector plays a pivotal role in driving industrial growth and economic development, particularly in emerging economies like India. Within this sector, chemical manufacturing has gained prominence due to its contribution to diverse industries such as pharmaceuticals, agriculture, and consumer goods.

Evaluating financial performance in this context is essential, as it provides insights into operational efficiency, profitability, and sustainability. Chaitanya Chemicals, located in Kadapa, represents a mid-sized manufacturing firm whose financial performance offers

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AN EMPIRICAL STUDY ON EMPLOYEE SATISFACTION IN THE CHEMICAL INDUSTRY: EVIDENCE FROM CHAITANYA CHEMICALS, KADAPA

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Keyword:
Employee Satisfaction, Chemical Industry, Organizational Commitment, Workplace Environment, Human Resource Practices.

ABSTRACT

Employee satisfaction has emerged as a critical determinant of organizational effectiveness, particularly in labour-intensive sectors such as the chemical industry. The present study aims to examine the level of employee satisfaction and identify the key factors influencing it at Chaitanya Chemicals, Kadapa. The primary objective is to assess how workplace conditions, compensation, management practices, and growth opportunities impact employee attitudes and overall job satisfaction. A descriptive research design was adopted for this study. Primary data were collected from a sample of 120 employees using a structured questionnaire. The sampling technique employed was simple random sampling to ensure fair representation. Statistical tools such as percentage analysis, mean scores, and correlation analysis were used to interpret the data and derive meaningful insights. The findings indicate that while employees are moderately satisfied with job security and interpersonal relationships, concerns persist regarding compensation, career advancement opportunities, and workplace safety measures. A positive correlation was observed between employee satisfaction and productivity-related factors such as motivation and organizational commitment. The study holds significance for both academia and industry practitioners. It contributes to the existing literature on employee satisfaction in the chemical sector and provides actionable insights for management to enhance human resource practices. Improving employee satisfaction can lead to higher retention, better performance, and sustainable organizational growth.

INTRODUCTION

Employee satisfaction has become a focal point of organizational research and practice, especially in industries characterized by high operational risks and demanding work environments such as the chemical industry. In today's competitive business landscape organizations increasingly recognize that human resources are not merely a factor of production but a strategic asset.

Satisfied employees tend to exhibit higher levels of productivity, commitment, and loyalty, which ultimately contribute to organizational success. Within this context, understanding the dynamics of employee satisfaction in specific industrial settings becomes essential.

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A Study on Financial Risk Management and its Effect on the performance of HDFC Bank, Rajampet

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Abstract: This study examines the impact of financial risk management on the performance of HDFC Bank over five years (2019–2024). The research evaluates key financial risks such as credit risk, liquidity risk, and operational risk, and analyzes their influence on the bank's financial performance indicators, including profitability, efficiency, and stability. The study is based on secondary data collected from annual reports, financial statements, and reliable financial websites. Ratio analysis and trend analysis are used to assess the bank's ability to manage risks effectively while maintaining consistent growth. The findings indicate that HDFC Bank has maintained a stable financial position with strong risk control measures, although certain variations in asset quality and profitability highlight the need for continuous improvement in risk management strategies. The study provides useful insights and recommendations to enhance financial stability and sustain long-term performance in a dynamic banking environment.

Keywords: Financial Risk Management, Credit Risk, Operational Risk, Profitability, Financial Performance, Banking Sector.

1. Introduction

Financial risk management involves identifying, analyzing, and mitigating potential financial losses from uncertainties like credit defaults, market volatility, interest rate shifts, liquidity shortages, and operational disruptions in banking. It uses tools like hedging, diversification, stress testing, and regulatory frameworks. In an era of volatile markets, regulatory pressures, and evolving economic challenges, understanding how these practices influence overall performance has become essential for sustainable banking operations. Background and Context Financial institutions face diverse risks, including credit, market, liquidity, and operational types, each capable of eroding profitability and shareholder value if un-managed. Effective risk management frameworks, aligned with global standards, enable banks to optimize capital allocation, reduce non-performing assets, and enhance return metrics such as Return on Assets and Return on Equity. This study explores the direct linkage between robust risk strategies and institutional performance, highlighting how proactive measures translate into measurable financial outcomes like improved net interest margins and lower volatility in earnings. The banking sector's transformation post-global financial crisis underscores the need for integrated risk-performance analysis. Traditional descriptive approaches to risk oversight have evolved into empirical evaluations that quantify impacts on key performance indicators.

2. Review of Literature

- **Ling Chen (2024):** Applied advanced artificial intelligence techniques such as Generative Adversarial Networks (GANs) in financial risk measurement. The study focuses on improving risk prediction methods like Value at Risk (VaR) and Expected Shortfall, which help financial institutions improve forecasting accuracy and decision-

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PERFORMANCE APPRAISAL PRACTICES IN MANUFACTURING FIRMS: EVIDENCE FROM TRIOVISION COMPOSITE TECHNOLOGIES, KADAPA

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Performance Appraisal, Manufacturing Firms, Employee Motivation, Human Resource Practices, Organizational Productivity.

ABSTRACT

This study investigates performance appraisal practices in manufacturing firms, with specific evidence from Triovision Composite Technologies, Kadapa. The research problem centres on the effectiveness and fairness of appraisal systems in enhancing employee motivation and organizational productivity. The objective is to examine the design, implementation, and outcomes of appraisal mechanisms in a mid-sized manufacturing context. A descriptive research design was adopted, using a structured questionnaire administered to 103 employees across different departments of Triovision Composite Technologies, Kadapa. Data were analysed using descriptive statistics and correlation techniques to identify patterns and relationships between appraisal practices and employee perceptions of fairness, motivation, and performance outcomes. The results reveal that while formal appraisal systems are in place, employees perceive gaps in transparency, consistency, and developmental feedback. A significant positive correlation was found between well-structured appraisal practices and employee satisfaction. However, the study also highlights challenges such as managerial bias, limited employee participation, and inadequate linkage between appraisal outcomes and career progression. Academically, the study contributes to literature on human resource management in manufacturing firms by providing firm-level evidence. Practically, it suggests that organizations should strengthen appraisal systems by integrating participatory approaches, continuous feedback, and alignment with training and career development. Policy-wise, the findings underscore the need for standardized appraisal frameworks in manufacturing firms to ensure fairness and competitiveness.

INTRODUCTION

Performance appraisal has long been recognized as a critical component of human resource management, particularly in manufacturing firms where productivity, efficiency, and employee motivation are closely interlinked. In today's competitive environment, organizations are increasingly aware that effective appraisal systems not only measure individual performance but also contribute to organizational growth by aligning employee goals with strategic objectives. Triovision Composite Technologies, Kadapa, a mid-sized

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WORK-LIFE BALANCE IN THE PHARMACEUTICAL INDUSTRY: EVIDENCE FROM HETERO LABS HYDERABAD

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Keyword:
Work-Life Balance; Pharmaceutical Industry; Employee Well-being; Organizational Support; Human Resource Management.

ABSTRACT

The pharmaceutical industry is characterized by demanding schedules, regulatory pressures, and high-performance expectations, often leading to challenges in maintaining work-life balance. This study investigates the extent of work-life balance among employees of Hetero Labs, Hyderabad, with the objective of identifying key stressors, coping mechanisms, and organizational practices that influence employee well-being. A descriptive research design was adopted, using a structured questionnaire administered to a sample of 107 employees across different departments. The data were analysed using statistical tools such as frequency distribution, mean scores, and correlation analysis to examine relationships between work demands, personal life satisfaction, and organizational support systems. The results indicate that while employees acknowledge the pharmaceutical sector's competitive environment, organizational initiatives such as flexible scheduling and wellness programs moderately contribute to improved work-life balance. However, high workload intensity and limited family time remain significant concerns. Younger employees reported higher stress levels compared to senior staff, suggesting generational differences in coping strategies. Academically, the study adds to the literature on human resource management in knowledge-intensive industries. Practically, it highlights the need for pharmaceutical firms to strengthen employee assistance programs, introduce family-friendly policies, and foster a culture of psychological safety. Policy-wise, the findings suggest that industry regulators and corporate leaders should prioritize employee well-being as a strategic imperative to sustain productivity and innovation.

INTRODUCTION

The pharmaceutical industry is one of the most dynamic and demanding sectors, characterized by long working hours, strict regulatory compliance, and continuous innovation. In India, the sector has witnessed rapid growth, with companies such as Hetero Labs in Hyderabad playing a significant role in manufacturing and research While this growth has created employment opportunities and contributed to national healthcare, it has also intensified workplace pressures. Employees often face challenges in balancing professional responsibilities with personal life, leading to stress, reduced satisfaction, and potential burnout. Against this backdrop, work-life balance has emerged as a critical issue in organizational behaviour and human resource management.

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DETERMINANTS OF EMPLOYEE MOTIVATION: A CASE STUDY OF TRIOVISION COMPOSITE TECHNOLOGIES, KADAPA.

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Keyword:
Employee Motivation, Job Satisfaction, Leadership, Career Development, Manufacturing Sector.

ABSTRACT

Employee motivation remains a critical driver of organizational performance, yet its determinants in technology-driven manufacturing firms like Triovision Composite Technologies—a mid-sized Indian firm specializing in composite materials—warrant deeper exploration amid rising turnover and productivity challenges. This study addresses the research problem of identifying key motivational factors influencing employee engagement in such contexts, with the primary objective to examine intrinsic and extrinsic determinants and their impact on job satisfaction and retention. Employing a single-case study design, the research collected primary data via structured surveys from 109 employees across production, R&D, and administrative roles at Triovision's Kadapa facility. Quantitative analysis involved descriptive statistics, correlation, and multiple regression using SPSS, supplemented by thematic analysis of open-ended responses to triangulate findings. Key results reveal that career growth opportunities ($\beta = 0.42$, $p < 0.01$) and supportive leadership ($\beta = 0.35$, $p < 0.01$) emerge as the strongest positive determinants, explaining 58% of motivation variance, while inadequate compensation and work-life imbalance significantly erode it. Employees in R&D showed higher intrinsic motivation linked to autonomy. Academically, this enriches motivation theories like Herzberg's Two-Factor model in emerging market settings; practically, it offers Triovision actionable strategies like leadership training and flexible policies; policy-wise, it underscores incentives for tech firms under India's labour reforms.

INTRODUCTION

In today's fast-paced manufacturing sector, employee motivation stands as a cornerstone for sustaining competitive advantage, particularly in technology-intensive firms navigating skill shortages and high attrition rates. Triovision Composite Technologies, a Kadapa-based company established in 2012, exemplifies this challenge. Specializing in advanced composite materials for automotive and aerospace applications, the firm employs over 500 workers but grapples with a 22% annual turnover rate—above the industry average of 15% reported by the Society for Human Resource Management (2024). Factors like repetitive tasks, technological disruptions from Industry 4.0, and post-pandemic work stress have eroded employee drive, impacting productivity and innovation.

The core research problem is the lack of clarity on specific determinants shaping motivation at Triovision,

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EMPLOYEE JOB SATISFACTION IN THE INDIAN CEMENT SECTOR: INSIGHTS FROM ULTRATECH CEMENT, TADIPATRI

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Job Satisfaction, Cement Industry, Employee Engagement, Work Environment, Organizational Behaviour.

ABSTRACT

This study examines employee job satisfaction in the Indian cement sector with specific reference to UltraTech Cement's Tadipatri unit. The purpose is to identify the key determinants influencing job satisfaction and to assess their relative impact on employees' overall work attitudes. Given the labour-intensive nature of the cement industry and its critical role in infrastructure development, understanding employee satisfaction is essential for improving productivity and retention. The study adopts a descriptive and analytical research design. Primary data were collected through a structured questionnaire administered to a sample of 202 employees across different departments and job levels. Statistical tools such as descriptive analysis, correlation, and multiple regression were employed to examine relationships between variables including compensation, work environment, leadership, job security, and career growth opportunities. Findings indicate that work environment, supervisory support, and career development opportunities are the most significant predictors of job satisfaction, while compensation, though important, has a comparatively moderate effect. The results also reveal variations in satisfaction levels across demographic groups. The study contributes to existing literature by offering sector-specific insights and provides practical implications for management to design targeted HR strategies. Policymakers and industry leaders may also benefit from these findings in framing labour practices that enhance workforce well-being.

INTRODUCTION

The Indian cement industry is a cornerstone of the country's economic development, supporting infrastructure growth, urbanization, and industrial expansion. As one of the largest cement producers globally, India's cement sector operates in a highly competitive and resource-intensive environment. Within this context, human resources play a crucial role in maintaining operational efficiency and ensuring sustainable growth. Employee job satisfaction, therefore, emerges as a key factor influencing productivity, organizational commitment, and employee retention.

Job satisfaction refers to the extent to which employees feel positively or negatively about their jobs. In industrial settings such as cement manufacturing, factors such as working conditions, safety measures, compensation, and supervisory relationships significantly influence employee perceptions. Despite technological advancements, the industry still relies heavily on human labour, making it essential to understand the drivers of

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FINANCIAL PERFORMANCE EVALUATION OF HINDUSTAN COCA-COLA BEVERAGES LIMITED, SRIKALAHASTHI

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Financial Performance, Ratio Analysis, FMCG Sector, Profitability, Liquidity.

ABSTRACT

The present study focuses on evaluating the financial performance of Hindustan Coca-Cola Beverages Limited, Srikalahasthi, with the objective of understanding its profitability, liquidity, solvency, and efficiency over a specific period. The research problem arises from the need to assess how effectively the company manages its financial resources at the unit level, which is often less explored in existing studies. The main objective is to analyse financial trends and identify key factors influencing overall performance. The study adopts a quantitative research design based on secondary data collected from financial statements and company records for a period of five years. Various financial tools such as ratio analysis, trend analysis, and regression analysis are used to examine the data. Key variables include profitability ratios, liquidity ratios, solvency ratios, and efficiency ratios. The findings indicate a steady improvement in profitability and operational efficiency, along with better liquidity management and reduced financial risk over the study period. Regression results show a positive relationship between asset utilization and profitability, while leverage shows a negative association. These results highlight the importance of balanced financial management practices. The study contributes to academic literature by providing a micro-level analysis of financial performance in the beverage sector. It also offers practical insights for managers to improve financial planning and resource utilization. The findings may assist policymakers in understanding operational efficiency at the plant level.

INTRODUCTION

The beverage industry in India has experienced significant growth over the past few decades, driven by changing consumer preferences, rising disposable income, and expansion of distribution networks. Among the major players in this sector, Hindustan Coca-Cola Beverages Limited (HCCB) plays a vital role as one of the largest bottling partners of Coca-Cola in India.

The company operates multiple manufacturing units across the country, including the plant at Srikalahasthi, which contributes to production and regional distribution. In such a competitive and dynamic environment, evaluating the financial performance of a company becomes essential to understand its operational efficiency, profitability, and long-term sustainability.

Financial performance evaluation is an important tool for management, investors, and other stakeholders to

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A Study on Working Capital Management With Reference to Chaitanya Chemicals Kadapa

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Abstract: Working capital management is important for the smooth functioning of a company. This study analyzes the working capital of Chaitanya Chemicals Limited, Kadapa, to understand its liquidity and efficiency. It shows that proper management of cash, inventory, and receivables helps in improving profitability and maintaining financial stability.

Keywords: Current Ratio, Quick Ratio, Cash Ratio, Net Working Capital to Current Assets Ratio, Gross Working Capital Turnover Ratio.

1. Introduction

Working capital management refers to the management of a company's short-term assets and liabilities to ensure smooth business operations. It focuses on maintaining a balance between current assets like cash, inventory, and receivables, and current liabilities such as payables. Effective working capital management helps in maintaining liquidity, avoiding financial difficulties, and improving the overall efficiency and profitability of the organization.

2. Review of Literature

- **Reddy & Patel (2024):** Proper management of inventory, receivables, and payables reduces operational risk and supports smooth business operations.
- **Mehta (2025):** Adoption of digital tools and real-time monitoring strengthens working capital efficiency and short-term financial stability.

3. Research Methodology

3.1. Need of the Study

In any of the organization working capital plays an important role. Under (or) over estimation of working capital affects the probability and liquidity of the company financial position. Especially in automobile industry operating cycle will be more days, so they need more working capital and estimation is very difficult. So it is very much needed to analyze the efficiency of working capital management in this industry.

3.2. Objectives of the Study

- To know the statement of changes in working capital in the company.
- To find the liquidity position of the Chaitanya Chemicals.
- To study the financial pattern of the working capital.

3.3. Scope of the Study

The main scope of the study was to put into practice the theoretical aspects of the study in real- life work experience. The study of Working Capital is based on the tools like Ratio Analysis, Statement of Changes in Working Capital. Further, the

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AWARENESS AND USAGE OF E-BANKING SERVICES AMONG YOUTH: A CASE STUDY OF UNION BANK OF INDIA, RAJAMPET

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E-banking, Digital banking adoption, Youth behaviour, Financial technology, Customer awareness.

ABSTRACT

This study examines the level of awareness and usage of e-banking services among youth, with specific reference to Union Bank of India in Rajampet. The increasing digitization of banking services has transformed financial transactions, yet variations exist in adoption levels among young users. The primary objective of this research is to assess awareness, analyse usage patterns, and identify factors influencing the adoption of e-banking services among youth customers.The study adopts a descriptive research design based on primary data collected through structured questionnaires. A sample of 120 respondents, primarily youth customers of the selected bank branch, was surveyed using convenience sampling. The collected data were analysed using basic statistical tools such as percentage analysis and simple charts to interpret patterns of awareness and usage.The findings reveal that while a majority of respondents are aware of basic e-banking services such as mobile banking and ATM usage, the adoption of advanced services like internet banking and digital payments remains moderate. Factors such as security concerns, lack of technical knowledge, and trust issues significantly influence usage behaviour.The study provides useful insights for banks to enhance digital literacy and improve customer confidence in e-banking platforms. It also contributes to academic literature by highlighting behavioural aspects of youth in digital banking adoption.

INTRODUCTION

The rapid growth of digital technology has significantly transformed the banking sector, leading to the widespread adoption of electronic banking (e-banking) services. E-banking enables customers to perform financial transactions conveniently through digital platforms such as mobile applications, internet banking, and automated teller machines. In India, the push toward digitalization has further accelerated the usage of these services, especially among the youth population, who are generally more tech-savvy and adaptable to technological changes.

Despite this progress, there remains a gap between awareness and actual usage of e-banking services among young customers in semi-urban regions like Rajampet. Many users are aware of digital banking facilities but hesitate to use them due to concerns related to security, lack of trust, and insufficient knowledge. This

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A Study on Portfolio Management with Reference to Yen Yes Finserve LLP. Kadapa

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Abstract:

This study examines the portfolio management strategies and service delivery frameworks of Yen Yes Finserve LLP, Kadapa. As a specialized financial intermediary, the firm provides a range of services including Mutual Fund investments, Share Market services, and Insurance planning. The research evaluates how the firm utilizes asset allocation and diversification to manage client risk while seeking optimal returns. By analyzing the firm's approach to investment planning—specifically in goal-based, retirement, and child future planning—the study assesses the effectiveness of their tailored advisory services. Key focus areas include the firm's reliance on research-driven portfolio tracking and the impact of localized financial consultancy on investor satisfaction in the Kadapa region. The study concludes that the firm's integrated suite of services facilitates disciplined long-term wealth creation, though it notes the importance of continuous rebalancing to adapt to shifting market dynamics.

Keywords: Asset Allocation, Diversification, Risk Tolerance, Rebalancing, Active vs. Passive Management, Capital Preservation, Risk-Return Tradeoff, Benchmark.

1. Introduction

Portfolio management is the strategic process of managing a collection of investments—such as stocks, bonds, cash, and real estate—to meet specific financial goals while minimizing risk. It involves a deliberate, analytical approach to selecting and overseeing assets, rather than relying on chance, ensuring that an investor's capital is optimized for maximum returns.

At its core, portfolio management is built on the principle of diversification, commonly known as not "putting all your eggs in one basket". By spreading investments across different asset classes, sectors, and geographies, investors can reduce the impact of volatility in any single investment, making the overall portfolio more resilient.

2. Literature Survey

Li, X. (2025) — empirical analysis on different portfolio management strategies:
Xiaoxi li (2025) investigates various portfolio management strategies, comparing advanced optimization methods with simple equal-weight approaches in financial portfolios.
Wu, c. (2025) — applications of modern portfolio theory in resource allocation and asset management :
chang wu (2025) examines the applications of modern portfolio theory (MPT) in resource allocation and asset management, revealing how mpt's mean-variance framework continues to guide investment decisions in a variety of contexts.

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INFLUENCE OF SALES PROMOTION STRATEGIES ON CUSTOMERS: A CASE STUDY OF CHENNAI MGR SHOPPING MALL, RAJAMPET

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Key word: Sales Promotion, Consumer Behaviour, Retail Marketing, Purchase Intention, Customer Loyalty.

ABSTRACT

The retail sector increasingly relies on sales promotion strategies to attract and retain customers in a competitive marketplace. This study, titled "Influence of Sales Promotion Strategies on Customers: A Case Study of Chennai MGR Shopping Mall, Rajampet", investigates the effectiveness of promotional tools in shaping consumer behaviour. The research problem centres on understanding how various sales promotion techniques—such as discounts, coupons, free samples, and loyalty programs—impact customer purchase decisions and satisfaction. The objective is to evaluate the extent to which these strategies influence consumer preferences and shopping frequency. A descriptive research design was adopted, with primary data collected through structured questionnaires administered to a sample of 120 customers at MGR Shopping Mall. Statistical tools including percentage analysis and chi-square tests were employed to examine relationships between promotional strategies and customer responses. Results indicate that price-based promotions, particularly discounts and seasonal offers, significantly enhance purchase intention, while non-monetary promotions such as free gifts contribute to customer loyalty. However, excessive reliance on discounts may reduce perceived product value. Academically, the study contributes to literature on consumer behaviour in emerging markets. Practically, it offers insights for mall managers to design balanced promotional strategies that sustain customer engagement without eroding brand equity. Policy-wise, findings highlight the need for ethical promotion practices to avoid misleading consumers.

TRODUCTION

Retail marketing has undergone a paradigm shift ecent decades, with sales promotion emerging as a cal tool for influencing consumer behaviour. In India, rapid expansion of shopping malls has intensified petition, compelling retailers to adopt innovative. promotional strategies to attract diverse customer segments Chennai MGR Shopping Mall, located in Rajampet, represents a dynamic retail environment where promotions play a pivotal role in driving footfall and purchase decisions.

Sales promotion encompasses short-term incentives designed to stimulate immediate consumer response. Techniques such as discounts, coupons, buy-one-get-one offers, and loyalty programs are widely used

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ASSESSING FINANCIAL PERFORMANCE IN MINING SECTOR: LAKSHMI NIVITHA MINERALS CASE STUDY, OBULAVARIPALLI

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Keywords:
Financial Performance, Mining Sector, Ratio Analysis, Case Study, Solvency Ratios.

ABSTRACT

The mining sector in India faces intense scrutiny for financial sustainability amid volatile commodity prices, regulatory pressures, and environmental challenges. This study addresses the research problem of evaluating financial performance in small-to-medium mining enterprises, using Lakshmi Nivitha Minerals in Obulavaripalli as a representative case. The primary objective is to assess the firm's profitability, liquidity, solvency, and operational efficiency over the 2019-2024 period, identifying drivers of performance and areas for improvement. The research adopts a descriptive case study design, relying on secondary data from the company's audited financial statements, annual reports, and industry benchmarks from the Ministry of Mines. Quantitative analysis includes ratio analysis (e.g., ROE, current ratio, debt-equity), trend analysis via common-size statements, and DuPont model decomposition. Tools like Excel-based financial modelling and comparative benchmarking against regional peers supplement the evaluation. Key findings reveal Lakshmi Nivitha Minerals achieved moderate profitability with an average ROE of 12.4%, bolstered by cost controls, but struggled with liquidity (current ratio averaging 1.1) due to high working capital cycles and fluctuating ore prices. Solvency improved post-2022 via debt restructuring, yet operational efficiency lagged peers by 15% in asset turnover. These results hold academic value by extending performance evaluation frameworks to niche mining contexts, offering practical insights for managers on liquidity management and financing strategies, and policy implications for Andhra Pradesh regulators to support SME miners through subsidies and eased compliances.

INTRODUCTION

India's mining sector plays a pivotal role in economic growth, contributing around 2.5% to GDP and supplying critical raw materials like coal, limestone, and iron ore for infrastructure and manufacturing (Ministry of Mines, 2024). In Andhra Pradesh.

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regions like Obulavaripalli host numerous small-to-medium enterprises (SMEs) extracting minerals amid challenges such as price volatility, stringent environmental norms, and supply chain disruptions. Companies like Lakshmi Nivitha Minerals, a limestone producer in Obulavaripalli, exemplify these struggles, navigating fluctuating demand and rising compliance costs. Despite the sector's importance, many firms face financial distress,

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(A STUDY ON FINANCIAL PERFORMANCE ANALYSIS) – THRIVENI EARTHMOVERS AND INFRA PRAIVATE LIMITED

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ABSTRACT:
This study examines the financial performance of Thriveni Earthmovers and Infra Private Limited over a five-year period from 2020–2021 to 2024–2025. The analysis focuses on key financial indicators such as liquidity, profitability, efficiency, and solvency using ratio analysis techniques. Secondary data sourced from company financial statements has been utilized. The study reveals that while the company maintains strong liquidity and improving asset utilization, profitability and operational efficiency fluctuate significantly. The research highlights the need for better cost control, efficient capital utilization, and strategic financial management to ensure sustainable growth.

KEYWORDS:
Financial Performance, Ratio Analysis, Liquidity, Profitability, ROI, ROE, Asset Turnover, Mining Industry

1. INTRODUCTION

Financial performance analysis is essential for evaluating a company's operational efficiency and financial stability. It involves analyzing financial statements such as the balance sheet, income statement, and cash flow statement.This study focuses on Thriveni Earthmovers and Infra Private Limited, a major player in the mining sector. The analysis helps stakeholders understand the company's ability to generate profits, manage resources, and meet financial obligations.Ratio analysis is used as a key tool to measure performance through relationships between financial variables.

2. REVIEW OF LITERATURE:

Baby et al. (2024): This review examined financial performance in the manufacturing sector using studies from 2018–2023. It identified cost efficiency and asset utilization as key drivers. Effective working capital management was also found crucial for performance. Profitability ratios remain widely used evaluation tools.

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DATA VISUALISATION FOR HEALTHCARE ANALYTICS USING POWER BI: A CASE STUDY OF NIVA BUPA HEALTH INSURANCE, KURNOOL

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Keywords: Healthcare Analytics; Data Visualization; Power BI; Health Insurance; Case Study.

ABSTRACT

Healthcare organizations increasingly rely on data-driven insights to improve patient outcomes and operational efficiency. However, the challenge lies in transforming complex datasets into actionable intelligence. This study focuses on the application of Power BI for healthcare analytics, using Niva Bupa Health Insurance in Kurnool as a case study. The objective is to demonstrate how interactive data visualization can enhance decision-making in health insurance operations.The research adopts a case study design, drawing on secondary data from Niva Bupa Health Insurance records and publicly available datasets. Power BI dashboards were developed to visualize claims processing, customer demographics, and service utilization. Analytical techniques such as trend analysis, comparative charts, and KPI monitoring were employed to interpret the data.The study reveals that Power BI enables real-time monitoring of claims, identification of high-cost segments, and improved customer profiling. Visualization tools simplified complex datasets, allowing managers to detect inefficiencies and predict future trends.Academically, the study contributes to the growing literature on healthcare analytics and visualization. Practically, it highlights the potential of Power BI in enhancing transparency, efficiency, and customer satisfaction in health insurance. Policy-wise, it underscores the importance of adopting digital analytics platforms for better governance in healthcare financing.

INTRODUCTION

Healthcare systems worldwide are undergoing rapid digital transformation, driven by the need to manage vast amounts of patient and insurance data. In India, health insurance providers play a crucial role in bridging the gap between healthcare demand and affordability. Niva Bupa Health Insurance, operating in regions such as Kurnool, faces the challenge of handling large-scale claims data, customer records, and service utilization metrics. Traditional reporting methods often fail to provide timely insights, leading to inefficiencies in claims management and customer service. Data visualization tools such as Microsoft Power BI offer a solution by converting raw data into interactive dashboards that support evidence-based decision-making.

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A Study on Non-Performing Assets with Reference to Union Bank of India, New Boyanapalli, Rajampet, Kadapa District, Andhra Pradesh

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Abstract: Non-Performing Assets (NPAs) have emerged as a major challenge to the efficiency and stability of the banking sector. This study focuses on examining the overall behavior and impact of NPAs with specific reference to Union Bank of India. It highlights how the presence of non-performing assets influences asset quality, profitability, and the financial soundness of the bank. The study observes a gradual improvement in the management of NPAs over the years, reflecting better credit discipline, effective recovery efforts, and strengthened internal control systems. The findings emphasize the importance of prudent lending practices, continuous monitoring, and timely corrective measures in controlling NPAs. The study concludes that efficient management of NPAs is essential for ensuring long-term sustainability and maintaining the overall health of the banking system.

Keywords: Non-Performing Assets (NPAs), Gross NPA, Net NPA, Financial Performance, Loan Recovery, Trend Analysis, Ratio analysis.

1. Introduction

A Non–Performing Asset is defined as a credit facility in respect of which the interest and/ or installment of principal has remained "past due for specified period of time. The term NPA is used by the financial institutions that refer to loans that are in default and so called NPA.When a borrower has failed to pay interest or principal amount for 90 days this loan is considered as a Non-Performing Asset. Non- Performing Assets are problematic because they depend on interest payments for income. With a view to moving towards international best practices and to ensure greater transparency, it has been decided to adopt the 90 days overdue norm for identification of NPA is a loan or advance.

2. Literature Survey

- **Rao & Reddy (2025)** — Trends in Public and Private Banks:
- Achakala Sai Koteswara Rao and Kuppa Jayachandra Reddy studied NPA trends across select public and private sector banks from 2014-15 to 2023-24. They showed that public banks consistently had higher NPAs due to weaker credit appraisal and risk controls, while private banks maintained better asset quality.
- **Hendry Ruban & Dr. S.V. Murugesan (2024):**This empirical study examines the impact of NPAs on the profitability of public sector banks in India. It finds that higher levels of NPAs significantly reduce profitability, stressing the need for effective NPA management and

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A Study on Fund Flow Analysis with Reference to Sriman Finance Limited, Rajampet

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Abstract: The study on Fund Flow Analysis focuses on examining the movement of funds within an organization over a specific period. It helps in understanding how funds are generated from various sources and how they are utilized in different business activities. The analysis is mainly based on financial statements such as the balance sheet and profit and loss account to identify changes in working capital and overall financial position.

The study aims to evaluate the liquidity, solvency, and financial efficiency of the organization by analyzing sources and applications of funds. It also helps management in making effective financial decisions, planning, and controlling resources. The findings of the study indicate that proper management of funds leads to better financial stability and improved performance.

Keywords: Statement of changes in working capital, Fund from operations, Fund flow statements

1. Introduction

Funds flow analysis is a financial management tool used to examine the movement of funds within an organization over a specific period. It provides insights into how financial resources are generated and utilized, helping businesses and financial analysts understand the underlying causes of changes in financial position.

This analysis is essential for assessing liquidity, evaluating financial stability, and making strategic decisions. By tracking the inflows and outflows of funds, businesses can identify trends, pinpoint inefficiencies, and ensure optimal allocation of resources.

2. Literature Survey

- **Varma (2013):** He highlighted that proper working capital management is important to avoid excess investment in current assets.
- **Roy and Bhattacharyya (2014):** They concluded that proper financing of current assets ensures financial stability.

3. Research Methodology

3.1. Need of the Study

- To understand the movement of funds
- To analyze changes in working capital
- To evaluate financial management
- To assist management decisions
- To identify sources and applications of funds
- To assess the long-term financial position
- To help creditors and investors
- To supplement financial statements

3.2. Objectives of the Study

- To study the movement of funds

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CUSTOMER PREFERENCES TOWARDS TWO-WHEELER PURCHASING: A CASE STUDY OF BAJAJ MOTORS, RAJAMPET

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Keyword: Consumer Preferences; Two-Wheeler Market; Purchase Behaviour; Brand Perception; Fuel Efficiency.

ABSTRACT

This study examines customer preferences toward two-wheeler purchasing with specific reference to Bajaj Motors in Rajampet. The primary objective is to identify the key factors influencing consumer decision-making, including price sensitivity, brand perception, fuel efficiency, design, and after-sales service. Understanding these preferences is essential for improving marketing strategies and enhancing customer satisfaction in a competitive automobile market. The research adopts a descriptive design based on primary data collected from a sample of 140 respondents using a structured questionnaire. Convenience sampling was employed, and the data were analysed using statistical tools such as percentage analysis, mean ranking, and chi-square tests to identify significant relationships between variables. The findings reveal that fuel efficiency, affordability, and brand reliability are the most influential factors driving purchase decisions. Bajaj Motors is perceived positively in terms of cost-effectiveness and mileage, while areas such as after-sales service and availability of spare parts require improvement. The study also indicates that younger consumers are more influenced by style and technological features compared to older customers. The study has both academic and practical implications. Academically, it contributes to consumer behaviour literature in the two-wheeler segment. Practically, it offers insights for dealers and manufacturers to align their strategies with customer expectations, thereby improving market competitiveness.

INTRODUCTION

The two-wheeler industry plays a vital role in India's transportation system, particularly in semi-urban and rural areas where affordability and convenience strongly influence mobility choices. Increasing disposable income, changing lifestyles, and rising fuel costs have significantly shaped consumer preferences in this segment.

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Bajaj Motors, as one of the prominent dealers in Rajampet, operates in a competitive environment where understanding customer expectations is crucial for sustaining market share and improving service quality.

Despite the growth of the two-wheeler market, customer preferences continue to vary based on factors such as price, fuel efficiency, brand image, style, and after-sales service. The research problem addressed in this study is the lack of clear understanding of the specific factors influencing purchasing decisions of customers in Rajampet, particularly in relation to Bajaj Motors.

The main objectives of the study are to identi

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A STUDY ON SALES FORECASTING AND DEMAND ANALYSIS OF PACKAGED DRINKING WATER INDUSTRY WITH REFERENCE TO CRYSTAL WATER BOTTLE PVT. LTD.

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***Abstract*:** This study focuses on analyzing sales forecasting practices in the packaged drinking water industry with special reference to Crystal Water Bottle Private Limited. Sales forecasting plays a crucial role in business planning, resource allocation, and decision-making, especially in demand-sensitive industries. The research adopts a descriptive design using secondary data. secondary data was obtained from company sales records and reports. The study examines historical sales trends, forecasting techniques, and key factors influencing sales performance. The findings reveal that seasonal demand, market competition, and limited use of advanced forecasting models affect forecasting accuracy. The study concludes that adopting data-driven forecasting techniques can improve efficiency, reduce operational costs, and enhance decision-making.

KEYWORDS
Sales Forecasting, Demand Analysis, Packaged Water Industry, Consumer Demand, Business Analytics, Forecasting Techniques.

INTRODUCTION

Sales forecasting is an essential function in modern business management that involves predicting future sales based on historical data, market trends, and analytical models. It helps organizations plan production, manage inventory, allocate resources, and achieve business targets effectively.

In industries like packaged drinking water, where demand fluctuates due to seasonal and environmental factors, accurate forecasting becomes critical. The packaged water industry in India has witnessed rapid growth due to increasing health awareness, urbanization, and concerns over water quality.

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CUSTOMER RELATIONSHIP MANAGEMENT AND MARKETING EFFECTIVENESS: A CASE STUDY OF VK HONDA AUTOMOBILES, RAJAMPET

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Keyword: Customer Relationship Management, Marketing Effectiveness, Customer Satisfaction, Automobile Industry, Customer Retention.

ABSTRACT

Customer Relationship Management (CRM) has become a critical tool for enhancing marketing effectiveness, particularly in competitive sectors such as automobile retailing. This study examines the role of CRM practices in improving marketing effectiveness at VK Honda Automobiles, Rajampet. The primary objective is to analyse how CRM dimensions—such as customer engagement, service quality, and feedback mechanisms—impact customer satisfaction and repeat purchase behaviour. The research adopts a descriptive and analytical design using primary data collected from a sample of 189 customers through a structured questionnaire. Convenience sampling was employed, and the data were analysed using statistical techniques including correlation and regression analysis to assess relationships between CRM practices and marketing outcomes. The findings reveal a strong positive relationship between effective CRM implementation and marketing performance indicators such as customer retention, brand loyalty, and sales growth. In particular, personalized communication and prompt service response were identified as key drivers of customer satisfaction. However, certain gaps were observed in post-sale follow-up and digital engagement strategies. The study contributes to academic literature by reinforcing the significance of CRM in small and medium automobile dealerships. Practically, it offers insights for managers to refine CRM strategies and enhance customer-centric marketing. The results also suggest the need for integrating digital CRM tools to sustain competitive advantage.

INTRODUCTION

In today's highly competitive automobile market, maintaining long-term relationships with customers has become essential for business sustainability. Customer Relationship Management (CRM) plays a significant role in helping organizations understand customer needs, improve service delivery, and enhance overall marketing effectiveness. Particularly in the two-wheeler segment, where multiple brands offer similar features and pricing, effective CRM practices can create differentiation and foster customer loyalty. VK Honda Automobiles, Rajampet, operates in such a competitive environment, making CRM an important strategic tool for improving customer satisfaction and

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Impact of non-Performing Assets on Profitability with Reference to HDFC Bank, Rajampet

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Abstract: Non-Performing Assets (NPAs) play a crucial role in determining the financial performance and stability of banks by reducing interest income and increasing provisioning requirements. This study examines the impact of NPAs on the profitability of HDFC Bank, one of India's leading private sector banks. Using secondary data over a selected period, the research evaluates key financial indicators such as Gross NPA Ratio, Net NPA Ratio, Return on Assets (ROA), Return on Equity (ROE), and Provision Coverage Ratio. The findings indicate that HDFC Bank has maintained relatively low NPA levels compared to industry standards, which has supported its consistent profitability and strong financial position. However, even moderate increases in NPAs have shown a negative effect on profit margins due to higher provisioning and reduced asset quality. The study highlights the importance of effective credit risk management, timely recovery mechanisms, and prudent lending practices in minimizing NPAs. It concludes that efficient NPA management is essential for sustaining profitability and ensuring long-term financial stability in HDFC Bank.

Keywords: Non-Performing Assets (NPAs), Bank Profitability, HDFC Bank, Gross NPA Ratio, Net NPA Ratio.

1. Introduction

In the world of finance, a Non-Performing Asset (NPA) is essentially a loan or an advance for which the principal or interest payment has remained overdue for a specified period. Generally, in the banking sector, an asset is classified as non-performing when it ceases to generate income for the lender, typically after a default period of 90 days. Banks rely on the steady flow of interest to maintain their operations; when borrowers stop paying, these "working" assets turn "non-performing," which directly hits the bank's profitability and capital adequacy.

The classification of NPAs is not uniform but falls into categories based on how long the asset has remained overdue. These include Sub-standard assets, which have been NPAs for 12 months or less; Doubtful assets, which have remained in the sub-standard category for more than 12 months; and Loss assets, where the loss has been identified by the bank or auditors but the amount has not been written off yet. High levels of NPAs are a significant red flag for any economy because they indicate that the credit system is clogged. When a bank's balance sheet is weighed down by bad loans, it becomes hesitant to lend further, leading to a "credit crunch" that can stifle industrial growth and overall economic momentum.

An asset is classified as non-performing asset (NPAs) if dues in the form of principal and interest are not paid by the borrower for a period of 180 days. However, with effect from March 2004, default status would be given to a borrower if dues are not paid for 90 days. If any advance or credit facilities granted by bank to a borrower become non-performing, then the bank will have to treat all the advances/credit facilities granted to that borrower as non-performing without having any regard to the fact that there may still exist certain advances/credit facilities having performing status.

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A STUDY ON FINANCIAL PERFORMANCE ANALYSIS WITH REFERENCE TO SHRIRAM FINANCE RAJAMPET

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ABSTRACT

This study analyzes the financial performance of a company to evaluate its profitability, efficiency, and overall financial stability over a period of five years. Financial performance analysis is essential for understanding how effectively an organization utilizes its resources and manages its operations. The study is based on both primary and secondary data, with a major focus on financial statements such as the income statement, balance sheet, and cash flow statement. Tools like ratio analysis and cash flow analysis are used to interpret financial data and identify trends in performance. The objectives include assessing asset and liability management, analyzing financial position, and comparing performance over time. Despite its usefulness, the study is limited by factors such as reliance on historical data, exclusion of qualitative aspects, and the impact of price level changes. Overall, the analysis provides valuable insights into the organization's financial strengths and weaknesses, supporting better decision-making and future planning.

KEYWORDS : Financial Performance Analysis, Ratio Analysis, Cash Flow Analysis, Profitability, Liquidity, Solvency, Financial Statements, Asset Management, Trend Analysis

1.INTRODUCTION:

Financial Performance Analysis refers to the process of evaluating a company's financial health, efficiency, and profitability by examining its financial statements. It helps stakeholders such as managers, investors, creditors, and government authorities understand how well a business is performing over a specific period.

This analysis mainly uses key financial documents like the income statement, balance sheet, and cash flow statement. By analyzing these reports, organizations can assess their revenue generation, cost control, asset utilization, and overall financial stability.

2.REVIEW OF LITERATURE:

Charles H. Gibson (2013)
Financial analysis is the process of reviewing and interpreting financial statements to make informed economic decisions.

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FINANCIAL PLANNING AND FORECASTING: A CASE STUDY OF HINDUSTAN COCA COLA BEVERAGES, SRIKALAHASTI

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Beverage Industry.

ABSTRACT

This study examines financial planning and forecasting practices with specific reference to Hindustan Coca Cola Beverages, Srikalahasti unit. The purpose of the research is to analyse the effectiveness of financial planning mechanisms and forecasting techniques in supporting operational efficiency and strategic decision-making. It aims to identify gaps between projected and actual financial performance and evaluate the reliability of forecasting models used within the organization. The study adopts a descriptive research design, relying on both primary and secondary data. Primary data were collected through structured interactions with finance and managerial personnel, while secondary data were obtained from company reports, financial statements, and internal records over a defined period. Analytical tools such as ratio analysis, trend analysis, and variance analysis were employed to assess financial performance and forecast accuracy. The findings indicate that while the company maintains a structured financial planning system, certain deviations between forecasts and actual outcomes arise due to market volatility, demand fluctuations, and operational constraints. However, forecasting techniques were found to be moderately reliable and useful for short-term planning. The study contributes academically by linking theory with real-world application, and practically by suggesting improvements in forecasting models and data integration. It also offers insights for policy formulation in corporate financial management practices.

INTRODUCTION

Financial planning and forecasting are essential components of effective corporate management, enabling organizations to allocate resources efficiently, anticipate uncertainties, and achieve long-term objectives. In dynamic and competitive industries such as the beverage sector, accurate financial forecasting plays a crucial role in managing costs, optimizing production, and responding to fluctuating consumer demand. Hindustan Coca Cola Beverages Pvt. Ltd., a key bottling partner of The Coca-Cola Company, operates in a highly competitive environment where financial precision is vital for sustained growth and operational success.

Despite the availability of advanced financial tools and systems, organizations often face challenges in aligning forecasts with actual performance due to market volatility, seasonal demand variations, and operational constraints. The research problem addressed in this study is the extent to which financial planning and forecasting

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A Study on Technical Analysis

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Abstract: Technical analysis is a methodology for evaluating financial markets by forecasting future price movements through the study of historical data, primarily price trends and volume. It focuses on identifying recurring patterns, indicators, and trends rather than assessing intrinsic value, making it popular for short-term trading. Technicians assume market prices reflect all relevant information and that historical trends tend to repeat.

Keywords: Forecasting, historical data, price trends, volume, patterns, indicators, short-term trading, market price.

1. Introduction

Technical analysis is a method of analyzing the market to identify trading opportunities by focusing on the historical market data—price and volume – instead of studying the security's fundamentals, such as the business model, financial statements, macroeconomic factors, and the rest.

2. Literature Survey

- **Louis Bachelier (1900):** His early work applied Brownian motion to price modeling, laying the groundwork for the idea that price movements are random, a concept that underpins the EMH.
- **Harry Roberts (1959):** Discussed stock market patterns and their methodological implications, one of the first to bring academic scrutiny to charting.
-

3. Research Methodology

3.1. Statement of the Problem

Technical analysis lies in its reliance on historical data to predict future price movements, which often fails due to changing market conditions, high subjectivity in pattern interpretation, and the limitation that it is only effective for short-term trading rather than long-term investing. It is inherently difficult to distinguish between legitimate trends and random noise, often leading to subjective interpretation of indicators like support/resistance or chart patterns.

3.2. Need of the study

Stock markets are playing a vital role in they are contributing a lot to the growth of the economy. The stock market study is different from any other market & it is very complex & interesting. By analyzing the past price movements of a scrip, we can forecast the future price movements. Technical analysis helps the investor in analyzing the prices &too except future trends.

3.3. Objective of the Study

To study the price movements of top five automobile company stocks.

Secondary objectives:

- To identify the buying and selling points of the automobile stocks.

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EVALUATING CAPITAL STRUCTURE PRACTICES IN SHRIRAM FINANCE, RAJAMPET

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Capital Structure, Debt-Equity Ratio, Financial Performance, Non-Banking Financial Companies, Leverage.

ABSTRACT

This study examines the capital structure practices of Shriram Finance in Rajampet, with a focus on understanding how the firm balances debt and equity to optimize financial performance. The primary objective is to evaluate the effectiveness of capital structure decisions and their impact on profitability, risk, and overall financial stability.The research adopts a descriptive and analytical design using secondary data collected from annual reports, financial statements, and relevant financial databases over a specified period. Key financial ratios such as debt-equity ratio, interest coverage ratio, and return on equity are analysed to assess capital structure efficiency. Trend analysis and ratio analysis are employed as the main tools for interpretation.The findings indicate that Shriram Finance relies significantly on debt financing, which enhances returns during favourable conditions but also increases financial risk. The study highlights a moderate alignment between capital structure decisions and profitability, suggesting scope for improved financial strategy.The study contributes to academic literature by providing firm-level insights into capital structure practices in non-banking financial companies. Practically, it assists financial managers in making informed financing decisions, while policymakers may benefit in framing guidelines for sustainable financial practices.

INTRODUCTION

Capital structure is one of the most critical aspects of financial management, as it determines the proportion of debt and equity used by a firm to finance its operations and growth. An optimal capital structure helps in minimizing the cost of capital while maximizing shareholder value. In the context of financial institutions, particularly Non-Banking Financial Companies (NBFCs), capital structure decisions are even more significant due to their reliance on borrowed funds and exposure to credit risk. Shriram Finance, a prominent NBFC operating in India, plays a vital role in providing financial services such as vehicle loans, small business financing, and retail lending. The branch located in Rajampet serves as a regional representation of the company's financial operations. Understanding how such an institution manages its capital structure offers valuable insights into financial decision-making at the operational level. Despite the extensive literature on capital structure theories—such as the Modigliani-Miller theorem, trade-off theory, and pecking order theory—there remains a gap in empirical studies focusing on region-specific operations of NBFCs.

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Employee Relations and Workplace Culture: A Descriptive Study of Bharathi Cement Corporation Private Limited, Nallalingayapalli.

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Abstract: This study investigates employee relations and workplace culture at Bharathi Cement Corporation Private Limited Nallalingayapalli , Andhra Pradesh. Using a descriptive research design, a 20-item Likert-scale questionnaire was adminis-tered to a simple random sample of 280 employees drawn from a workforce of over 1,000. The survey looked at a lot of different things, like how open communication is, how complaints are handled, how much trust there is between coworkers, how decisions are made with everyone's input, how well welfare policies are put into place, how good the work environment is, how much respect and dignity there is, how well people work together, how well they balance their work and personal lives, how well they feel connected to their jobs, how satisfied they are with their jobs, how motivated they are to work, how satisfied they are with their recognition, how connected they feel to their jobs, and how they feel about their employer's brand.

We used percentage analysis to examine the data, then created APA-formatted frequency distribution tables and bar charts to present the results. The results show that most people had positive views on all aspects, with percentages ranging from 57.1% to 71.4%. Teamwork, collaboration, and employer brand had the highest support levels. People were most unhappy with support for the work environment (25.3%), the implementation of welfare policies (23.9%), and conflict resolution (23.2%). The study suggests focused human resource interventions to rectify these deficiencies while leveraging established organizational strengths.

Keywords: employee relations, workplace culture, job satisfaction, employee engagement, organisational climate

1. Introduction

Employee relations and workplace culture are two strategically interdependent dimensions of organizational effectiveness. Employee relations (ER) encompass the formal and informal connections, communications, and interactions that govern the relationships among employees, management, and the broader organization.

When done right, good

employee relations and a healthy workplace culture can boost productivity, job satisfaction, and the organisation's long-term performance. On the other hand, dysfunctional relationships and cultures lead to conflict, disengagement, reduced innovation, and a competitive disadvantage. Consequently, the strategic management of employee relations has become a paramount focus for human resource (HR) professionals globally *(Armstrong, 2023)*.

The Indian cement industry is a good place to study these kinds of issues. As the world's second-largest cement producer, India's sector is characterized by large-scale workforces, capital-intensive operations, and demanding physical environments that strain workforce management systems.

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EVALUATING CUSTOMER SATISFACTION IN AGRICULTURAL MACHINERY: SRI GAYATRI MAHINDRA TRACTORS CASE STUDY, NELLORE

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Keyword: Customer Satisfaction, Agricultural Machinery, Mahindra Tractors, Service Quality, Dealer Support.

ABSTRACT

The study titled "Evaluating Customer Satisfaction in Agricultural Machinery: Sri Gayatri Mahindra Tractors Case Study, Nellore" addresses the critical issue of understanding customer satisfaction in the agricultural machinery sector. Tractors represent high-value investments for farmers, and satisfaction with their performance, service, and support directly influences productivity and brand loyalty. The research problem lies in the limited region-specific evaluation of customer satisfaction, particularly in Nellore, despite Mahindra's strong market presence. The study employed a mixed-methods design, combining quantitative surveys and qualitative interviews. A structured questionnaire was administered to a sample of 300 tractor owners, measuring satisfaction across product quality, service quality, price perception, and dealer support. Statistical techniques including descriptive analysis, correlation, and multiple regression were applied to identify significant predictors of overall satisfaction, while thematic coding was used to interpret qualitative insights. The findings revealed that product quality and dealer support were the strongest contributors to satisfaction, followed by service quality and price perception. Regression analysis confirmed product quality as the most influential variable, while qualitative data highlighted the importance of reliable after-sales service and transparent dealer communication. The study contributes to academic discourse by extending Expectancy-Disconfirmation Theory and SERVQUAL into the agricultural machinery domain. Practically, it provides actionable insights for managers and policymakers to enhance product innovation, strengthen dealer networks, and design region-specific support strategies. Future

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BRAND PROMOTION APPROACHES IN RETAIL MARKETING: SATHYA AGENCIES CASE STUDY, RAJAMPET

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Keywords: Retail Marketing, Brand Promotion, Consumer Behaviour, Integrated Marketing Communications, Retail Management.

ABSTRACT

This research investigates the efficacy of retail marketing strategies and brand promotion techniques employed by Sathya Agencies in Rajampet. Amidst intensifying competition in the consumer electronics and home appliances sector, the study aims to identify how localized promotional tactics influence consumer footfall and brand stickiness in a Tier-3 urban setting. The primary objective is to evaluate the correlation between integrated marketing communications (IMC) and customer retention. The study adopts a descriptive research design, utilizing a quantitative approach. Primary data was collected via a structured questionnaire administered to a convenience sample of 200 active customers of Sathya Agencies in the Rajampet region. The data analysis involved the application of percentage analysis, Chi-square tests, and Likert scale modelling to interpret consumer perceptions regarding price-led versus brand-led promotional activities. Preliminary results indicate that "experiential marketing" and "localized festive discounting" are the most significant drivers of brand recall for Sathya Agencies. While digital advertisements showed moderate reach, word-of-mouth and point-of-purchase (POP) displays remained the dominant factors influencing final purchase decisions. Furthermore, the findings reveal a high degree of brand loyalty attributed to after-sales service quality rather than just aggressive pricing. Practically, this study provides a roadmap for regional retailers to optimize their marketing spend by balancing traditional and digital channels. Academically, it contributes to the discourse on rural-urban transition marketing, suggesting that personal relationships and localized branding are vital for retail sustainability in developing Indian markets.

INTRODUCTION

The global retail landscape has undergone a seismic shift, transitioning from traditional brick-and-mortar setups to sophisticated, technology-driven ecosystems. In the Indian context, the consumer durables and electronics sector is characterized by high price sensitivity and a brand-conscious middle class While multinational corporations dominate the manufacturing space, the final bridge to the consumer is built by regional retail giants. Sathya Agencies, a prominent name in South Indian retail, exemplifies this bridge. In a localized market like Rajampet, the dynamics of retail marketing extend beyond mere television commercials; they involve

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ANALYSING EMPLOYEE RETENTION PRACTICES IN CEMENT SECTOR: EVIDENCE FROM ULTRATECH CEMENT

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Employee Retention, Cement Industry, Human Resource Practices, Ultratech Cement, Workforce Stability.

ABSTRACT

The cement industry, being highly labour-intensive and competitive, faces persistent challenges in retaining skilled employees. This study titled "Analysing Employee Retention Practices in Cement Sector: Evidence from Ultratech Cement" seeks to understand the dynamics of employee retention within India's largest cement producer. The research problem centres on high attrition rates in the sector, which impact productivity, morale, and organizational sustainability. The objective is to analyse the retention strategies adopted by Ultratech Cement and assess their relevance in addressing workforce stability. A descriptive research design was employed, using a structured questionnaire administered to a sample of 206 employees across different units of Ultratech Cement. Data were analysed using statistical tools including frequency distribution, cross-tabulation, and correlation analysis to identify patterns in retention drivers such as compensation, career growth, work environment, and leadership practices. The study reveals that competitive pay and career development opportunities are significant predictors of retention, while factors such as work-life balance and managerial support also play a crucial role. However, gaps remain in communication and recognition practices, which influence employee satisfaction. Academically, the study contributes to HRM literature in the cement sector by highlighting sector-specific retention challenges. Practically, it offers actionable insights for HR managers to design holistic retention policies that integrate financial and non-financial motivators. Policy-wise, the findings underscore the need for industry-wide frameworks to standardize employee welfare practices.

INTRODUCTION

The cement industry is one of the most vital sectors contributing to infrastructure development and economic growth in India. As a labour-intensive industry, it relies heavily on skilled and semi-skilled employees to ensure operational efficiency, quality production, and sustainable competitiveness. Among the leading players, Ultratech Cement has emerged as the largest manufacturer in the country, with a diverse workforce spread across multiple plants and regions. However, like many organizations in the sector, Ultratech faces challenges in retaining talent due to factors such as demanding work conditions, limited career progression opportunities, and competitive labour markets.

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PERFORMANCE EVALUATION PRACTICES IN EMERGING AGRO-BEVERAGE FIRMS: INSIGHTS FROM NANDYAL SPY AGRO BEVERAGES.

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Performance appraisal, Agro-beverage firms, Employee evaluation, Emerging enterprises, HR practices.

ABSTRACT

This study investigates performance evaluation practices within emerging agro-beverage firms, focusing on Nandyal SPY Agro Beverages, a grain-based distillery in Andhra Pradesh, India. The core research problem centres on the absence of tailored, effective appraisal mechanisms in small-scale agro-beverage enterprises, which hampers employee productivity, operational efficiency, and sustainable growth amid volatile agricultural inputs and market demands. The primary objective is to assess prevailing practices, pinpoint shortcomings, and propose context-specific enhancements to align human resource strategies with firm competitiveness.Employing a descriptive case study design, the research collected primary data via structured surveys from 150 respondents, including managers, supervisors, and frontline workers at SPY Agro Beverages. Secondary data drew from company records, annual reports, and industry benchmarks. Analysis involved statistical tools like descriptive statistics, correlation coefficients, and regression modelling through SPSS software, enabling a robust examination of variables such as goal-setting clarity, feedback frequency, and reward linkage to performance. Key findings reveal that while annual appraisals dominate (68% usage), they suffer from subjectivity and infrequent feedback, correlating weakly (r=0.42) with output metrics like Extra Neutral Alcohol yield. Modern tools like balanced scorecards show promise but remain underutilized (22% adoption), with training gaps exacerbating a 15% productivity shortfall against peers. Academically, it enriches human resource management literature in agro-processing by validating hybrid evaluation models for emerging markets. Practically, firms can adopt multi-dimensional tools for 20-25% efficiency gains; policy-wise, it urges government incentives for digital HR adoption in rural agro-clusters to bolster inclusive growth.

INTRODUCTION

India's agro-beverage sector has surged as a vital economic pillar, especially in regions like Andhra Pradesh. where firms process grains into ethanol and spirits amid rising global biofuel demand. Emerging players such as Nandyal SPY Agro Beverages exemplify this growth, operating grain-based distilleries that convert agricultural surplus into value-added products like Extra Neutral Alcohol. Yet, these firms grapple with volatile

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RECRUITMENT AND SELECTION DYNAMICS IN CHEMICAL INDUSTRY: CASE STUDY OF CHAITANYA CHEMICALS, KADAPA

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Recruitment Process; Selection Techniques; Human Resource Management; Chemical Industry; Employee Retention.

ABSTRACT

Recruitment and selection play a critical role in ensuring organizational effectiveness, particularly in process-driven industries such as chemicals. This study examines the recruitment and selection dynamics at Chaitanya Chemicals, Kadapa, with the objective of identifying existing practices, evaluating their efficiency, and understanding their impact on employee performance and organizational outcomes.The research adopts a descriptive design using both primary and secondary data. Primary data were collected from a sample of 120 respondents comprising employees and HR personnel through structured questionnaires. Secondary data were sourced from company records and relevant literature. Statistical tools such as percentage analysis, mean scores, and correlation analysis were employed to interpret the data and derive meaningful insights.The study reveals that structured recruitment processes, including internal referrals and competency-based interviews, positively influence employee quality and retention. However, gaps were identified in the areas of transparency, timely communication, and alignment between job requirements and candidate skills. The findings also indicate a moderate correlation between effective selection practices and employee job satisfaction.Academically, the study contributes to literature on HR practices in the chemical industry. Practically, it offers actionable insights for improving recruitment strategies, enhancing workforce quality, and reducing turnover. Policymakers and HR practitioners may use these findings to design more efficient and transparent hiring frameworks.

INTRODUCTION

Human resource management has become a decisive factor in determining organizational success, especially in industries that require technical expertise and strict compliance standards such as the chemical sector. Recruitment and selection are foundational HR functions that ensure the right talent is acquired to meet operational and strategic goals. In the context of the chemical industry, where safety, precision, and efficiency are paramount, effective hiring practices gain even greater significance. Chaitanya Chemicals, located in Kadapa, operates in a competitive and skill-intensive environment, making its recruitment and selection processes crucial for sustaining productivity and quality standards.

Despite the recognized importance of these functions, many organizations face challenges in aligning recruitment practices with evolving industry

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RECRUITMENT AND SELECTION PRACTICES IN MANUFACTURING: CASE STUDY OF CENTURY PANELS, BADVEL

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Recruitment Practices;
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Human Resource Management.

ABSTRACT

This study examines the recruitment and selection practices in the manufacturing sector, focusing on Century Panels, Badvel. The research aims to identify the effectiveness, challenges, and alignment of current hiring processes with organizational goals. It addresses the problem of skill mismatch and inefficiencies in talent acquisition within small and medium-scale manufacturing firms. A descriptive research design was adopted for the study. Primary data were collected through structured questionnaires and interviews with HR personnel and employees at Century Panels. Secondary data were gathered from company records and relevant literature. The sample consisted of 50 respondents selected using convenience sampling. Data were analysed using percentage analysis, charts, and basic statistical tools to interpret patterns in recruitment and selection practices. The study reveals that Century Panels relies heavily on informal recruitment sources such as employee referrals and local networks. While this approach reduces hiring costs and time, it limits the diversity and quality of the talent pool. The selection process is found to be moderately structured, with limited use of advanced assessment techniques. There is a gap between job requirements and candidate competencies, impacting overall productivity. The findings suggest the need for more formalized and technology-driven recruitment strategies. Academically, the study contributes to understanding HR practices in emerging manufacturing firms. Practically, it provides actionable insights for improving hiring efficiency. Policymakers may also consider supporting skill development initiatives aligned with industry needs.

INTRODUCTION

Recruitment and selection are fundamental functions of human resource management, particularly in the manufacturing sector where workforce efficiency directly influences productivity and operational success. In recent years, manufacturing firms in semi-urban regions have experienced increasing challenges in attracting and retaining skilled employees due to changing labour market dynamics and limited access to formal hiring channels. Century Panels, located in Badvel, represents a typical small-scale manufacturing unit that

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BUSINESS ANALYTICS FOR RETAIL SALES TRENDS: CASE STUDY OF SHANMUKHA AGENCY AT NANDALUR

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ABSTRACT

This study examines retail sales patterns at Shanmukha Agency at Nandalur with the objective of identifying key trends, seasonal variations, and demand drivers that influence business performance. The research addresses the problem of inconsistent sales forecasting and aims to enhance decision-making through business analytics. A descriptive and analytical research design was adopted using historical sales data collected from the agency over a defined period. Data pre-processing techniques were applied to ensure accuracy and consistency. Analytical tools such as trend analysis, moving averages, and basic predictive modelling were employed to interpret sales behaviour. Visualization techniques were also used to present insights in an accessible format. The study reveals clear seasonal fluctuations in sales, with peak demand observed during festival periods and promotional campaigns. Certain product categories consistently outperform others, indicating strong customer preferences. Additionally, external factors such as pricing strategies and local market conditions significantly influence sales trends. The analysis demonstrates that data-driven forecasting can reduce uncertainty and improve inventory planning. Academically, the study contributes to the application of business analytics in small-scale retail contexts. Practically, it offers actionable insights for improving sales strategies, inventory control, and customer targeting. The findings may also inform policymakers supporting small business digital transformation initiatives.

INTRODUCTION

In the contemporary retail environment, businesses increasingly rely on data-driven approaches to remain competitive and responsive to customer needs. Business analytics has emerged as a vital tool that enables retailers to interpret large volumes of transactional data, identify sales patterns, and make informed decisions.

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Small and medium-sized retail enterprises, however, often underutilize such analytical techniques due to limited resources or technical expertise. Shanmukha Agency at Nandalur, a local retail business, presents a relevant case to explore how business analytics can be applied to understand sales trends and improve operational efficiency.

Research Article

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RISK–RETURN ANALYSIS IN EMERGING FINANCIAL INSTITUTIONS: EVIDENCE FROM SHRIRAM FINANCE AT TADIPATRI

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NBFC, Credit Risk, Financial Stability, Risk-Return Trade-off, Emerging Markets.

ABSTRACT

This research investigates the intricate dynamics of the risk–return trade-off within the context of emerging financial institutions, specifically focusing on Shriram Finance at Tadipatri. As the non-banking financial company (NBFC) sector faces increasing regulatory scrutiny and market volatility, understanding the correlation between credit risk, operational liquidity, and profitability becomes paramount. The primary objective is to evaluate how strategic risk management frameworks influence shareholder value and institutional stability in a competitive emerging market landscape. The study employs a quantitative research design, utilizing secondary financial data spanning a five-year period. Financial performance is measured through Return on Equity (ROE) and Return on Assets (ROA), while risk metrics are analysed using Non-Performing Assets (NPA) ratios, Capital Adequacy Ratios (CAR), and standard deviation of returns. Correlation analysis and multiple regression models are applied to determine the sensitivity of returns to specific risk variables, ensuring a robust statistical foundation for the findings. Preliminary results indicate a significant positive correlation between disciplined credit risk appraisal and long-term profitability. While aggressive lending strategies yielded higher short-term returns, they were frequently offset by increased provisioning requirements. The analysis reveals that Shriram Finance at Tadipatri maintains a resilient risk profile, though liquidity risk remains a sensitive factor influencing market valuation. Practically, the study provides a roadmap for NBFC managers to optimize portfolio diversification. Academically, it contributes to the literature on emerging market finance by validating the applicability of the Modern Portfolio Theory in specialized credit institutions. Policy-wise, it underscores the necessity for dynamic regulatory oversight to balance financial inclusion with systemic stability.

INTRODUCTION

The financial landscape of emerging economies has undergone a seismic shift, characterized by the rapid proliferation of Non-Banking Financial Companies (NBFCs) that bridge the gap between traditional banking and the unbanked population. In India, institutions like Shriram Finance have become pivotal in driving financial inclusion through specialized credit delivery. However,

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A Study on Technical Analysis

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Abstract: Technical analysis is a methodology for evaluating financial markets by forecasting future price movements through the study of historical data, primarily price trends and volume. It focuses on identifying recurring patterns, indicators, and trends rather than assessing intrinsic value, making it popular for short-term trading. Technicians assume market prices reflect all relevant information and that historical trends tend to repeat.

Keywords: Forecasting, historical data, price trends, volume, patterns, indicators, short term trading, market price.

1. Introduction

Technical analysis is a method of analyzing the market to identify trading opportunities by focusing on the historical market data—price and volume – instead of studying the security's fundamentals, such as the business model, financial statements, macroeconomic factors and the rest.

2. Literature Review

- **Louis Bachelier (1900):** His early work applied Brownian motion to price modeling, laying the groundwork for the idea that price movements are random, a concept that underpins the EMH.
- **Harry Roberts (1959):** Discussed stock market patterns and their methodological implications, one of the first to bring academic scrutiny to charting.

3. Research Methodology

Technical analysis lies in its reliance on historical data to predict future price movements, which often fails due to changing market conditions, high subjectivity in pattern interpretation, and the limitation that it is only effective for short-term trading rather than long-term investing. It is inherently difficult to distinguish between legitimate trends and random noise, often leading to subjective interpretation of indicators like support/resistance or chart patterns.

3.1. *Need of the study*

Stock markets are playing a vital role in they are contributing a lot to the growth of economy The stock market study is different from any other market & it is very complex & interesting by analyzing the past price movements of a scrip, we can forecast the future price movements Technical analysis helps the investor in analyzing the prices & too except future trends.

3.2. *Objective of the Study*

- To study the effect of the changing trends in the capital market on the investor, the broker and on the country.
- To serve the investors to decide whether the invest in the company's share to measure the probability.
- To study the tools of the technical analysis and find out the share values of different companies in the market.
- To assess the future stock market potentiality of the company.

3.3. *Scope of the Study*

The scope of a study on technical analysis involves examining historical price movements, trading volumes, and chart

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INVESTOR BEHAVIOUR TOWARDS MUTUAL FUNDS: EVIDENCE FROM HDFC BANK CUSTOMERS

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Keywords:
Investor Behaviour, Mutual Funds, Financial Literacy, Risk Perception, Retail Investment.

ABSTRACT

This study examines investor behaviour towards mutual funds among customers of HDFC Bank, with the objective of identifying the factors influencing investment decisions, risk perception, and preference patterns. The research seeks to understand how demographic and behavioural variables shape mutual fund adoption and investment attitudes. A descriptive research design was employed using primary data collected through a structured questionnaire. The sample comprised 154 HDFC Bank customers selected through convenience sampling. Statistical tools such as descriptive analysis, correlation, and regression analysis were applied to evaluate relationships between variables such as income, risk tolerance, awareness, and investment behaviour. The study reveals that investor awareness, risk perception, and past investment experience significantly influence mutual fund investment decisions. Moderate-risk investment options were preferred by the majority of respondents. Income level and financial literacy showed a positive correlation with investment in mutual funds. Additionally, bank advisory services and brand trust played a crucial role in shaping investor confidence. The findings contribute to academic literature by highlighting behavioural dimensions in retail investment decisions. Practically, financial institutions can tailor advisory services and awareness programs to enhance mutual fund participation. Policymakers may also leverage these insights to promote financial inclusion and investor education initiatives.

INTRODUCTION

In recent years, mutual funds have emerged as a popular investment avenue among retail investors in India due to their diversification benefits, professional management, and accessibility. With increasing financial awareness and the expansion of banking services, institutions such as HDFC Bank play a significant role in promoting mutual fund investments among their customers.

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The growing shift from traditional savings instruments to market-linked products highlights the importance of understanding investor behaviour in this domain. Factors such as risk perception, financial literacy, income level, and trust in financial institutions influence investment decisions, making it essential to examine these aspects in a structured manner.

Despite the growth of mutual fund participation, many investors remain hesitant or exhibit inconsistent investment patterns. The research problem, therefore, lies

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BEHAVIOURAL DRIVERS OF EMPLOYEE JOB SATISFACTION: EVIDENCE FROM CENTURY PANELS, BADVEL

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Keyword:
Organizational Behaviour, Employee Engagement, Psychological Empowerment, Job Satisfaction, Manufacturing Industry.

ABSTRACT

This research investigates the critical behavioural drivers influencing employee job satisfaction within Century Panels, Badvel, a prominent subsidiary of Century Plyboards (India) Ltd. In an increasingly competitive manufacturing landscape, maintaining a motivated workforce is essential for operational excellence. This study addresses the research problem of identifying which specific behavioural constructs—namely psychological empowerment, perceived organizational support, and intrinsic motivation—exert the most significant influence on overall employee contentment and retention. Adopting a quantitative, cross-sectional research design, the study utilizes primary data collected via structured Likert-scale questionnaires. The sample comprises 300 employees across various functional departments of Century Panels, Badvel, selected through stratified random sampling to ensure representativeness. Data analysis was performed using Multiple Linear Regression and Correlation Analysis to test the hypothesized relationships between behavioural drivers and job satisfaction levels. The results indicate that psychological empowerment and perceived organizational support are the strongest predictors of job satisfaction at Century Panels, Badvel, accounting for a substantial variance in the model. Notably, the findings reveal that while financial incentives are foundational, behavioural drivers related to "autonomy" and "workplace inclusivity" significantly reduce turnover intentions. There is a strong positive correlation between participative decision-making and long-term employee commitment. Academically, this study enriches the literature on organizational behaviour within the Indian manufacturing sector. Practically, it provides Century Panels' management with an empirical framework to redesign HR interventions, moving beyond transactional benefits toward a culture of empowerment. Policy-wise, it suggests that fostering a supportive behavioural climate is a cost-effective strategy for enhancing organizational productivity and labour stability.

INTRODUCTION

In the contemporary globalized economy, the human capital of an organization is no longer viewed as a mere factor of production but as a primary source of competitive advantage. For labour-intensive industries, particularly the manufacturing sector in India, the psychological and behavioural alignment of employees with organizational goals is paramount. Century Panels, Badvel, a key player in the wood-based panel industry,

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A Study on Work-Life Balance and Employee Well-being with Reference to Bharathi Cement Corporation Private Limited Nallalingayapalli.

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Abstract: Work-life balance and employee well-being have become critical factors influencing organizational effectiveness and employee productivity in today's dynamic work environment. This study focuses on analyzing the relationship between work-life balance and employee well-being, highlighting how factors such as workload, working hours, organizational support, and flexible work arrangements impact employees' physical and mental health. The research aims to evaluate employees' perceptions regarding their ability to manage professional and personal responsibilities and to identify the key challenges affecting their overall satisfaction and performance. Data is collected using structured questionnaires and analyzed through percentage methods to draw meaningful insights. The findings indicate that poor work-life balance leads to increased stress, reduced job satisfaction, and lower productivity, whereas supportive management practices and flexible policies contribute positively to employee well-being. The study concludes that organizations must adopt effective work-life balance strategies to enhance employee morale, improve retention, and achieve sustainable growth.

Keywords: Work-Life Balance, Employee Well-Being, Job Satisfaction, Work Stress, Flexible Working Hours, Organizational Support, Employee Performance.

1. Introduction

Work-life balance (WLB) is defined as the ability of an individual to balance their work obligations with their personal life, including family, health, and leisure. In the current fast-paced corporate environment, the line between professional and personal life has blurred due to technology, making WLB a central issue for employee wellbeing. It is not about an equal 50/50 split of time, but rather a fluid, personalized approach to managing responsibilities.

Employee well-being refers to a broader, holistic state of being "healthy, happy, comfortable, and secure" at work. It encompasses physical health, mental health, and emotional stability. A healthy, supportive work culture, effective.

2. Review of literature

A review of literature on work-life balance and employee well-being highlights the growing importance of maintaining a healthy balance between professional responsibilities and personal life to improve employee satisfaction and organizational performance.

- According to Greenhaus and Beutell (1985): Work-life balance is defined as the absence of conflict between work and family roles. When employees experience less role conflict, their stress levels decrease and overall well-being improves.
- Clark (2000): Introduced the Work-Family Border Theory, stating that individuals manage and negotiate the boundaries between work and family domains. Flexible work arrangements help employees maintain better

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A STUDY ON CASH FLOW ANALYSIS WITH REFERENCE OF SHRIRAM FINANCE LIMITED

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ABSTRACT

This study focuses on analyzing the cash flow position of Shriram Finance Limited over a period of five years from 2020 to 2025. Cash flow analysis plays a crucial role in evaluating the financial health, liquidity, and operational efficiency of an organization. The study examines cash inflows and outflows under operating, investing, and financing activities to understand the company's financial performance. Secondary data has been used from annual reports and financial statements. The analysis reveals that while the company has shown consistent growth in operating profit, there are fluctuations in cash flows, particularly in financing and investing activities. The study concludes that effective cash flow management is essential for maintaining financial stability and supporting long-term growth.

KEYWORDS: Cash Flow Analysi ,Liquidity, Financial Performance ,Operating Activities ,Investing Activities ,Financing Activities ,Working Capital ,NBFC

1. INTRODUCTION

Cash flow analysis refers to the study of inflows and outflows of cash in a business over a specific period. It helps in understanding the liquidity, solvency, and financial flexibility of an organization.Cash flow is considered the lifeblood of any business as it ensures smooth functioning of operations. A company may earn profits but still face financial problems due to lack of cash. Therefore, cash flow analysis becomes essential for effective financial management.

2.REVIEW OF LITERATURE:

ingh (2022) emphasized that investors prefer companies with strong cash flow positions and that cash flow reduces investment risk.

Gupta (2023) analyzed trends and concluded that positive cash flow is essential for sustainability.

Rao (2024) stated that efficient cash flow management improves profitability and overall performance.

Verma (2025) highlighted the role of technology and automation in improving accuracy in cash flow analysis.

3.RESEARCH METHODOLOGY:

The study adopts a **descriptive and analytical research design** to evaluate the cash flow performance of the company.

3.1 Data Collection

Secondary data is used

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A STUDY ON RECRUITMENT&SELECTION WITH REFERENCE TO ULTRATECH CEMENT LIMITED, TADIPATRI

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Abstract: This study examines the effectiveness of recruitment and selection practices with reference to UltraTech Cement Company, a leading organization in the Indian cement industry. Recruitment and selection are critical human resource functions that directly influence organizational performance, employee productivity, and long-term sustainability. The study aims to analyse the existing recruitment sources, selection techniques, and overall effectiveness of hiring practices within the organization. Using a descriptive research design, both primary and secondary data were collected from employees and organizational records. The findings reveal that a majority of respondents perceive the recruitment and selection process as effective, transparent, and structured, with significant use of modern practices such as online recruitment platforms and employee referral programs. However, certain challenges such as skill gaps, recruitment costs, and minor inefficiencies in screening processes were identified. The study concludes that while the organization maintains a strong and systematic recruitment framework, there is scope for improvement through enhanced technological integration, continuous monitoring, and refinement of selection techniques. These insights contribute to the broader understanding of strategic human resource management practices in large-scale industrial organizations.

Keywords: Recruitment, Selection, Human Resource Management, Talent Acquisition, Employee Performance, Organizational Effectiveness, Hiring Practices, UltraTech Cement, Workforce Planning, HR Strategies.

INTRODUCTION

Recruitment and selection are critical components of human resource management that significantly influence organizational performance, productivity, and long-term sustainability. In today's dynamic and competitive business environment, organizations are increasingly recognizing the strategic importance of hiring the right talent to achieve their goals. With the advent of globalization, technological advancements, and digital transformation, recruitment practices have evolved from traditional methods to more sophisticated approaches involving online platforms, artificial intelligence, and data-driven decision-making. These modern techniques enable organizations to attract a wider and more diverse talent pool, enhance the accuracy of selection decisions, and reduce biases in the hiring process. Consequently, recruitment and selection are no longer viewed as routine administrative functions but as strategic tools that contribute to innovation, efficiency, and competitive advantage.

In large industrial organizations such as UltraTech Cement Company, the complexity of recruitment and selection is further heightened due to the need for a diverse workforce comprising technical experts, skilled labor, and managerial personnel. Effective manpower planning, structured recruitment strategies, and robust selection techniques are essential to ensure the availability of competent employees who can meet organizational demands. Additionally, factors such as employer branding, candidate experience, transparency, and fairness have become crucial in attracting and retaining talent in a highly competitive labor market. Proper recruitment and selection practices not only reduce employee turnover and hiring costs but also enhance employee satisfaction and organizational effectiveness. Therefore, evaluating the effectiveness of these practices is essential to identify strengths and areas for improvement, thereby enabling organizations to strengthen their human resource strategies and sustain long-term growth.

REVIEW OF LITERATURE

Recent literature on recruitment and selection reflects a progressive shift toward technology-driven and strategic human resource practices. Herold and Roedenbeck (2025) identified the growing role of artificial intelligence and data-driven decision-making in recruitment, highlighting emerging trends and future directions in human resource management. Safarudin and Wibowo (2025) conducted a bibliometric analysis and observed a significant rise in recruitment-related research, indicating increased academic and industry focus on modern hiring practices. Furthermore, Judijanto et al. (2025) suggested that best practices such as competency-based interviews, applicant tracking systems, and multi-stage evaluation processes enhance hiring quality and reduce employee

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A Study on Performance Evaluation of Select Public and Private Sector Mutual Funds in India

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Abstract:

Mutual funds have emerged as one of the most popular investment avenues in India, offering diversification, professional management, and risk mitigation to investors. The rapid growth of the Indian mutual fund industry has increased the need to evaluate the performance of various schemes, particularly in comparing public sector and private sector mutual funds.

The present study aims to analyse and evaluate the performance of selected public and private sector mutual fund schemes in India. The evaluation is based on key financial parameters such as risk and return, and employs statistical tools like Sharpe Ratio, Treynor Ratio, Jensen's Alpha, and Standard Deviation. These measures help in understanding both the absolute and risk-adjusted performance of mutual funds.

The study uses Net Asset Value (NAV) data of selected mutual fund schemes over a specific period. Benchmark indices such as market indices and risk-free rates (e.g., Treasury Bills) are used for comparison to assess the relative performance of funds.

The findings of the study indicate that both public and private sector mutual funds have shown varied performance levels. In many cases, private sector mutual funds tend to outperform public sector funds in terms of risk-adjusted returns, although some public sector funds provide stable and consistent returns with relatively lower risk. Overall, the performance depends on fund management efficiency, market conditions, and investment strategies.

The study concludes that mutual funds remain a viable investment option, but investors should carefully evaluate performance indicators and risk factors before making investment decisions. The research also provides insights for investors, fund managers, and policymakers to improve investment strategies and enhance fund performance.

Keywords: Mutual Funds, Performance Evaluation, Risk-Return Analysis, Sharpe Ratio, Treynor Ratio, Public Sector, Private Sector, India.

1. Introduction

A mutual fund is a collective investment vehicle that collects & pools money from a number of investors and invests the same in equities, bonds, government securities, money market instruments. The money collected in mutual fund scheme is invested by professional fund managers in stocks and bonds etc. in line with a scheme's investment objective. The income / gains generated from this collective investment scheme are distributed proportionately amongst the investors, after deducting applicable expenses and levies, by calculating a scheme's "Net Asset Value" or NAV. In return, mutual fund charges a small fee.

In short, mutual fund is a collective pool of money contributed by several investors and managed by a professional Fund Manager.

Mutual Funds in India are established in the form of a Trust under Indian Trust Act, 1882, in accordance with SEBI (Mutual

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A STUDY ON TRAINING & DEVELOPMENT WITH REFERENCE TO ULTRATECH CEMENT LIMITED, TADIPATRI

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Abstract: Training and Development (T&D) plays a crucial role in enhancing employee performance, organizational productivity, and long-term sustainability. This study examines the effectiveness of training and development practices at UltraTech Cement Limited. The research adopts a descriptive research design using both primary and secondary data. A structured questionnaire was used to collect data from 202 employees selected through simple random sampling. The findings reveal that training significantly improves employee performance, productivity, and job satisfaction. On-the-job training and practical methods are highly preferred, while e-learning is less favored. The study concludes that while training programs are effective, improvements are needed in accessibility, digital learning methods, and communication. The research provides practical suggestions for enhancing training effectiveness and aligning it with organizational goals.

Keywords: Training and Development, Employee Performance, HRM, Organizational Growth, Cement Industry

INTRODUCTION

Training and Development (T&D) is a critical function of Human Resource Management that focuses on enhancing employees' skills, knowledge, and competencies to improve individual and organizational performance. Training is a short-term process aimed at developing job-specific skills, while development is a long-term initiative that prepares employees for future roles and career growth. In today's dynamic and technology-driven business environment, organizations must continuously upgrade employee capabilities to remain competitive. Industries such as cement manufacturing require a skilled and adaptable workforce to meet challenges related to productivity, safety, quality, and sustainability. Effective training programs help employees stay updated with technological advancements, improve efficiency, and reduce operational errors. Training and development also contribute to employee satisfaction, motivation, and retention, while supporting organizational goals such as improved productivity and innovation. UltraTech Cement Limited, being a leading player in the cement industry, emphasizes employee training as a strategic tool for maintaining operational excellence. This study examines the effectiveness of training and development practices at UltraTech Cement Limited and analyzes their impact on employee performance and satisfaction, with the aim of providing suggestions for improvement.

REVIEW OF LITERATURE

Recent literature on training and development demonstrates its significant influence on employee and organizational performance over time Putra (2025),observed that structured and relevant training programs significantly improve employee skills, knowledge, and motivation, which ultimately enhance individual and organizational performance. Nor (2025),found that effective training has a positive impact on employee performance, and employee performance acts as a mediating factor between training and improved public service delivery in organizations. Haritha and Reddy (2025), studied HRD initiatives in IT companies and found that training programs have a direct positive influence on employee performance, especially when aligned with organizational strategies. Zalukhu, Ria et al. (2025), in their systematic literature review, stated that modern training and development programs must be contextual, measurable, and aligned with organizational goals to ensure effectiveness in dynamic work environments. Hosen (2024), highlighted that training and development are significantly related to career development and work performance, and this relationship is strengthened through organizational commitment among employees. Olabiyi (2023), concluded that employees who perceive training as relevant to organizational success show higher motivation and performance levels. Putri and Soplah (2022), in their systematic literature review, concluded that training and development are crucial for skill enhancement, work engagement,

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A Study on Capital Structure With Reference to Heritage Food Limited Chandragiri

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ABSTRACT

Capital structure is a critical financial decision that determines the proportion of debt and equity used to finance a firm's operations and growth. An optimum capital structure minimizes the overall cost of capital while maximizing shareholder value. This study examines the theoretical foundations of capital structure, including the Net Income Aroach, Net Operating Income Aroach, Traditional View, and the Modigliani–Miller Proposition, alongside their practical implications. It highlights the trade-off between tax benefits of debt and the risks of financial distress, emphasizing the role of financial leverage in magnifying shareholder returns under favourable conditions while increasing exposure to risk. The research also explores determinants such as profitability, firm size, tangibility, market conditions, and industry dynamics, suorted by empirical evidence from prior studies across global markets. The findings suggest that capital structure decisions are context-specific, requiring firms to balance flexibility, solvency, profitability, and control to achieve sustainable growth and maximize market value

KEY WORDS : Capital Structure , Debt–Equity Mix , Cost of Capital , Optimum Capital Structure , Traditional Theory , Modigliani–Miller Proposition , Risk and Return

INTRODUCTION

Capital structure is one of the most important financial decisions for any organization. It refers to the mix of debt and equity used to finance a company's operations and growth. An optimum capital structure minimizes the overall cost of capital while maximizing the value of the firm and its shares. The use of debt brings tax benefits, but it also increases financial risk and the possibility of distress if not managed properly. Therefore, companies must strike a balance between risk and return when deciding their capital structure.

A sound capital structure should ensure profitability, solvency, flexibility, capacity, and control. Profitability means the structure should help maximize returns, while solvency ensures long-term stability.

Theories of capital structure provide different perspectives on how debt and equity affect firm value. The Net Income Aroach suggests that increasing debt lowers the cost of capital and raises firm value, while the Net Operating Income Aroach argues that capital structure changes do not affect firm value. The Traditional View takes a middle ground, suggesting there is an optimum mix of debt and equity where the cost of capital is minimized. Modigliani and

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A Study on Training and Development with Reference to Century Panels Limited, Badvel

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Abstract: The study focuses on training and development practices at Century Panels Limited, Badvel, and impact on employees performances and organizational growth. Training and development are essential for improving employee skills, knowledge, and efficiency, especially in a manufacturing environment where techologyband processes continuosly change. A descriptive research desing was adopted, and primary data were collected through a structured questionnaire from 300 employees were selected from different departments of Century Panels Limited for the study sampling. The study examines the existing training methods, objectives, and procedures followed by the organization, along with employee perceptions and challenges faced in training programs. A descriptive research approach is used to identify gaps such as limited exposure to advanced training methods, differences in skill levels, and lack of continuous training for employees. The findings highlight that effective training improves productivity, quality of work, employee motivation, and job satisfaction. However, certain improvements are needed in training design, implementation, and evaluation. The study concludes by suggesting better training strategies, regular skill development programs, and adoption of modern training techniques to enhance employee performance and support overall organizational development.

Keywords: Training, Development, Human Resource Management, Skill Development, Learning and Development, Career Development, Organizational Growth, Leadership Development.

1. Introduction

Training and development play a crucial role in improving employee performance, enhancing skills, and achieving organizational goals. In today's competitive industrial environment, organizations must continuously upgrade the knowledge and abilities of their employees to meet changing technological and operational requirements. Effective training programs help employees perform their jobs efficiently, reduce errors, and improve productivity.

This study focuses on the training and development practices at Century Panels Limited, a leading manufacturing unit in the wood panel industry. The research examines how training programs are designed, implemented, and evaluated within the organization. It also analyzes employee perceptions regarding training effectiveness, structure, and relevance to job requirements.

The data collected from employees reveals that while training programs exist, there are gaps in planning, alignment with organizational goals, and practical implementation. Many employees expressed neutral or negative opinions about the effectiveness of training in improving performance and productivity. At the same time, employees acknowledged that training contributes to job satisfaction and suggested the need for more practical sessions, modern tools, and frequent training programs.

Therefore, this study aims to identify the strengths and weaknesses of the current training system and provide sugges-

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A STUDY ON EMPLOYEE JOB SATISFACTION WITH REFERENCE TO ZUARI CEMENT, YERRAGUNTLA

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Abstract:

Job satisfaction is very important for the success of every organization. This study examines the level of job satisfaction among employees of zuari cement Industry located in Yerraguntla. The research focuses on key factors influencing satisfaction, including working conditions, compensation, career growth and welfare measures. A descriptive research design was adopted, and primary data were collected through a structured questionnaire from 280 employees selected using convenience sampling. The findings reveal that the majority of employees are satisfied with their jobs, management practices, training opportunities, and workplace relationships, although concerns remain regarding rewards, appraisal fairness, and gender equality in career development. The study concludes with recommendations to enhance employee welfare, participative management, and performance-based recognition to improve overall job satisfaction and organizational performance.

Key words

Job Satisfaction, Employee Welfare, Cement Industry, Organizational Behavior, HRM, Workplace Environment.

Introduction

One of the main areas of interest in organization behavior and HRM practice is job satisfaction. It shows how committed workers are to a company and how they feel about their work. The term

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Financial Literacy and Behavioral Biases among Retail Investors: An Empirical Study in Kadapa Region

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Abstract

In today's complicated world of finance, where complexity abounds and informed decision-making is the key, financial literacy is an important tool for navigating. This study is an attempt to find out the level of financial literacy among investors and the role of financial literacy in financial behavior. It will be helpful in understanding the correlation between knowledge and action. The results show that the investors have good understanding of financial concepts, which means they have a good background in personal finance. An assessment of their financial behaviour indicates favourable results, typified by a modest level of optimism and a willingness to take prudent risks. The study highlights the importance of financial literacy in equipping investors to take an informed decision leading to wise financial decision making hence reducing risk and increasing returns. Moreover, the study highlights the role of financial education in promoting long-term financial stability and security. The study indicates that high levels of financial literacy contribute to prudent decision making which enables an individual to attain his or her long-term financial goals and to deal confidently with the complexities of the present financial environment.

Key words: financial literacy, financial behaviour, financial understanding, decision making

Introduction:

Financial literacy is one of the most important elements for financial well-being in the twenty-first century. Financial markets are evolving rapidly, the technological advancement and digital payment systems and investment opportunities are growing, people must have sufficient financial knowledge and skills to make sound financial decisions. Financial literacy may help the people in adequately managing their income, regular savings, wise investments and planning for future financial uncertainties [1].

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A STUDY ON BUSINESS ANALYTICS APPLICATIONS IN TALENT MANAGEMENT WITH REFERENCE TO NEETSHALA HYDERABAD

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ABSTRACT

This study focuses on the application of business analytics in talent management with reference to NEETshala, Hyderabad. It examines how data-driven approaches enhance recruitment, performance evaluation, employee retention, and workforce planning. The research uses a descriptive design with primary data collected from 150 respondents through questionnaires. Findings reveal that business analytics improves decision-making, increases objectivity in performance evaluation, and helps identify skill gaps and future workforce needs. The study highlights that while many organizations use analytics, some still rely on traditional methods. Overall, business analytics plays a significant role in improving organizational efficiency and talent management practices.

KEYWORDS : Business Analytics, Talent Management, HR Analytics, Recruitment, Employee Performance, Workforce Planning, Predictive Analytics, Employee Retention.

1.INTRODUCTION:

The application of business analytics in talent management begins with recruitment. Hiring the right person is one of the most important decisions within an organisation. With analytics, HR teams can study historical hiring data, candidate behaviours, job performance patterns, and workforce trends. Predictive models can estimate how successful a candidate might be in a role based on skills, qualifications, and past performance indicators. This not only improves the quality of talent but also reduces recruitment costs and errors.

2.REVIEW OF LITERATURE:

Abhishek Mishra (2025) This systematic literature review explores how predictive analytics is used to manage employee engagement and turnover in knowledge-based teams. As more organisations turn to data-driven methods, predictive analytics has become a valuable tool in Human Resource Management (HRM).

Chabi Gupta (2023) In the constantly evolving and highly competitive modern world, talent management has become a crucial aspect of any organization's success. The conventional techniques of managing human resources are no longer sufficient to cater to the ever-increasing demands for efficiency and effectiveness in operations. With advancements in

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A Study on Impact of Celebrity Endorsement with Reference to Bharathi Cement Corporation Private Limited, Nallalingayapalli

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Abstract: *This study focuses on analysing the impact of celebrity endorsement on consumer behaviour with reference to Bharathi Cement Corporation Private Limited. The research examines how celebrity endorsements influence purchase decisions, brand perception, and consumer attitudes. Data was collected from 120 respondents using a structured questionnaire and analysed through percentage methods. The findings reveal that celebrity endorsements significantly enhance advertisement attractiveness, brand recall, and consumer confidence. However, the study also indicates that not all consumers are equally influenced, and some remain sceptical about product quality and credibility. Factors such as celebrity credibility, attractiveness, trustworthiness, and celebrity–product fit play a crucial role in determining the effectiveness of endorsements. The study concludes that while celebrity endorsement is a powerful marketing tool, it must be strategically implemented to achieve desired outcomes.*

Keywords: Celebrity Endorsement, Consumer Behaviour, Brand Perception, Purchase Decision, Brand Recall, Advertisement Effectiveness, Celebrity Credibility, Consumer Attitude

1. Introduction

In today's highly competitive market environment, companies use various promotional strategies to attract consumers and build strong brand recognition. One of the most popular and effective marketing strategies is celebrity endorsement, where well-known personalities are used to promote products and services. Celebrity endorsement helps in capturing consumer attention, enhancing brand image, and influencing purchase decisions by leveraging the popularity and credibility of celebrities.

Consumers often associate the personality, lifestyle, and success of celebrities with the brands they endorse, which creates a positive impact on their perception. This strategy is widely used in industries such as cement, FMCG, fashion, and electronics to differentiate products and gain competitive advantage. However, the effectiveness of celebrity endorsement depends on several factors such as trustworthiness, expertise, attractiveness, and the match between the celebrity and the product.

This study aims to analyze the influence of celebrity endorsement on consumer behavior, particularly focusing on purchase intention, brand recall, and perception. It also examines whether celebrity endorsements truly enhance consumer confidence or if other factors like product quality play a more significant role. The research provides insights into how companies can effectively utilize celebrity endorsements to strengthen their marketing strategies and improve overall brand performance.

2. Review of Literature

Atkin & Block (1983) examined the effectiveness of celebrity endorsers in advertising, particularly in the context of alcoholic beverages. Their study found that advertisements featuring celebrities gained higher levels of attention compared to non-celebrity advertisements. The research showed that celebrity endorsements improve advertisement recall and brand recognition. The authors also found that celebrities enhance the perceived believability of advertising messages. The study suggests that celebrities reduce consumer resistance to persuasive messages. Atkin and Block observed that younger consumers are especially influenced by celebrity-endorsed advertisements. The research concluded that celebrity endorsement is a powerful tool for increasing advertising effectiveness and consumer awareness.

Erdogan (1999) conducted an extensive review of existing research on celebrity endorsement and identified key theoretical models used to explain its effectiveness. These include the **Source Credibility Model**, **Source Attractiveness Model**, and the **Match-Up Hypothesis**. The study highlights that trustworthiness, expertise, and attractiveness are critical characteristics that influence consumer attitudes toward endorsed brands. Erdogan argued that consumers are more likely to accept advertising messages from celebrities they perceive as honest and knowledgeable. The review also discusses potential risks such as negative publicity, celebrity scandals, and overexposure. Erdogan emphasized that endorsers promoting too many brands may lose credibility. The study further explains that celebrity endorsement involves high financial investment and reputational risk. Erdogan concluded that while celebrity endorsement can enhance brand image and recall, it must be carefully planned and continuously monitored.

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A STUDY ON IMPACT OF SOCIAL MEDIA MARKETING WITH REFERENCE TO VK HONDA RAJAMPETA.

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Abstract:

Now days, modern world is a digital world, social media is a playing a vital role in each and every field such as advertising, marketing, business, agriculture etc. Social media has become a main element of marketing strategies, changing consumer behavior through various social media channels. Social media is providing many platforms to businessmen to attract audiences, such as YouTube, Facebook, Instagram, Instagram, tik-tok, twitter etc. This paper shows the different types of impact of social on business marketing strategies, like brand awareness, engagement of customers, growth in sales, data analytics, and marketing influencers. To show the impact of social media on marketing, some data is collected from various official websites. Findings show that brand visibility can increase with social media platforms, sales improvement, and loyalty of customers. This paper presents that social media is an important tool in digital marketing, offering dynamic and low-cost means to access and engage target customers.

Keywords: Social Media, Marketing, Brand, Customer, Digital Tools, Companies, Loyalty, Revenue, Sales.

Introduction: In the market field, social media created a revolution with various platforms. These platforms are attracting customers with innovative ways. In 2024, around 4.5 billion active social media users are accounted for, which is clear proof that social media has become a necessary marketing tool for making brand images and the easy access of brands. Social media allows businesses to create brand awareness among customers, predict customer's loyalty, provide attainable market sales personalized interactions that were not possible in traditional marketing.

Review of Literature:

1. Kaplan and Haenlein (2010)

Kaplan and Haenlein explained social media as internet-based applications that allow the creation and exchange of user-generated content. They stated that businesses use social media platforms to improve communication with customers

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Intent-driven Diffusion-based Path for Mobile Data Collector in IoT-enabled Dense WSNs

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***Abstract*—Mobile data collection using controllable sinks is an effective approach to improve energy efficiency and data freshness in densely deployed wireless sensor networks (WSNs). However, existing path-planning methods are often heuristic-driven and lack the flexibility to adapt to high-level operational objectives under dynamic network conditions. In this paper, we propose ID^{2}P^2, a intent-driven diffusion-based path planning framework for jointly addresses rendezvous point selection and mobile data collector (MDC) tour construction in IoT-enabled dense WSNs. High-level intents, such as latency minimization, energy balancing, or coverage prioritization, are explicitly modeled and incorporated into a generative diffusion planning process that produces feasible and adaptive data collection trajectories. The proposed approach learns a trajectory prior that captures spatial node distribution and network characteristics, enabling the MDC to generate paths that align with specified intents while maintaining collision-free and energy-aware operation. Extensive simulations are conducted to evaluate the effectiveness of the proposed framework against conventional path-planning baselines. The results demonstrate that ID^{2}P^2 consistently outperforms representative baselines, achieving up to 25–30% reduction in tour completion time and travel overhead, approximately 10–30% improvement in data freshness, and 15–30% gains in energy efficiency and packet delivery performance, while maintaining higher throughput and fairness as network density increases, confirming its robustness and scalability for WSNs.**

***Index Terms*—Diffusion-based planning, Intent-driven networking, Mobile data collection, Wireless sensor networks, Generative diffusion models**

I. Introduction

WIRELESS sensor networks (WSNs) and Interent of things (IoT) are widely deployed in applications such as environmental monitoring, smart cities, and industrial automation [1]. In densely deployed WSNs, traditional multi-hop data forwarding often leads to excessive energy consumption, network congestion, and uneven energy depletion among sensor nodes [2]. To address these challenges, mobile data collectors (MDCs) have been introduced as an effective solution, where a controllable sink traverses the network to gather data directly from sensor nodes or cluster heads [3], [4]. A general view of a IoT-enabled dense Wireless Sensors Networks, with multiple rendezvous points along with a single base station and mobile data collector is shown in Fig. 1. However, the performance of MDC-based data collection heavily depends on the efficiency of path-planning strategies, especially under dense node distributions and dynamic network conditions [5].

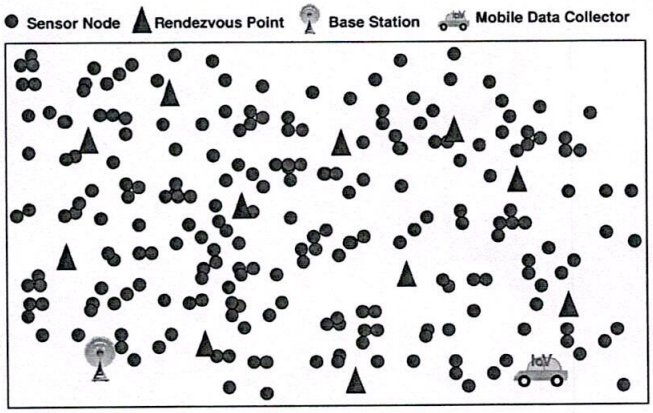

Fig. 1: A general view of a IoT-enabled dense Wireless Sensors Networks, with multiple rendezvous points along with a single base station and mobile data collector;

Existing path-planning approaches for mobile data collection largely rely on heuristic or rule-based methods, such as shortest-path planning, clustering-based trajectories, or classical search and sampling algorithms [6]. Particularly, some of the recent approaches focused on Rapidly-exploring random tree (RRT) [7], Bug2 [8] and A* [9] algorithms for path construction, which are closely related to robot path planning. These methods are computationally efficient, they are typically designed for fixed objectives [10]–[12] and lack the flexibility to adapt to varying operational requirements, such as latency sensitivity, energy balancing, or data priority differentiation. Recent learning-based approaches [13], [14], including reinforcement learning and optimization-assisted planning [15], have been explored to enhance adaptability; however, they often require carefully designed reward functions or suffer from scalability issues in dense WSN scenarios. Moreover, most existing methods do not explicitly incorporate high-level intents that reflect user-defined or application-specific goals into the path-planning process. To overcome these limitations, this paper proposes an ID^2P^2 framework for mobile data collection in densely deployed WSNs. The key idea is to jointly optimize (i) the deployment of IoT-enabled rendezvous points (RPs) that aggregate sensor data and (ii) the tour of a MDC that visits the selected RPs for data offloading. In particular, the MDC tour is modeled as a conditional generative planning problem

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An Integrated Learning Approach for Detecting Depression in University Students

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Abstract: Depression among college students has become a major mental health issue that needs accurate and reliable computer screening methods. Conventional grading methods often have problems with uneven distribution of classes, duplicate features, and limited interpretability, which makes them less useful in the real world. This framework uses two different sets of data that are linked to depression: a Kaggle dataset on student depression and a large-scale mental health survey that was conducted during the COVID period and included demographic, academic, behavioral, and psychological questions. A lot of work goes into the preprocessing, like getting rid of nulls and duplicates, labeling, balancing the data with SMOTE, getting rid of features with RFECV and Stratified K-Fold validation, and making sure everything is normal with MinMax and Standard scaling. Random Forest, Gradient Boosting, Decision Tree, Gaussian Naive Bayes, Logistic Regression, Extra Trees, Support Vector Machine, XGBoost, LightGBM, CatBoost, SGD, LASSO, and MLP are some of the machine learning classifiers that are used. There are also hybrid ensemble strategies that combine MLP, SGD, and CatBoost. We check how well the model works by looking at its accuracy, precision, recall, F1-score, ROC-AUC, Cohen's kappa, and log loss. Voting and Stacking classifiers worked best for the sadness student dataset, getting a maximum accuracy of 98.0%. A Voting classifier worked best for the mental health dataset, getting a 99.3% accuracy. SHAP and LIME analysis make sure that things can be explained. Real-time prediction from user-provided inputs is possible with a Flask-based interface that uses SQLite for authentication. This shows that the sadness detection capability is strong, understandable, and deployable.

"Index Terms: *Depression Detection, Hybrid Machine Learning, Ensemble Models, University Students, Explainable AI, Mental Health Screening".*

1. INTRODUCTION

Mental health disorders have become a big public health issue around the world. Depression is one of the most common and severe conditions in the world [1]. Young people in college are especially at risk because they are under a lot of pressure to do well in school, make new friends, deal with money problems, and not know what they want to do with their lives after college [2]. These stresses, along with developmental and environmental factors, make college students more likely than the general population to show signs of depression [3]. The problem is even worse in low- and middle-income countries, where it's harder to get mental health services, which raises the risks [4]. Because of this, early detection and help are needed to lessen the long-term effects of untreated sadness on health, social life, and schoolwork.

Even though people are becoming more aware of the problem, the ways that are currently used to spot sadness in students have major flaws. Self-reported surveys and clinical interviews are used a lot in traditional diagnostic methods, but they take a lot of time and are often affected by stigma, underreporting, and subjective bias [5]. Because of this, a lot of students who are affected don't get identified or wait too long to get help [6]. Recent research has looked into using data to help with mental health evaluations, but many of the current solutions have trouble finding the right mix between being able to predict performance and being reliable, clear, and scalable [7]. Aside from that, not much attention has been paid to checking whether performance gains seen are statistically significant and reliable across a wide range of student groups [8]. These holes make it harder for automated systems that can spot depression to be used in real academic situations.

The main goal of this study is to use survey-based mental health data to build a strong and reliable system for finding sadness early in college students. The suggested method aims to make predictions