



1st International Conference on WOMEN DEVELOPMENT IN ENGINEERING, SCIENCE & TECHNOLOGY (WD-EST'23)

ABSTRACT BOOK

Organised by:

Women Engineer Development Committee , Pakistan Engineering Council &
Mehran University of Engineering & Technology, Jamshoro



03-05
OCT 2023



U.S.-PAKISTAN CENTER FOR ADVANCED STUDIES
IN WATER (USPCAS-W), MUET JAMSHORO

Our Partners





1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023



MESSAGE FROM PROF. DR. TAUHA HUSSAIN ALI WORTHY VICE CHANCELLOR, MUELT

It is my distinct pleasure to extend a heartfelt welcome to each and every one of you at the 1st International Conference on Women Development in Engineering, Science & Technology, an event jointly organized by the Pakistan Engineering Council (PEC) and My Mehran.

Mehran University of Engineering & Technology, Jamshoro, has long been at the forefront of supporting groundbreaking research, fostering innovative ideas, promoting sustainable development goals, and upholding the highest standards of academic excellence. As the Vice Chancellor of this esteemed institution, it brings me immense pride to see our university's vision encapsulated in the acronym RISE: Research, Innovation, Sustainability, and Educational Excellence, embodied in this conference.

This conference represents not just a gathering of brilliant minds, but a convergence of ideas that have the power to reshape the landscape of STEM fields. It stands as a testament to our commitment to promoting gender equality in these disciplines, encouraging women's participation, and providing a platform for their voices to be heard and celebrated.

In the spirit of RISE, I encourage each of you to actively engage in discussions, share your knowledge, and forge connections that will lead to transformative collaborations. Together, let us explore innovative avenues, nurture sustainable practices, and advance the cause of education and research in engineering, science, and technology.

I am confident that the outcomes of this conference will echo far beyond these walls, inspiring generations of researchers, innovators, and educators. Your contributions will not only enrich our understanding but will also propel us towards a future where diversity and excellence coexist harmoniously.

Once again, I welcome you all to this momentous event. May your time here be filled with meaningful interactions, enlightening discussions, and fruitful collaborations that further the cause of women in STEM and contribute significantly to the global pursuit of knowledge and progress.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023



MESSAGE FROM PROF. DR. KHADIJA QURESHI CONFERENCE CHAIR

It is with immense pleasure and pride that I welcome you all to the 1st International Conference on Women Development in Engineering, Science & Technology, organized jointly by the Pakistan Engineering Council (PEC) and Mehran University of Engineering and Technology (MUET), Jamshoro.

I extend my heartfelt gratitude to the MUET administration, who has been the backbone of support for this conference. Their dedication and hard work have been invaluable, ensuring that this event reaches the heights of success we aspire to achieve. The trust and encouragement extended by the Chairman of PEC has played a pivotal role as well, guiding us with wisdom and foresight.

This conference is more than just an academic event; it is a celebration of the remarkable strides that women have made in the fields of engineering, science, and technology. It stands as a testament to the fact that gender should never be a barrier to pursuing one's passions and dreams. The incredible lineup of international and national speakers we have gathered here reflects the diversity and richness of talent that women bring to these fields.

I firmly believe that this conference will serve as a spark, igniting conversations and collaborations that will empower women globally. It is not just a gathering of brilliant minds; it is a platform for change, for breaking barriers, and for fostering an environment where every woman can thrive and excel.

I encourage you all to engage wholeheartedly, share your knowledge, experiences, and dreams. Let us inspire and be inspired. Let us challenge the status quo and envision a future where gender equality is not just a concept but a reality.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023



MESSAGE FROM PROF. DR. ANEEL KUMAR CONFERENCE CO-CHAIR

It is with great pleasure and anticipation that I extend a warm welcome to all our esteemed international and national speakers at the 1st International Conference on Women Development in Engineering, Science & Technology, organized collaboratively by the Pakistan Engineering Council (PEC) and Mehran University of Engineering and Technology (MUET), Jamshoro.

This conference is not just a confluence of brilliant minds but a testament to the power of collaboration, resilience, and determination. In the realm of STEM, where women have historically been underrepresented, this event stands as a beacon of hope and progress. It symbolizes our collective commitment to breaking barriers, challenging norms, and fostering an environment where every individual, regardless of gender, is given equal opportunity and encouragement to thrive.

I firmly believe that this conference will serve as a global gathering, not just in terms of physical presence but in the amalgamation of diverse ideas, experiences, and perspectives. Each session, discussion, and interaction here is a step forward in the betterment of women in STEM fields worldwide. It is a chance for us to learn from one another, to be inspired by each other's journeys, and to formulate strategies that will shape a future where women stand at the forefront of scientific and technological advancements.

As we embark on this transformative journey together, I encourage you all to actively engage, participate, and collaborate. Let us seize this opportunity to create a network of support and mentorship, to nurture the talents of aspiring women scientists and engineers, and to pave the way for a more inclusive and diverse STEM community.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023



MESSAGE FROM DR. MASROOR AHMED ABRO CONFERENCE SECRETARY

With great pleasure, I would like to extend a warm welcome to all the esteemed international and national speakers at the 1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23), hosted by Women Engineers Development Committee, Pakistan Engineering Council and Mehran University of Engineering and Technology (MUET), Jamshoro.

I want to express my heartfelt appreciation to the MUET administration for their unwavering support, dedication, and encouragement. Their belief in the significance of this conference has been instrumental in making this event a reality.

I am deeply thankful to the Conference Chair for placing faith in me as the Conference Secretary. Their guidance and trust have been invaluable, motivating me to work diligently to ensure the smooth organization of this conference.

This conference is not just a gathering; it's a platform where ideas converge, knowledge is shared, and collaborations are forged. It is a celebration of the remarkable achievements of women in the fields of engineering, science, and technology. Our collective goal is to empower, inspire, and create pathways for more women to thrive in these disciplines.

I encourage all of you to actively engage in the discussions, share your insights, and embrace the wealth of knowledge that will be presented here. Let us foster an environment of learning, support, and mentorship, where each participant leaves with new ideas, connections, and perspectives.

May this conference be a catalyst for positive change, sparking conversations that reverberate far beyond these walls. Together, let us pave the way for a future where gender equality is not just a goal but a reality in the world of STEM.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023



MESSAGE FROM ENGR. ZUNAIRA ANUM CONFERENCE CO-SECRETARY

Dear Esteemed Guests, Speakers, and Participants,

I am delighted in extending a warm and heartfelt welcome to all of you at the 1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23). This momentous event, hosted by the Women Engineers Development Committee, Pakistan Engineering Council, and Mehran University of Engineering and Technology (MUET), Jamshoro, represents a significant milestone in our collective pursuit of gender equality and empowerment in STEM fields.

First and foremost, I wish to express my deep gratitude to the MUET administration for their unwavering support, dedication, and encouragement. Their belief in the importance of this conference has been pivotal in bringing our vision to life.

Furthermore, I would like to acknowledge and commend the remarkable leadership of the Conference Chair for entrusting me with the role of co-secretary. Their guidance and trust have been instrumental in motivating our team to work diligently to ensure the seamless organization of this conference.

Let us remember that this conference is not merely a gathering but a vibrant platform where innovative ideas converge, knowledge is generously shared, and invaluable collaborations are formed. It is a celebration of the remarkable achievements of women in the fields of engineering, science, and technology. Together, we aim to empower, inspire, and create pathways for more women to flourish in these critical disciplines.

I encourage each and every one of you to actively engage in the enriching discussions, share your invaluable insights, and embrace the wealth of knowledge that will be presented throughout this conference.

Once again, a warm welcome to WD-EST'23, and I look forward to an inspiring and fruitful conference experience with all of you.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Organizing committees of WD-EST'23

S No.	Name	Designation and affiliation
1. Steering Committee		
01	Prof. Dr. Tauha Hussain Ali	Vice Chancellor MUET Jamshoro
02	Engr. Mukhtiar A. Shaikh	Vice Chairman PEC, Sindh
03	Prof. Dr. Samreen Hussain	Vice Chancellor DUET Karachi
04	Prof. Dr. Aneel Kumar	Pro Vice Chancellor MUET Jamshoro
05	Prof. Dr. Khadija Qureshi	Conference Chair
2. Organizing Committee		
01	Prof. Dr. Khadija Qureshi	Conference Chair
02	Prof. Dr. Aneel Kumar	Conference Co-Chair
03	Prof. Dr. Zahid H. Khand	Member PEC Governing Body
04	Engr. Abdul Rehman Sheikh	Member PEC Governing Body
05	Engr. Dr. Faizullah Khan Kakar	Member PEC Governing Body
06	Engr. Syed Raghieb Abbas Shah	Member PEC Governing Body
07	Prof. Dr. Saima Yasin	Chairperson Chemical Engg: UET Lahore
08	Engr. Qazi Riaz Hassan Qureshi	Director Services, MUET Jamshoro
09	Dr. Masroor A. Abro	Conference Secretary
10	Engr. Zunaira Anum	Conference Co-Secretary
3. Advisory Committee		
01	Prof. Dr. Mukhtiar Ali Unar	Dean Faculty of Electrical, Electronic & Computer Engineering
02	Prof. Dr. Khanji Harijan	Dean Faculty of Mechanical, Process & Earth Engineering
03	Prof. Dr. Abdul Sattar Larik	Dean Faculty of Sciences Technology & Humanities
04	Prof. Dr. Rizwan Ali Memon	Dean Faculty of Architecture & Civil Engineering
4. Technical Committee		
01	Prof. Dr. Zeenat M. Ali (Convener)	Department of Chemical Engineering, MUET Jamshoro
02	Prof. Dr. Shaheen Aziz	Department of Chemical Engineering, MUET Jamshoro
03	Prof. Dr. Aziz Aftab	Department of Chemical Engineering, MUET Jamshoro
04	Prof. Dr. Abdul Jabbar Laghari	Director QEC, Shaheed Benazir Bhutto University Shaheed Benazirabad



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

05	Dr. Zohra Altaf	Department of Science and Technical Education, Faculty of Education, University of Sindh, Elsa Kazi Campus, Hyderabad
06	Prof. Dr. Farah Naz Talpur	Center of Excellence in Analytical Chemistry, University of Sindh Jamshoro
07	Prof. Dr. Malika Rani	Department of Physics, The Women University, Multan
International Members		
01	Prof. Dr. Sule Yildirim Yayilgan	Department of Information Security and Communication Technology, Norwegian University of Science and Technology, Norway.
02	Prof. Dr. Guangren Yu	College of Chemical Engineering, Beijing University of Chemical Technology, Beijing, China
03	Prof. Dr. Griet Verbeeck	Sustainability Coordinator & Professor, Faculty of Architecture & Arts Hasselt University, Belgium
04	Dr. Fathiah Binti Mohamed Zuki	Department of Chemical Engineering, Faculty of Engineering, University Malaya
05	Dr. Julie A. Sinclair	Associate Director, Office of International Studies in Education, College of Education, Michigan State University United States
06	Dr. Muhammad Zeeshan Nawaz	Saudi Basic Industries Corporation (SABIC), Jeddah, KSA
5. Printing and Publication		
01	Dr. Imran Nazir Unar (Convener)	Department of Chemical Engineering, MUET Jamshoro
02	Engr. Naveed Ali Koondhar	Department of Chemical Engineering, MUET Jamshoro
03	Engr. Faiz Abro	Department of Chemical Engineering, MUET Jamshoro
04	Engr. Sajjad Hyder	Department of Chemical Engineering, MUET Jamshoro
6. Registration Committee		
01	Dr. M. Shuaib Shaikh (Convener)	Department of Chemical Engineering, MUET Jamshoro
02	Dr. Zulfiqar Ali Bhatti	Department of Chemical Engineering, MUET Jamshoro
03	Engr. Abdul Qadeer Laghari	Department of Chemical Engineering, MUET Jamshoro
04	Engr. Naveed Ali Koondhar	Department of Chemical Engineering, MUET Jamshoro



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

05	Engr. Faiz Abro	Department of Chemical Engineering, MUET Jamshoro
06	Engr. Parus Abro	Institute of Information and Communication Technology, MUET Jamshoro
07	Ms. Aleena	Department of Chemical Engineering, MUET Jamshoro
7. Stage and Hall Committee		
01	Dr. Shumaila Aijaz Memon (Convener)	Centre of English Language and Linguistics, MUET Jamshoro
02	Dr. Sahiba Thaheem	Centre of English Language and Linguistics, MUET Jamshoro
03	Ms. Sadia Memon	Centre of English Language and Linguistics, MUET Jamshoro
04	Mr. Ali Raza Khoso	Centre of English Language and Linguistics, MUET Jamshoro
05	Mr. Wahid Bhatti	Centre of English Language and Linguistics, MUET Jamshoro
06	Mr. Ismail Memon	Centre of English Language and Linguistics, MUET Jamshoro
07	Ms. Nazia Koonj	Centre of English Language and Linguistics, MUET Jamshoro
08	Engr. Faiz Abro	Department of Chemical Engineering, MUET Jamshoro
09	Ms. Maryam Qureshi	Department of Software Engineering, MUET Jamshoro
8. Sponsorship Committee		
01	Dr. Aamir Mehmood Soomro (Convener)	Department of Electrical Engineering, MUET Jamshoro
02	Dr. Sikandar Almani	Department of Chemical Engineering, MUET Jamshoro
03	Engr. Faiz Abro	Department of Chemical Engineering, MUET Jamshoro
9. Food & Entertainment Committee		
01	Qazi Riaz Hassan Qureshi (Convener)	Director (Services) MUET
02	Mr. Abdul Samad Shaikh	Executive Engineer (Maintenance) MUET Jamshoro
03	Mir Danish Talpur	Executive Engineer MUET Jamshoro
04	Mr. Jawed Ali Shah	Senior Programmer (MIS) MUET Jamshoro



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

05	Mr. Idrees Khan	Purchase and Store Officer MUET Jamshoro
06	Mr. Fahad Memon	Accounts Officer (Directorate of Services) MUET Jamshoro
07	Mr. Uns Junejo	Sub Engineer (Electrical) MUET Jamshoro
08	Mr. Kashif Ghafoor Kandhir	Sub Engineer (Civil) MUET Jamshoro
09	Mr. Zulfiqar Sahito	Assistant Registrar (Sports) MUET Jamshoro
10	Mr. Abdul Fatah Rind	IT Assistant MUET Jamshoro
11	Mr. Faizan Ahmed Memon	Logistic Assistant, USPCAS-W, MUET Jamshoro
10. Protocol Committee		
01	Dr. Nasarullah Pirzada (Convener)	Department of Telecommunication Engineering, MUET Jamshoro
02	Dr. Imran Nazir Unar	Department of Chemical Engineering, MUET Jamshoro
03	Dr. Zulfiqar Solangi	Department of Chemical Engineering, MUET Jamshoro
04	Dr. Sikandar Almani	Department of Chemical Engineering, MUET Jamshoro
05	Engr. Faiz Abro	Department of Chemical Engineering, MUET Jamshoro
11. Boarding & Lodging Committee		
01	Dr. Zulfiqar Ali Solangi (Convener)	Department of Chemical Engineering, MUET Jamshoro
02	Dr. Rehan Ali Hakro	Department of Civil Engineering, MUET Jamshoro
03	Engr. Miskeen Ali Gopang	Department of Industrial Engineering & Management, MUET Jamshoro
04	Mr. Ali Raza Khoso	Centre of English Language and Linguistics, MUET Jamshoro
05	Ms. Rida Hussain	Department of Architecture, MUET Jamshoro
06	Ms. Mahjabeen Memon	Department of Architecture, MUET Jamshoro



**1st International Conference on Women Development in Engineering, Science &
Technology (WD-EST'23)**

03-05 October 2023

Table of Contents

Code	Title	Page
KN01	Scoping an ethical framework for information Systems while swimming in the academic waters Prof. Dr. Sule Yildirim Yayilgan	1
KN02	The Joys and Challenges of International Collaborations Dr. Julie Sinclair	2
KN03	The Next Generation Battery: Paving the Way for a Sustainable Future Dr. Hae-Young Choi	3
KN04	Advanced Method for Synthesizing Metal Organic Framework Membrane for Gas Separation Dr. Yeong Yin Fong	4
KN06	Building(s) for the future – questions vs answers Dr. Griet Verbeeck	5
INV03	Andragogy: Methods and Techniques of Teaching Adults Prof. Dr. AHMAD HUSSAIN (Professor, Department of Mechanical Engineering, DHA SUFFA University)	6
ENG01	Water Resource Management and Dams Construction for Sustainable Development of Pakistan Jamil Afzal ^{1,*} , Asma Batool ² , Muhammad Adeel Afzal ³ and Abdullah	7
ENG02	Regional Integrated Energy System Energy Management in a Smart Building Microgrid Considering Multiple Uncertainties and Integrated Demand Response Kalsoom Baghat ^{1,*} , Chaohua Dai ² , M. Zubair Bhayo ³	8
ENG03	Enhancing Model Validity by Comparative Analysis of Adams-Moulton, Runge-Kutta and Euler Methods in Lengyel-Epstein Reaction Simulation for Zinc Oxide Nanostructures Kaniz Fatima ^{1,*} , Basit Ali ² , Mahnoor ³	9
ENG04	Role of Women in Pakistan for Microgrid's Energy Management Systems Saqib Ali ^{1,*} , Farhan Hameed Malik ² , Saima Akram ¹ and Muhammad Muneeb Khan ¹	10
ENG05	Women's Participation in Energy Transition Paradigm in Smart Grid Environment Saqib Ali ^{1,*} , Farhan Hameed Malik ² , Saima Akram ¹ and Muhammad Muneeb Khan ¹	11
ENG06	A Fuzzy Logic based System to mitigate the Challenges of Outcome-based Education faced by Students of Remote Areas: A Case Study of Khuzdar Region Rehana Naseer [*] , Najeeb Ullah Jan, Shabbar Naqvi and Jalal Shah	12
ENG07	Gasification of Plastic Waste and Coal for Hydrogen Gas Production Nadia Khan ^{1,*} , Syed Ali Ammar Taqvi ² and Sabih Arshad ¹	13



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

ENG08	In-Vitro Study on Polyvinyl Alcohol (PVA) Films Incorporated with Manganese Dioxide (MnO₂) Nanoparticles for Wound Healing Applications Tooba Khan ^{1, *} , Nafia Jawaid Kurd ²	14
ENG09	Simulation design of Grid Tied Photovoltaic (PV) system of a 1.05 kWp DC for a geographical location of Tandojam, Sindh Muhammad Muneeb Khan ^{1,2} , Sadiq Ahmad ¹ , Sumera Jabbar ² , Sara Baloch ² , Muhammad Aamir Shafi ³ , Rubab Nazeer ⁴ , Jahangeer Faiz ²	15
ENG10	Assessment of Biomethane Potential of Organic Substances Co-Digested with Animal Dung: a mini-review Barkatullah Kandhro, Abdul Razaque Sahito and Sheeraz Ahmed Memon	16
ENG11	Enhancing Methane Production by Co-Digestion of Organic Substances with Buffalo Dung Barkatullah Kandhro, Ayesha Rasheed, Syeda Ghulam Fatima Naqvi and Saeed Samoo	17
ENG12	Optimization of Electrocoagulation Oxidation Unit Treating Textile Dye Barkatullah Kandhro ¹ , Muhammad Tahir ¹ , Mudasar Hussain ¹ and Shoukat Ali ¹	18
ENG13	Modeling of Sachal Wind Project, Jhimpir and analysis of voltage regulation of the model with Sliding Mode Control-based Cuk Converter Ramsha Panhwar [*] , Asadullah, Aamir Sario, Ashfaqe Ahmed Hashmani and Anwar Ali Sahito	19
ENG14	Decolorization of distillery waste water by using low-cost adsorbents Mehwish Qaseem, Syeda Alishba Fatima & Muhammad Yasir Khan [*]	20
ENG15	Cu-Doped ZnO Nanoparticle Electrode for Precise and Rapid Sodium Ion Detection in Water Samples Sadaf Samreen, Muhammad Saquib Ali & Muhammad Yasir Khan [*]	21
ENG16	Detecting heavy metals in underground drinking water using a nanomaterial-based electrode Syeda Alishba Fatima, Muhammad Saquib Ali & Muhammad Yasir Khan [*]	22
ENG17	Sustainable natural dyeing from agricultural and food waste Rabia Almas Arain	23
ENG18	Smart Hand Glove with Obstacle Detection Zahid Siddique, Sami Ullah Khan, Yousaf Masih [*] , Gul Munir, Wasim Munir,	24
ENG19	Design and Fabrication of 15 TR Cooling Tower Ifrah Asif, Mirza Hammad Baig, Umer Nadeem Abdullah [*] , Sohail Hasnain, Qasim Siddiqui	25
ENG20	Experimental investigation of enhancement in sedimentation of particle species in a modified settling tank Faisal Khan, Naveed ul Hasan Syed, Naseer Ahmed Khan	26
ENG21	An analysis of traffic noise pollution and its impact on schools in Hyderabad: A modeling approach Soomal shabir [*] , Abdul Razaque Sahito	27
ENG22	Developing nanomaterial-based adsorbents for removing dyes from textile wastewater	28



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

	Mehwish Altaf and Muhammad Yasir Khan*	
ENG23	Tracing Veins using Near Infrared Imaging Techniques Anoosh Fatima*, Shanzae Zubair, Amna Wagley	29
ENG24	Sustainable Modular Recovery Units Beenish Babar	30
ENG25	Analysis and utilization of residual spaces under flyover based on sustainable development: a post pandemic scenario Safia Saleem	31
ENG26	System Identification of the VCM process Tuba Siraj Ansari	32
ENG27	Challenges and Limitations of Glucose Monitoring Devices and its Future Perspectives: A concise overview Amna Shaikh ^{1,2,*} , Rahima Ismail ¹ , Hina Shah ¹ and Sidra Batool ¹	33
ENG28	Diverse load management in renewable energy system based smart distribution grid using battery management system Fiza Fatima Arain* and Wasi Hyder Larik	34
ENG29	Solar Panel Dual Management System Using IoT Muhammad Faiz Ul Hassan*, Mirza Umair Ul Haq and Ali Hassan	35
ENG30	Reinforcement effect of NCC on the mechanical properties of NBR Asra Nafees*, Saud Hashmi, Rafiq Ahmed and Nabiha Syed	36
ENG31	Ergonomics Assessment of Work-Related Musculoskeletal Disorders using Vicon Motion Capture System- A case study of Sedentary Tasks Jahangeer Shakeel*, Miskeen Ali, and Shakeel Ahmed Shaikh	37
ENG32	Prioritizing the Ventilation Index System for Sustainable Underground Mining (A Case Study of Lakhra Coalfield) Mushtaque Ali Panhwar ¹ , Saleem Raza Chalgr ^{1,*} , Shakeel Ahmed Shaikh ² , Muhammad Burhan Memon ¹	38
ENG33	Design and development of a neural network controller for a submarine Muhammad Azeem*, and Mukhtiyar Ali Unar	39
ENG34	Musical & Non-musical Song Classification Using Neural Network Areeza Bhanbhro ^{1,*} , Abeer Mukhtiar ¹ , Sunbul Bhangwar ¹ , Mohsin Ali ¹ , and Akhtar Hussain Jalbani ²	40
ENG35	Machine Learning Approach for Cyber Bullying Detection on Social Media Platform Saba Yousha ¹ , Sajjad Ali Memon ² , Shahnawaz Talpur ¹	41
ENG36	Study of Energy Consumption in Universities of Jamshoro, Sindh Muazam Memon ¹ , Tanveer Hussain Phulpoto ² , Muhammad Shuaib Shaikh ³	42
ENG37	OPTIMINZING WELLBORE INTEGRITY: XHANTHAN GUMS CONTRIBUTION TO CEMENT SLURRY PERFORMANCE Chaker Khan ¹ , Irshad Ali Gopang ² , Ghulam Abbas ³	43
ENG38	Enhancing Access to Legal Information: AI-Driven Constitution of PakistanSearch Engine Hafiz Muhammad Faisal Shehzad ¹ , Rabia Naz ²	44
ENG39	Digitally Guarded Doorways	45



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

	Preety Narwani* and Muhammad Taha Khanzada	
ENG40	Comparison of Machine Learning Algorithms for Urdu Hand Written Character Recognition Tooba Ali*, Tabasum, Jawaria, Alia and Akhtar Hussain Jalbani	46
ENG41	A Review on Cybersecurity Threats, Vulnerabilities, Their Countermeasures, and Emerging Trends Eesha Rehman ¹ and Adnan Ahmed ²	47
ENG42	Efficient Solar Power Generation Waqar Imdad ¹ , Kashif Nawaz ² , Shahzad Ali ³ , and Bakhat Ali ⁴	48
ENG43	DEFORMATION MONITORING OF UNDERGROUND MINE ROOF BY USING ULTRASONIC SENSORS Kashif Nawaz ¹ , Agha Shafi Muhammad Pathan ² , Muhammad Naeem ³ and Waqar Imdad ⁴	49
ENG44	Identification of Green Construction Barriers in the Construction Industry of Pakistan Shahzad Ali*, Muhammad Fahad Ali ¹ and Zeeshan Amir	50
ENG45	Technological advancement and trends in modern high-rise buildings in Pakistan Muhammad Fahad Ali*, Shahzad Ali, Abdul Moaiz, and Asmar Haider	51
ENG46	Exploring Tech Trends: Analyzing Web-Scraped Data Huma Jamshed*, Urooj Waheed and Yusra Mansoor	52
ENG47	The drivers of Green Innovation practices and its impact on organizational & environmental performance: Evidence from pharmaceutical sector of Pakistan. Sana Hassan ¹ and Rida Zainab ²	53
ENG48	Efficient Control of a Construction Project by Earned Value Analysis Tayyiba Rashid ¹ , Sheza Khurshid ¹ and Dur-e-Shawwal ¹	54
ENG49	Estimation of minimum distance between public places and roads based on simulation of vehicle exhaust Muzafar Hussain ¹ , Naqash Saagar ² and Janbaz Hassan ¹	55
ENG50	To optimize a work system's performance by integration of Ergonomics tools Zahid Abbas Shah ¹ , Ramisha Hashmi ²	56
ENG51	Fashion Image Analysis and Comparative Research Using Different Optimizers Fatima Khanzada ¹ , Asif Aziz Memon ² , Rizwan Badar Baloch ³ and Mehwish Shaikh ⁴	57
ENG52	Thermal Problems in Gas Turbine Blades – An Assorted Review of Issues and Remedial Measures Osama Ali Ahmed Awan ¹ , Ali Sarosh ² and Usama Sarfraz ³	58
ENG53	An SDG-based Design Evaluation of Supercritical Sahiwal Coal-Fired Power Plant Osama Ali Ahmed Awan ¹ , Ali Sarosh ² , Usama Sarfraz ³ , Muhammad Awais ⁴ and Muhammad Asadullah Khan ⁵	59
ENG54	Divorce Prediction Using Artificial Neural Network Muhammad Rizwan Jamil* and Adnan Ghafoor	60



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

ENG55	Numerical Investigation of Design Parameters for Flat Plate Solar Collector (FPSC) Shoaib Almani ¹ , Sheeraz Ahmed Memon ¹ and Imran Nazir Unar ²	61
ENG56	Exploring the Resource Recovery Potential of Fecal sludge using Anaerobic Co-Digestion Nida Maqbool *, Aiman Gul, Zukhruf Khalid, Abdul Wahab Akram, Asfand Yar, Sher Jamal Khan	62
ENG57	Sustainable use of Waste Material for Controlling Leachate Infiltration Dr. Erum Aamir ¹ *, Maria A. Ghor ¹ Zunaira Anum ²	63
ENG58	Influence Of Climate Change on Water Cycle Dr. Erum Aamir ¹ , Zunaira Anum ²	65
ENG59	Evaluating and improving the overall equipment effectiveness (oe) of shovel and dumper at quarry site of cement industry Muhammad Noman Mughal, Saleem Raza Chalgari, Shafi Muhmmad Pathan	66
ENG60	Development of musa fibre-based stone matrix asphalt Asif shah ¹ , prof. Dr rizwan ali memon ¹ , ali nizam ¹ , mohsin ali ¹ and muhammad fahad ali ¹	67
ENG61	Numerical simulation of hemodialysis membrane system for removal of urea and salt from blood Urooba memon, khadija qureshi, imran nazir unar	68
ENG62	CO₂ Capture using Thin Film Composite Membrane: A simulation Study Pirbhat, Khadija Qureshi, Imran Nazir Unar, Masroor Ahmed Abro	69
ENG63	Development of Sustainable Packaging Material by Using Bio-Degradable Polymers Umm-e-Salma ¹ , Muhammad Abdul Haq ² and Shagufta Ishtiyaque ³	70
ENG64	Carbonization and Activation of Banana Leaves for Removal of Ni, Pb, Cr and mixed solution of heavy metals from wastewater Safia, Tayyab Ahmed Qureshi, Tanveer Ahmed Gadhi *, Rasool Bux Mahar	71
ENG65	Innovation capability measuring the impact of marketing capability and new product development in telecommunication sector Kanz ul aziz, a. Mujtaba	72
SS01	Empowering Women in Sustainable Biomass Cooking: The Role in Rural and Low-Income Communities towards Energy Initiatives Razia Begum ¹ , Shaheen Aziz ¹ , Suhail A. Soomro ¹ , Tooba Naveed ²	73
SS02	Addressing Gender Disparities in Physical Education Participation among Women in an Underserved Region Muhammad Ubair Shah	74
SS03	Prioritization of awareness campaigns for a disease through fusion of pentagonal intuitionistic fuzzy number and promethee Oyoon abdul razzaq	75
SS04	Inclusive leadership on employee's psychological capital Seeta Kumari *, Noor Fatima, Mehjabeen, Farha kainat, Atia Bano	76



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

SS05	The importance of early childhood education: discussing the benefits of investing in early childhood education and its long impact on childrens cognitive, social, and emotional development Aleena soomro [*] , bisma lakho, asad abbas rizvi	77
SS06	Investigating the Barriers and Opportunities for Women in Accessing and Utilizing Technology Resources in University Settings Fiza Chachar, Shahar Bano Kazmi, Ramsha Khalid, Asad Abbas Rizvi	78
SS07	Socio-Economic Challenges faced by female students at higher education. A Case study of BNBWU Ruqia Memon [*] , Kaneez Fatima Memon [*] , Fiza Chachar [*] and Asad Abbas Rizvi	79
SS08	Analyzing the Impact of Employee Training Programs on Job Performance in Health Department District Jamshoro: A Case Study of Extended Program of Immunization Fawad Ahmed	80
SS09	The Impact of Modern Technology in Education Musrat Zulfiqar [*] , Shireen Ali, Nadia Hassan	81
SS10	Post-Pandemic Trends in Physical Education: Lessons Learned and Future Directions Misbah Shaikh, Afsheen Nisar	82
SS11	Investigating How Artificial Intelligence Adapts Feedback and Content to Improve User Performance to enhancing Language Learning with AI: A survey study of Public University of Sukkur Sindh Noor Fatima [*] and Humera Aijaz	84
SS12	Investigating the relationship between socioeconomic support and student achievemem Saima Maitlo [*] , Zamina Batool shaikh, Asad Abbas Rizvi	85
SS13	Effect of physical education on students' academic performance Farah Shar [*] , Ghanwa Shar and Asad Abbas Rizvi	86
SS14	Reimagining a World without Poverty: An Examination of the Effectiveness of SDG-1 and Future Prospects Following the UN-SDG 2015 Agenda Hafsa Shaikh and Adnan Pitafi	87
SS15	Assessing the Effectiveness of Gamification Tools for Recruitment and Selection Process in Pakistan's Universities Samar Siddiqui and Adnan Pitafi	88
SS16	Quantitative Study on the Impact of Autonomous Learning on University Students' Academic Motivation Uzma Buriro [*] and Roshan Ali	89
SS17	Factors Affecting in Career Choice of Secondary School Student Farah Naz [*] and Roshan Ali	90
SS18	Women working as a freelancer in today's digital era Sheeba Memon ^{1,*} , Saajid Hussain Mirbahar ² and Naadiya Mirbahar ³	91
SS19	Investigating professional attraction and marketability of various disciplines university of Sindh, challenges and opportunities	92



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

	Waqar Ali [*] , Qazi Moinuddin Abro and Adnan Pitafi	
SS19	Political skills and impression management as a means towards self-promotion in academia: blessing or evil Nida Kalwar and Adnan Pitafi	93
SS20	Impact of public debt on economic growth of aseancountries and pakistan Nimra Noor and Waqar Ahmed Sethar	94
SS22	What are the Factors affecting PSTs Job Satisfaction! An Investigation of the Motivating factors of teaching staff in district Dadu Akash Soomro ¹ , Muhammad Moinuddin Qazi Abro ² and Adnan Pitafi ³	95
SS23	Challenges faced by underprivileged women in developing technology skills at the university level Summera Muhram, Uzma Akabr, Sana Sabayo, Shah Bibi khan	96
SS24	A Comparative Study of Pricing Strategies through Marketing Efficiency in Pesticides Market. Muhammad Mohsin Yousfani	97
SS25	Psychological capital influence burnout and organisational citizenship behavior among customer service: a moderating role of gender differences Mahwish Saeed [*] , Sana Tahir and Muhammad Osama Siddiqui	98
SS26	Analysis of sales Growth and firm size and its impact on sustainability practices of oil and gas sector of Pakistan AFAQUE ALI	99
SS27	The Implementation of Quality Management System in Healthcare: A Case of LUMHS Jamshoro Mujeeb ur Rehman ¹ , Moin ud din Qazi ¹ , Asif Ali Shah	100
SS28	Investigating the effect of islamic financial literacy on the adoption of islamic banking services: a multiple mediation perspective Sanober baloch	101
SS29	Analyzing the Effect of Responsible Leadership on Employee Turnover and Organizational Performance: The Mediating Role of Trust Rifat Ul Ain	103
SS30	Evaluating the HEC's Smart-Universities initiative and its Implementation in Mehran UET Jamshoro Muazam Ali, Shah Muhammad Kamran and Adnan Pitafi	104
SS31	Impact of capital structure on dividend payouts of publicly listed firms of pakistan: a case study from pakistan stock exchange (psx) Syed owais ahmed shah	105
S01	A Fundamental Study on the Psychological Impact of Global Climate Change Jamil Afzal ^{1,*} , Ammar Bin Halim ² and Soraya Sarwari ³	107
S02	Perceptual Analysis of Tone Mapping Algorithms Raazia Sosan [*] , Muhammad Hamza Qureshi, Zukhruf Basheer	108
S03	Toxicity of insecticides bifenthrin and fipronil against Oxya japonica (Orthoptera: Acrididae)	109



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

	Wajeeha Tanveer*, Sajida Mushtaq, Sadia Maalik, Qurat Ul Ain and Moazama Batool	
S04	Effect of selected insecticides on Coleopteran foliage fauna of district Sialkot Aleena Yousaf, Sadia Maalik*, Sajida Mushtaq, Moazama Batool and Qurat ul Ain	110
S05	A Review of Motion Planning Algorithms for Autonomous Ground Vehicles Aziz ur Rehman*, Ahsan Tanveer*, Umer Khan and M. Touseef Ashraf	111
S06	Nickel Cobalt Oxide – Quantum Dot Nanocomposites for Photocatalytic Water Splitting Nawal Haider*, Ramsha Zafar Osama Mutahir and Muhammad Abdul Basit Saim	112
S07	Preparation, characterization of CuO, ZnO and series of new CuO/ZnO nano composites using precipitation method and their potential applications in the photo-catalytic degradation of Victoria blue R dye *Abdul Waheed Mastoi ^{1,3,*} , Abdul Halim Bin Abdullah ² , Mohd. Haniff Bin Wahid ² , Saifullah Bullo ³ , Mohd Zobir bin Hussien ¹ , Ghulam Murtaza Mastoi ⁴ and Zulkrnain Zainal ^{2,*}	113
S08	Advancement in Biocompatible Film's Fabrication for In-Vivo Wound Healing: Polyvinyl Alcohol-Based Innovations Anoosh Fatima	114
S09	Development of New Protocol for Monitoring of Nalbuphine: An Opioid Analgesic Drug Kanwal Hussain	115
S10	Key Performance Indicators for evaluating Laboratory Performance of Academic Institution (A case study at Engineering University) Ahmed Abdur Rehman ¹ , Saleem Raza Chalgri ² Shakeel Ahmed Shaikh ³	116
S11	An Ontology Based Approach for Characterizing Long Covid-19 Suspected Cases Shabana Tanwari*, Qasim Arain, Isma Farah Siddiqui, Mehwish Shaikh	117
S12	Oxidative removal of a diclofenac using horseradish peroxidase immobilized soft gel Tahira Qureshi ^{1,*} , Rabel Soomro ² , Najma Memon ² and M. Iqbal Bhangar ³	118
S13	Polyaniline/Ag-Pd nanocomposite as an efficient catalyst for degradation of Eosin Dye Noorzaman*, Farah Naz Talpur, Aamina Baloch, Jamil Baig	119
S14	Halophytic derived Manganese and Zinc nanoparticle ameliorates salinity resistance in sunflower seedlings Kainat Amin Bora ¹ , Rabia Anwar ² , Saud Hashmi ¹ , Zainul Abideen ²	120
S15	Women in Space Science: A spotlight on Pakistan Intikhab Ulfat	121
S16	Application of Lean tools along with Arena simulation to reduce patient waiting time in health care services: A case of the Radiology department Sana Hassan and Saher Afshan	122



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

S17	Highly Active Carbon Material Derived from Carica papaya Fruit Juice: Access to Efficient Photocatalytic Degradation of Methylene Blue in Aqueous Solution under the Illumination of Ultraviolet Light Muhammad Ali Bhatti ¹ , Elmuez Dawi ² , Aneela Tahira ³ , Khalida Faryal Almani ¹ , Shymaa S. Medany ⁴ , Ayman Nafady ⁵ , Zulifqar Ali Solangi ⁶ , Umair Aftab ⁷ and Zaffar Hussain Ibhupoto	124
ENG66	Investigating the Performance of Magnetization of water to improve the water quality by numerical simulation Surhan memon ¹ , Imran Nazir Unar ² and Masroor Abro ¹	126
S18	Synthesis of porous geopolymer by Si/Al metal powder Abdul Qadeer ¹ , Dr. Khadija Qureshi ² , Dr Shaheen Aziz ³ Dr. Imran nazir ⁴ ,	127
ENG67	Nanoporous Hydroxyapatite-Infused Thin-Film Cellulose Acetate Matrix for Hybrid Membrane Architectures in Engineering Applications. Abida*, Ayatullah Qureshi, Dr. Ali dad Chandio Khurshid Ali Mirza	128
SS32	Examining the Impact of Artificial Intelligence in Journalism: The Perceptions of Pakistani Journalists and Experts Bhavesh Chhipa	129
SS33	Generative Artificial Intelligence in Academia: Comparative Analysis of Students' and Teachers' Perceptions in Higher Education Prof. Dr. Muhammad Yousuf Sharjeel ^{1,*} , Fatima Qanita ² , Imrana Arif ²	130
SS34	Analyzing How Education Quality, Socio-Cultural Factors, and Policies Influence the Development of Women's Entrepreneurship in Pakistan Kifayat Ali Larik	131
SS35	A Fuzzy Logic based System to mitigate the Challenges of Outcome-based Education faced by Students of Remote Areas: A Case Study of Khuzdar Region Rehana Naseer*, Najeeb Ullah Jan, Shabbar Naqvi and Jalal Shah	132
SS36	Investigation of a Fuzzy Expert System Leading Towards Eradication of Malaria in Balochistan: A Case Study of Khuzdar Region Sahiba Kareem*, Najeeb Ullah Jan, Shabbar Naqvi and Noor Ahmed	133
SS36	An Analysis of Wheat Supply Chain Risks using the Case of Tando Muhammad Khan Maryam Saleem	134
SS37	Exploring the Factors that Cause Psychological Contract Breach among Healthcare Employees during the Covid-19 Aqib Ali Sahito*, Mahvish.K.Khaskheli and Adnan Pitafi	135
SS38	Impact of Structural Determinants on the Financial Variables: Evidence from Dairy Industrial Cluster of Hyderabad Hasan Shoukat*, Iffat Batool Naqvi and Tooba Hashmi	136
SS39	The impact of the political and economic system on human development index: A Classification of Pakistan, India and Bangladesh Aaisha Memon	137



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keynote talk: Scoping an ethical framework for information Systems while swimming in the academic waters

Sule Yildirim Yayilgan

Department of Information Security and Communication Technology Faculty of Information Technology and Electrical Engineering Norwegian University of Science and Technology

Author email: sule.yildirim@ntnu.no

Abstract. As an academician, I have mainline responsibilities such as teaching, doing research, and carrying out administrative work. As educators, we want our students not only to be as good as possible with learning their subjects technically but also respect issues of ethics, privacy and data protection. As a researcher, my research group (MRPET) and I work on developing information systems which can solve daily life challenges and ease life and at the same time which can be improved versions of existing systems and solutions. Development and improvement encompass taking care of ethics, privacy and data protection by design into these systems. One of the questions to look into is then ‘How can we define ethics, privacy and data protection?’ while the other question is ‘How can we ensure ethics and respect privacy and data protection is a part of our solutions?’

In this talk, I will touch these aspects of developing information systems and give indications of how I evolved into an academician of computer science and information security who works on ethics, privacy and data protection issues of information systems.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keynote talk: The Joys and Challenges of International Collaborations

Julie Sinclair

College of Education, Michigan State University United States

Author email: sincla53@msu.edu

Increasingly there are more opportunities for higher education professionals and researchers across the globe to collaborate. Due to the pandemic, the higher education community has also become more able to think about virtual partnerships. However, there is still a need to think about how to engage in various types of international collaborations more thoughtfully and creatively. In this talk, Dr. Sinclair will share not only about the benefits and challenges of international collaborations, but also about how higher education professionals can enhance their partnerships with colleagues and academic institutions outside of their country context. Dr. Sinclair will draw from her personal experience as an international programs administrator over more than 25 years and also from a research project with US faculty members involved in international collaborations.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keynote talk: The Next Generation Battery: Paving the Way for a Sustainable Future

Hae-Young Choi^{*}, You-Jin Lee, Jun-Woo Park, Asif Raza, Muhammad Bilal Raza, Doohun Kim

Next-Generation Battery Research Center, Korea Electrotechnology Research Institute, 12, Jeongiui-gil, Seongsan-gu, Changwon 51543, the Republic of Korea

^{*}Corresponding author email: ssunzero@keri.re.kr

Abstract. The transition to renewable energy sources necessitates the development of advanced energy storage systems with high energy density, extended cycle life, and improved safety. Among the various energy storage technologies, lithium-sulfur (Li-S) batteries have emerged as a promising next-generation candidate due to their inherent high theoretical energy density (2,600 Wh/kg) and the abundant, low-cost nature of sulfur. However, the commercialization of Li-S batteries is still impeded by several challenges, including the soluble polysulfide shuttle mechanism, rapid capacity decay, and low sulfur utilization. In this work, we elucidate the key advances in electrode design, electrolyte engineering, and interfacial modifications that have enabled remarkable improvements in the cycle stability and overall performance of Li-S batteries. Special attention is devoted to the development of novel carbon-sulfur composite cathodes, protective coatings for the lithium anode, and functional electrolyte additives that mitigate polysulfide dissolution. Furthermore, a holistic understanding of the fundamental reaction mechanisms and degradation processes, as derived from advanced in-situ and operando characterization techniques, is presented. Our findings underscore the significant strides made in Li-S battery technology, which are paving the way for a sustainable future by offering a viable and eco-friendly alternative to traditional lithium-ion batteries.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keynote talk: Advanced Method for Synthesizing Metal Organic Framework Membrane for Gas Separation

Yeong Yin Fong

Department of Chemical Engineering, Universiti Teknologi PETRONAS

Author email: yinfong.yeong@utp.edu.my

Abstract. Zeolitic imidazolate framework (ZIF) membrane has been extensively investigated in many studies due to its unique properties, such as a small pore, high affinity towards small gas molecules, good thermal and chemical stabilities. However, it is very challenging to synthesize and grow the membrane layer because it involves complex synthesis procedures. We have successfully synthesized ZIF-8 membrane in disc and tubular configurations by using a novel solvent evaporation secondary seeded growth coupled with a microwave-assisted solvothermal method. The obtained ZIF-8 membrane demonstrated comparable gas permeation results with those results reported in the literature. Overall, the newly developed method can be further applied for membrane scale up for gas separation processes.

Keywords: Zeolitic imidazolate framework, Membrane, Disc and tubular configurations.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keynote talk: Building(s) for the future – questions vs answers

Griet Verbeeck

Faculty of Architecture & Art, Hasselt University, Belgium

Author email: griet.verbeeck@uhasselt.be

Abstract. As engineers we excel in problem-solving and often expect users to readily adopt our innovative solutions. However, our enthusiasm for crafting solutions sometimes eclipses the importance of scrutinizing the problems themselves. In today's world, where problems are not merely complex, but often inherently wicked and multifaceted, there is a considerable risk that the very solutions we develop today may face significant resistance and even may morph into future predicaments. Therefore, it is paramount to ensure that we take our time to pose the correct questions before embarking on the quest for suitable answers to emerging problems. Equally crucial is a critical evaluation of current answers, especially if we want to impart them to our students or implement them on a large scale. Furthermore, if we confidently acknowledge both our strengths and our limitations, and consequently engage in this process of reflection collaboratively alongside experts from non-beta disciplines, such as social sciences and humanities, as well as non-professional stakeholders, we enhance the chances to generate solutions that are not only richer, but also deeper integrated in the fabric of society. In her keynote lecture, professor Griet Verbeeck, drawing upon her extensive 30-year journey in researching and advocating for sustainable energy and materials use in the building sector, will use her experiences to underscore the perils of isolated research and overly narrow system boundaries. And she will discuss ways for embracing a broader perspective, emphasizing its role in eliciting good answers. Keywords: wicked problems, building sector, sustainable energy and material use, collaboration, critical reflection.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Invited talk: Andragogy: Methods and Techniques of Teaching Adults

Ahmad Hussain

Dean, Faculty of Engineering and Applied Sciences, DHA Suffa University, Karachi

Abstract. Going to school is one thing but as an adult is another. Just as adults think, act, and process information differently than children, so too do they learn differently. In fact, there is a lot of research out there about what makes a learning style effective for an adult. Adult learning theories trace their roots back to Malcolm Knowles, an adult educator who developed the concept of andragogy. Andragogy is the "art and science of teaching adults." This is intentionally different from pedagogy, which is the practice of teaching children. Knowles theorized that adult learning and childhood learning are entirely different and that older people do not process, comprehend or retain information in the same manner as children. In this talk, we will explore seven of the best adult learning theories, or adult learning styles, in play today. The seven principles of adult learning include self-direction, transformation, experience, mentorship, mental orientation, motivation, and readiness to learn. Adult learning theories can positively impact adult learning experiences both in the classroom and on the job. Institutions that specialize in andragogy offer a unique advantage to adult students. To develop his concept of andragogy, we need to focus on certain characteristics within adult learners. These include: a preference for self-directed learning; an ability to draw on life experience to assist with learning; a willingness to learn when transitioning into new roles; a focus on immediately applying new knowledge to real-life situations and problems and a tendency to be internally motivated (rather than externally). In this invited talk, the speaker will recognize the way adult learning theory empowers students not just to learn but to transform their lives with information that applies directly to the real world.

Keywords: Adult learning, andragogy, self-directed learning



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Water Resource Management and Dams Construction for Sustainable Development of Pakistan

Jamil Afzal^{1,*}, Asma Batool², Muhammad Adeel Afzal³ and Abdullah⁴

¹*College of Hydraulic & Environmental Engineering, China Three Gorges University, Yichang City, China*

²*Department of Education, Government of Punjab, Pakistan.*

³*College of Economics and Management, China Three Gorges University, Yichang City, China*

⁴*School of chemistry, University of the Punjab, Lahore, Pakistan.*

*Corresponding author email: jamil@ctgu.edu.cn

Abstract. For human survival, electricity needs, flooding control, water resources management, and the construction of dams are very important. The purpose of this study is to undertake a sustainability evaluation of water resources management and dam construction in Pakistan. The findings demonstrated that the economic dimension of dams is the most significant for sustainable development in Pakistan. Need for the electricity has increased dramatically so hydroelectric projects play a vital role because of their technological and environmental advantages. This study will be helpful in dealing with the measures to fulfill Pakistan's energy and power demand for sustainable development. About 33 % of electricity generation in Pakistan is done by hydropower, but Pakistan needs to increase the production; hydro power is considered as a symbol of praise in the production of energy and it is also a fundamental source of storage of the water. The recent flood condition in Pakistan affected the economy and it diverts the focus of government towards the destruction recovery. Hydropower reservoirs are fundamentally used in the electricity generation in summer and water reservoirs are used in crop irrigation during the winter and these reservoirs filled in the monsoon season.

Keywords: Water Resource Management, Sustainable Development, Hydropower Projects, Dams Construction



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Regional Integrated Energy System Energy Management in a Smart Building Microgrid Considering Multiple Uncertainties and Integrated Demand Response

Kalsoom Baghat^{1,*}, Chaohua Dai², M. Zubair Bhayo³

¹ *Department of Electrical Engineering, MUET SZAB Campus Khairpur Mir's*

² *School of Electrical Engineering, Southwest Jiatong University, China*

³ *University of Electronics, Science and Technology (UESTC), China*

*Corresponding author email: kalsoombhagat@muetkhp.edu.pk

Abstract. A novel approach to the energy crisis is offered by the Regional Integrated Energy System (RIES) dilemma in smart building microgrid. However, the RIES will unavoidably be affected by the numerous uncertainties due to the RIES's connection to an abundance of renewable energy sources and a variety of loads. This research proposes a RIES optimization model that takes into account numerous uncertainties, multi-energy coupling, and integrated demand response (IDR) in order to address the problems mentioned above. Under the premise of resources can improve the comprehensive utilization efficiency of energy, reduce energy costs, and consume more renewable energy. The Yalmip Solver Framework is then used to model the uncertainty of sources and load by comparing and analyzing the mathematical properties of the uncertainty of source and load.

Keywords: RIES, SBMG, Uncertainties, IDR



03-05 October 2023

Enhancing Model Validity by Comparative Analysis of Adams-Moulton, Runge-Kutta and Euler Methods in Lengyel-Epstein Reaction Simulation for Zinc Oxide Nanostructures

Kaniz Fatima^{1, *}, Basit Ali², Mahnoor³

¹Department of Humanities and Social Sciences, Bahria University Karachi, Karachi, Pakistan.

²Department of Electrical Engineering, Bahria University Karachi, Karachi, Pakistan.

³Dow College of Pharmacy, Dow University of Health Sciences, Karachi, Pakistan.

*Corresponding author email: kanizfatima.bukc@bahria.edu.pk

Abstract. This paper examines the reaction kinematics of zinc oxide (ZnO) nanostructure formation using the Lengyel-Epstein reaction model with three distinct numerical approaches: Euler, fourth-order Runge-Kutta, and Adams-Bashforth-Moulton. The purpose of this research is to determine the optimum approximation method for calculating zinc ion (Zn^{+2}) and hydroxyl ion (OH^-) concentrations. In terms of accuracy, stability and consistency, the results reveal that the Adams-Bashforth-Moulton method outperforms the Euler and fourth-order Runge-Kutta techniques. It also gives a comparison with Euler's approach and fourth-order Runge-Kutta by simulating it, demonstrating that the rate of convergence of Adams-Bashforth-Moulton method is more appropriate than Euler's method and fourth-order Runge-Kutta methods. The error analysis using simulation results concluded that Adams-Bashforth-Moulton gives optimized results in comparison with Euler and Runge-Kutta methods. The Adams-Bashforth-Moulton method also validates the experimental output for the formation of zinc oxide nanostructures in the aqueous chemical growth method.

Keywords: Lengyel Epstein, Euler, fourth-order Runge-Kutta, Adams Moulton, Nanostructures



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Role of Women in Pakistan for Microgrid's Energy Management Systems

Saqib Ali^{1,*}, Farhan Hameed Malik², Saima Akram¹ and Muhammad Muneeb Khan¹

¹*Electrical Engineering Department, NFC Institute of Engineering and Technology, Multan, Pakistan.*

²*Department of Electromechanical Engineering Technology, Abu Dhabi Polytechnic, UAE*

*Corresponding author email: saqib.ali@nfciet.edu.pk

Abstract. In distribution networks, large-sized industrial, medium-sized commercial, and small-sized domestic buildings with high, average, and low amount of energy requirements are mainly considered, respectively. These buildings are termed industrial, commercial, and residential microgrids (μ G). Thus, these types of customers need to attempt to concentrate on an optimum intra-building power handling energy management system (EMS) as well as a bi-directional energy transfer mechanism between the utility grid and the respective type of μ G. For this purpose, a bi-level EMS control is required that supervises building-level benefits as well as utility-level incentives at the same time by achieving an optimal compromise between resilience and performance. In this paper, the performance of the proposed μ G is evaluated by developing an EMS control under deterministic and stochastic conditions by incorporating unpredictable situations i.e., random outages on the electric and natural gas networks as well as intermittent solar irradiation as a case study. The conversion of the risk-neutral control into the risk-averse one is also explained thoroughly to protect from loss of load during unpredictable carrier interruptions. How the conditional value at risk is incorporated in the objective function of EMS for μ G buildings. The conceptual mathematical modeling and its simulation results on this topic are also presented to solve the social and environmental issues in terms of energy cost as well as greenhouse gas emissions reduction, respectively, at the building level and increase the system stability in terms of network losses at the utility level.

Keywords: Conditional Value at Risk, Energy Management System, Microgrid, Risk Aversion, Resilience, unexpected conditions.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Women's Participation in Energy Transition Paradigm in Smart Grid Environment

Saqib Ali^{1,*}, Farhan Hameed Malik², Saima Akram¹ and Muhammad Muneeb Khan¹

¹ *Electrical Engineering Department, NFC Institute of Engineering and Technology, Multan, Pakistan.*

² *Department of Electromechanical Engineering Technology, Abu Dhabi Polytechnic, UAE*

*Corresponding author email: saqib.ali@nfciet.edu.pk

Abstract. An ever-growing population means an ever-increasing demand for energy. Today, it is becoming increasingly difficult to participate in market supply and demand due to the prevalence of unconventional and renewable sources. On the other hand, smart grid technology will help in balancing the supply and demand of the energy market. The main objective of this research paper is to identify barriers and enablers of smart grid expansion in Pakistan's environment. This would change the way of using smart grid technologies that are in the process to build and put these at the forefront of the country's impending energy revolution. In such a way, smart grid technologies contribute to the energy transition paradigm. Also, find out the factors that are driving or hindering smart grid performance. For this purpose, a case study of Pakistan's environment is investigated. Interviews with experts and document analysis are used to report on the driver's perception of the effectiveness of the smart grid. Each driver is rated using five different parameters i.e., the economic indicators, analysis of a company review, emerging technologies, regulatory assessment, and a look at the broader social picture. In addition to this, the smart grid faces six primary barriers that must be overcome before it can be widely adopted i.e., financial, organizational, technological, regulatory, social, and political. The investigation conducted in this study reveals that the socio-economic dimensions are the main stumbling blocks, while the sociological and technological dimensions are the main drivers. Smart grids simplify the transition to renewable energy sources and improve the efficiency of the energy market. Researchers can gain valuable comparison data for future studies by learning about the multiple drivers and barriers in smart grid deployment, as well as smart grid technologies.

Keywords: Conditional Value at Risk, Energy Management System, Microgrid, Risk Aversion, Resilience, unexpected conditions.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

A Fuzzy Logic based System to mitigate the Challenges of Outcome-based Education faced by Students of Remote Areas:

A Case Study of Khuzdar Region

Rehana Naseer*, Najeeb Ullah Jan, Shabbar Naqvi and Jalal Shah
Balochistan University of Engineering and Technology Khuzdar

* Corresponding author email: engrrehana@yahoo.com

Abstract. Outcome Based Education (OBE) is a concept that is spreading fast across the globe. In this regard, various accords are also signed. They include Washington Accord, Sydney Accord, Dublin Accord and Seoul Accord to name a few. Pakistan through Pakistan Engineering Council has adopted OBE through Washington Accord. Although OBE system has many advantages as being precise, clear, involving three domains of Bloom's Taxonomy including Cognitive, Psychomotor and Affective domains, still implementing it unanimously across the country is big challenge. This is due to different terrains of provinces, diversity of facilities and types of students, their understanding of the system etc. In this research, the challenges of OBE faced by Students of remote areas with a case study of Khuzdar have been investigated by creating a fuzzy inference system assisting to combat these challenges. This Fuzzy inference system based on quantifiable rule sets, having four inputs and one output variable. Input variables were identified with the help of existing literature and mapping that with the regional problems with the help of survey. We have created datasets based on literature and survey to obtain the output. Both Mamdani and Sugeno systems were created and their results were compared too. The results indicated that Mamdani system performed slightly better than the Sugeno system which implies that fuzzy inference system can mitigate the challenges of OBE and helped to achieve the SDG-4 of quality education particularly in context of Pakistan and specifically for Balochistan through quality tertiary education based on Outcome Based education.

Keywords: Artificial Intelligence, Outcome Based Education, Challenges, Khuzdar.



03-05 October 2023

Gasification of Plastic Waste and Coal for Hydrogen Gas Production

Nadia Khan^{1,*}, Syed Ali Ammar Taqvi² and Sabih Arshad¹

¹*Department of Polymer & Petrochemical Engineering, NED University of Engineering and Technology Karachi, Karachi.*

²*Department of Chemical Engineering, NED University of Engineering and Technology Karachi.*

* Corresponding author email: nadiakhan@neduet.edu.pk

Abstract. Gasification is a well-established method of hydrogen production from waste biomass, but it can also be used for energy production from waste plastic. This work presents the production of syngas through gasification. Waste plastic and coal are heated in the presence of a gasifying agent (such as steam or oxygen) to produce a syngas composed of hydrogen, carbon monoxide, and other gases. However, the process requires careful control of temperature, pressure, and gas flow to avoid tar formation and to optimize hydrogen yield. The simulation model was developed in Aspen Plus. The raw material comprises lignite coal and plastic waste, specifically Polypropylene (PP) and Polyethylene (PE), which are prevalent non-biodegradable plastics and take 20-30 years to totally breakdown. This non-biodegradable nature poses massive environmental concerns, which leads us for the selection of these two particular plastic waste materials along with a combination of lignite coal which is the lowest grade of coal and most abundantly found in Pakistan. The study includes various analyses, including manipulating gasifier temperature, adjusting steam/feed ratios, and considering Lower Heating Value (LHV) and Higher Heating Value (HHV). Considering the 50:50 waste plastic /coal mass ratio, the results indicate that at 800 °C with optimal S/F ratio of 1.1, 60% hydrogen and 30% carbon monoxide were produced.

Keywords: Synthesis gas; Gasification; Plastic; Coal



03-05 October 2023

In-Vitro Study on Polyvinyl Alcohol (PVA) Films Incorporated with Manganese Dioxide (MnO₂) Nanoparticles for Wound Healing Applications

Tooba Khan^{1, *}, Nafia Jawaid Kurd²

¹Salim Habib University

²NED University of Engineering & Technology

* Corresponding author email: tooba.khan@shu.edu.pk

Abstract. Throughout history, wound care has been a challenging situation and still poses an exceptional burden to our health care system. In the United States, the quality of life of about 2.5% of the total population is being affected by chronic wounds. In 2021, due to diabetes, the rise in the elderly population, and, obesity chronic wounds are still a challenge. Various types of wound dressings are used to cover wounds, reduce the loss of physiological fluids, and lessen the risk of infection. Polymeric materials are now being used in wound healing management with properties like flexibility, biodegradability, easier fabrication methods, and non-toxicity. PVA is a water-soluble, biocompatible, and hydrophilic polymer and has been used for wound healing for decades. Manganese nanoparticles are used in various biomedical and medicinal applications due to their exceptional and tunable physiochemical and biodegradability properties. This study aims to present the preparation and in vitro evaluation of flexible composite films incorporating Polyvinyl Alcohol (PVA) and Manganese Dioxide nanoparticles (MnO₂). The films were fabricated in various percentages of PVA i.e. 8%, 12%, and 15%. Various characterization tests are performed to evaluate the thickness, weight variation, folding endurance, swelling, degradation, pH stability, hygroscopicity, Young's modulus, and tensile strength of fabricated specimens. Results indicated that samples with PVA-MnO₂ NPs showed improved results than the pure PVA samples. In addition, the samples with higher concentration of PVA exhibit greater tensile strength and exhibit lower swelling, degradation, and hygroscopic properties. Further, In-Vivo studies should be performed to evaluate the biological performance.

Keywords: Biomaterial, Burden, Biodegradable, Manganese Dioxide (MnO₂), Swelling, Polyvinyl Alcohol (PVA), pH, Tensile Strength, Wound care.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Simulation design of Grid Tied Photovoltaic (PV) system of a 1.05 kWp DC for a geographical location of Tandojam, Sindh

Muhammad Muneeb Khan^{1,2}, Sadiq Ahmad¹, Sumera Jabbar², Sara Baloch², Muhammad AamirShafi³, Rubab Nazeer⁴, Jahangeer Faiz²

¹Department of Electrical and Computer Engineering, COMSATS University Islamabad, Wah Campus, Wah Cantt, Pakistan

²Department of Electrical Engineering and Technology, Institute of Southern Punjab Multan, Pakistan

³ Department of Electrical and Computer Engineering., COMSATS University Islamabad, Pakistan ⁴Department of Electrical Engineering, NFC Institute of Engineering and Technology Multan, Pakistan

* Corresponding author email: muneebkhanisp@gmail.com

Abstract. Due to rising costs and a lack of conventional sources of power generation, impoverished nations are experiencing an increasing number of energy crises. Pakistan has an abundance of resources for producing renewable energy, particularly solar energy. Although Pakistani markets have a wide variety of solar cells, modeling studies and contemporary technologies may aid the solar power industry in choosing the best site for an efficient power generating system. A photovoltaic (PV) system's performance analysis is largely influenced by its location and the power conversion inverter system's string count. The primary source of solar energy generation for photovoltaic systems is the number of irradiations on collector plane. In places with a lot of incoming direct and indirect sun rays, PV systems are advantageous. Tandojam got an average of 5.1 kWh/m²/day yearly in Sindh province, which is greater than many other Pakistani cities. A grid connected 1.05 kW_p DC/ 1 kW_p AC PV system is now being studied for the Pakistani region of Tandojam Sindh utilizing the PVSyst software version 7.4.0. Current study analyzes the design and performance ratio of PV systems, the total amount of energy produced by the system, as well as various losses of the system. Annually performance ratio (PR) for grid connected photovoltaic system is calculated 75.4% and Minimum PR of 71% is reported in the month of May, while highest PR of 80.4% is recorded in the months of January and December. This demonstrates that using a PV system to generate power is a practical way for Tandojam to meet its growing energy demands.

Keywords: Grid Tie, Photovoltaic system, PVSyst Simulation, Solar power generation, Silicon-poly solar cell 150 W_p, Solar radiations,



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Assessment of Biomethane Potential of Organic Substances Co-Digested with Animal Dung: a mini-review

Barkatullah Kandhro, Abdul Razaque Sahito and Sheeraz Ahmed Memon
Institute of Environmental Engineering and Management, Mehran University of Engineering and Technology Jamshoro, 76062, Sindh, Pakistan

Corresponding author

email: barkatullah.kandhro@faculty.muett.edu.pk, barkatullahkandhro@gmail.com

Abstract. The production of Municipal Solid Waste (MSW) is estimated at 1.3 billion tons per year and is estimated at 2.2 billion tons per year by 2025 according to a 2012 World Bank report. The fruit and vegetable waste (FVW) is another kind of organic waste that mostly comes from households and food markets. However, the major dumping approaches for municipal solid waste in Pakistan includes non-engineered landfills which causes major environmental impact on cities. This review study focuses on anaerobic co-digestion as the optimal method to treat organic substances and animal dung that are capable of regenerating methane (CH₄) and refueling with organic fertilizers. The FVW and buffalo dung were co-digested in batch reactors at various I/S ratios on mesophilic condition to assess methane potential. A biogas yield of 0.87 Nm³/kg.VS with 57.58% CH₄ was perceived. Where fruit fractions are higher than vegetable, the AD process becomes unstable with low biogas yield and low methane concentration. Increasing the FVW ratio from 20% to 50% added 0.23-0.45 m³ CH₄/kg.VS to the methane yield and reduced the VS reduction slightly. Anaerobic co-digestion of FVW is useful and presents a major promising solution in order to increase methane production. Thus, it is suggested to ban the dumping of FVW in Pakistan along with other wastes. Also the Government of Pakistan should immediately take steps to mechanize the biodegradable waste segregation system at the production source for methane production.

Keywords: Fruit Vegetable Waste; Anaerobic Co-digestion; Methane Production; I/S Ratio



03-05 October 2023

Enhancing Methane Production by Co-Digestion of Organic Substances with Buffalo Dung

Barkatullah Kandhro, Ayesha Rasheed, Syeda Ghulam Fatima Naqvi and Saeed Samoo

¹*Institute of Environmental Engineering and Management, Mehran University of
Engineering and Technology Jamshoro, 76062, Sindh, Pakistan*

Corresponding author

email: barkatullah.kandhro@faculty.muett.edu.pk, barkatullahkandhro@gmail.com

Abstract. Energy has turned into a significant essential for the financial improvement of a country. Pakistan is as currently confronting a serious energy crisis, which is expensive and multi-dimensional. This outrageous lack of energy resources in the nation has led to an increment in fossil fuel prices. Currently world is moving towards renewable energy resources specially biomass. The fruit and vegetable waste (FVW) is essential component of Municipal Solid Waste that mostly comes from households and wholesale markets. The FVW is biodegradable in nature and there is no proper method to manage this type of important organic waste. This study examines the maximum potential of FVW as a source of renewable energy through anaerobic co-digestion in Biochemical Methane Potential (BMP) setup at mesophilic condition. The characteristics of FVW were analyzed which includes pH, total solids, and volatile solids that affect methane production in the anaerobic digestion process. The pH was found in the range of 6.8-7.5 in all reactors which is favorable for methanogens bacteria in digestion process. Different ratios of FVW and buffalo dung were used to detect the suitable ratio which produces methane. This suitable ratio was utilized to assess the maximum methane by dosing iron oxide nano particles from 25 mg/l to 125 mg/l in each reactor bottle.

Keywords: Energy crisis, renewable energy, Anaerobic Co-digestion, and methane production



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Optimization of Electrocoagulation Oxidation Unit Treating Textile Dye

Barkatullah Kandhro¹, Muhammad Tahir¹, Mudasar Hussain¹ and Shoukat Ali¹

¹*Institute of Environmental Engineering and Management, Mehran University of Engineering and Technology Jamshoro, 76062, Sindh, Pakistan*

Corresponding author

email: barkatullah.kandhro@faculty.muets.edu.pk, barkatullahkandhro@gmail.com

Abstract. Textile industries are responsible for one of the major environmental pollution problems in the world, because they release undesirable dye effluents. Textile wastewater contains dyes mixed with various contaminants at a variety of ranges. In this study, Electrocoagulation method has been used for the treatment of textile wastewater obtained from a textile factory. Electrocoagulation (EC) is an excellent and promising technology in wastewater treatment, as it combines the benefits of coagulation, flotation, and electrochemistry. This study examines the electrocoagulation treatment of textile wastewaters utilizing iron and aluminium electrode materials. The influence of pertinent wastewater properties like conductivity and pH, as well as significant process parameters like current density and operation duration on the turbidity removal efficiency and chemical oxygen demand (COD) have been investigated. According to the data, iron is more effective than aluminium at removing COD and uses less energy when used as sacrificial electrode. The Indigo dye-fixing electrocoagulation procedure were used to treat the dye effluent under a variety of conditions, including different current densities and the impact of pH. For each method, the effectiveness of COD reduction, colour removal, and power usage were examined. Ion exchange is utilized to further increase the removal efficiency of colour, COD, Fe concentration, Suspended Solids, Turbidity, pH and Color which are the main goals of electrochemical treatment. The present study have indicated that electrocoagulation treatment followed by ion-exchange methods were very effective and were capable of elevating quality of the treated wastewater effluent to the reuse standard of the textile industry.

Keywords: Electrocoagulation, Wastewater Treatment, Dye, Textile Industry.



03-05 October 2023

Modeling of Sachal Wind Project, Jhimpir and analysis of voltage regulation of the model with Sliding Mode Control-based Cuk Converter

Ramsha Panhwar*, Asadullah, Aamir Sario, Ashfaque Ahmed Hashmani and Anwar Ali Sahito

¹*Department of Electrical Engineering, Mehran University of Engineering & Technology, Jamshoro, Pakistan*

*Corresponding author email: ramshapanhwar1975@gmail.com

Abstract. Pakistan, rich in wind energy, currently incorporates 36 operational wind farms. Sachal Wind Project, Jhimpir, Sindh is a CPEC project having 33 wind turbines of 1.5MW each, cumulatively supplying 49.5 MW to the national grid. As wind speed is stochastic, it causes variations in the turbine voltage and its power generated. In the absence of a suitable mechanism that regulates the turbine voltage, wind turbines fail to supply the grid with rated power at a constant voltage. This is poor voltage regulation, and it deteriorates power quality and reliability. Turbine manufacturers employ power electronics DC-DC converters with Maximum Power Point Tracking (MPPT) control to maintain the voltage. Among the different DC-DC converters, the Cuk converter is an interesting topology. One of the simplest and most robust MPPT controls is Sliding Mode Control (SMC). This article is dedicated to developing a model of one of the 33 grid-connected turbines of Sachal Wind Farm on MATLAB Simulink using the system data and secondly, to addressing the problem of voltage regulation in the Wind Energy System (WES) using an SMC Cuk converter. A comprehensive design of each module of the WES is laid out. All modules are individually simulated and later integrated. The final 1.5MW Sachal Wind Farm model is analyzed under varying supply voltage conditions. The simulation results show that rated power is delivered to the grid at rated voltage despite the supply variations, and the overall results of the model match with the system data validating the model design and performance.

Keywords: Cuk converter, Sliding Mode Control, Sachal Wind Farm Jhimpir, voltage regulation, WES and SMC.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Decolorization of distillery waste water by using low-cost adsorbents

Mehwish Qaseem, Syeda Alishba Fatima & Muhammad Yasir Khan*

*Department of Chemical Engineering, University of Karachi, Main University Road
Karachi - 75270 Sindh, Pakistan*

*Corresponding author email: myasir@uok.edu.pk

Abstract. Pakistan's distilleries contribute a considerable amount to its economic growth and exports. A ton of molasses containing 46-50 percent fermentable sugar produces 240-260 litres (96.3% pure alcohol) and around 12-15 litres of residual liquid waste (spent wash). These industries generate a significant amount of spent wash, considered one of the most environmentally hazardous industries due to the release of highly toxic wastewater that threatens the ecology of the surrounding area and the environment. A dark brown liquid waste with a high organic loading, very high chemical oxygen demand (COD), and a high biochemical oxygen demand (BOD) is also reduced in fertility by decreasing soil alkalinity and manganese content. For spent wash, a number of processes have been applied, including aerobic and anaerobic treatment, adsorption, coagulation, physicochemical treatment, and oxidation treatment. This study will use FE-SEM, XRD, FTIR, and UV spectrophotometers to characterize synthesized materials and remove colour. Adsorption produces high-quality products economically and cost-effectively. Standard methods will determine pH, acidity, DO, BOD, COD, EC, hardness, total solids, and other physicochemical parameters.

Keywords: Decolorization, distillery, Wastewater, Characterization



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Cu-Doped ZnO Nanoparticle Electrode for Precise and Rapid Sodium Ion Detection in Water Samples

Sadaf Samreen, Muhammad Saquib Ali & Muhammad Yasir Khan*

*Department of Chemical Engineering, University of Karachi, Main University Road Karachi
- 75270 Sindh, Pakistan*

Corresponding author email: myasir@uok.edu.pk

Abstract. Excessive consumption of sodium ions (Na^+) can result in high blood pressure, linked to various health issues. To regulate Na^+ intake and manage food flavor, it is crucial to determine the Na^+ content in food in real time. Researchers have developed an electrochemical sensor that utilizes cyclic voltammetry (CV) to detect Na^+ at room temperature to address this concern. The sensor used a Cu-doped ZnO-modified electrode and was found to be highly selective in detecting Na^+ . The Cu-doped ZnO nanoparticles (Cu-ZnONPs) were synthesized using a solution process and placed on a glassy carbon electrode (GCE). The sensor exhibited excellent sensitivity, selectivity, linear response, stability, and reproducibility in detecting Na^+ . It had a low detection limit of 0.1 ppm for known water samples and was successfully employed to measure Na^+ levels in actual water samples. This electrochemical sensor is a valuable tool for the real-time measurement of Na^+ levels in drinking water samples

Keywords: Nanoparticles, electrochemical sensor, glassy carbon electrode, drinking water



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Detecting heavy metals in underground drinking water using a nanomaterial-based electrode

Syeda Alishba Fatima, Muhammad Saquib Ali & Muhammad Yasir Khan*
*Department of Chemical Engineering, University of Karachi, Main University Road Karachi
- 75270 Sindh, Pakistan*

*Corresponding author email: myasir@uok.edu.pk

Abstract. In Pakistan, a large number of people are affected by the presence of heavy metals in groundwater as well as drinking water. Iron (Fe), copper (Cu), cadmium (Cd), chromium (Cr), lead (Pb), and especially arsenic (As) are the heavy metals present in higher quantities in water as compared to allowable limits by WHO and NEQS. With the advancement in the detection of these heavy metals and nanomaterials, they have been playing a vital role. Despite the many properties of nanomaterials, their high sensitivity, selectivity, effectivity, onsite detection portability, and low cost are important factors for selecting. Heavy metals, particularly arsenic, found in drinking water can be detected by metal oxide hybrid sensors even at low concentrations. In this research, nanomaterial, hybrid sensors are being designed to detect heavy metals at low concentrations. XRD, SEM, UV adsorption and other characterization techniques will be used.

Keywords: Nanomaterials, Chemical sensor, Heavy metals, Drinking water



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Sustainable natural dyeing from agricultural and food waste

Rabia Almas Arain

*Textile Engineering Department, Mehran University of Engineering and Technology,
Jamshoro*

Corresponding author email: rabia.arain@faculty.muuet.edu.pk

Abstract. Nowadays producing sustainable natural colors from waste materials has become of prime importance. The proposed work, aims to provide a “green” technique for the mordanting and dyeing of cotton fabric with natural sustainable dyes from agricultural and food waste. For providing a complete “green” and ecofriendly dyeing process, tannins and alums were used as bio mordant. Green extraction of dyes were performed without any hazardous chemicals. Different designs are produced for creative work. Color properties were analyzed in detail. Fastness properties shows that new and traditional natural dyes can be used as a cheap source of sustainable natural dyes from waste materials and these wastes can be converted into natural coloration of textiles.

Keywords: Sustainable, natural dyes, agricultural and food waste, designs



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Smart Hand Glove with Obstacle Detection

Zahid Siddique, Sami Ullah Khan, Yousaf Masih*, Gul Munir, Wasim Munir,
Department Of Biomedical Engineering, Salim Habib University, Karachi, Pakistan

*Corresponding author email: yousuf09rajput@gmail.com

Abstract. Humans are born with the ability to see, hear, and interact with their surroundings. Unfortunately, some people are differently abled and do not have the ability to use their senses. Such people rely on alternative modes of communication, such as sign language. This creates a significant barrier for people with hearing and speech impairments when they try to interact with others who are unfamiliar with sign language. Communication is the only medium through which people with disabilities (dumb and deaf) can share their thoughts and communicate with others. However, there are numerous difficulties in communicating with disabled people. As a result, a disabled person cannot compete in a race with a normal person. Dumb people typically communicate using sign language, but they have difficulty communicating with others who do not understand sign language as a result, communication between these two communities is hampered. e. The use of smart gloves by people with disabilities helps the state grow and allows them to interact with the general population.

Keywords: Smart gloves, Obstacles detection, Modes of communication.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Design and Fabrication of 15 TR Cooling Tower

Ifrah Asif, Mirza Hammad Baig, Umer Nadeem Abdullah*, Sohail Hasnain, Qasim Siddiqui.
NED University of Engineering & Technology, Karachi

*Corresponding author email: abdullah4301614@cloud.neduet.edu.pk

Abstract. In response to escalating demands for precise temperature and humidity control in sectors like petrochemicals, plastics, electronics, and pharmaceuticals, this study focuses on addressing these needs, particularly in nations like Pakistan where efficient air conditioning is pivotal for productivity and cost-effectiveness. Stringent water usage regulations necessitate alternative cooling methods, leading to the prominence of cooling towers as reliable heat removal systems across various industries. However, despite their widespread adoption, cooling tower design remains predominantly rooted in experiential knowledge and lacks comprehensive technical exploration.

The central objective of this research is to bridge this gap by proposing a cooling tower design for industrial applications based on provided data. The chosen methodology, the Merkel method, streamlines thermal evaluation equations for cross-flow cooling towers, hinging on specific assumptions. To achieve this, the study employed extensive research and calculations, utilizing SolidWorks software to generate a design that aligns with the Merkel method.

The study's key findings encompass critical insights into relative humidity, cooling tower system efficiency, evaporation loss, and the Cycle of Concentration (COC) for the cooling tower and more. The implications of these findings are manifold. Industries seeking refined cooling solutions can leverage this research for enhanced productivity. Policymakers can utilize the insights to formulate regulations pertaining to industrial water use. Moreover, researchers in the field of thermal management gain valuable insights into cooling tower dynamics. Ultimately, this research underscores the synergy between scientific inquiry and practical applications.

Keywords: Industrial Cooling Tower Design, Merkel Method, Precise Temperature Control.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Experimental investigation of enhancement in sedimentation of particle species in a modified settling tank

Faisal Khan, Naveed ul Hasan Syed, Naseer Ahmed Khan

Department of Chemical Engineering, University of Engineering and Technology Peshawar

Corresponding author email: faisalkamilkhan@gmail.com

Abstract. Sedimentation is an important phenomenon and finds its application in various industrial processes such as wastewater treatment, coal and mineral processing industries. The segregation of solid particles from liquid streams through sedimentation is a crucial process, however, it is a slow and needs time. Nevertheless, the sedimentation of solid particles can be enhanced by utilizing inclined channels in settling tanks, which provide a larger settling area compared to vertical channels. This research work utilized a modified settling tank, incorporating inclined channels (patent submitted), to investigate the settling behavior of two different feeds, coal and marble waste, size ranging 125 to 250 microns. The experimental work shows a higher settling rate of particles. Furthermore, a comparison between the settling rate of solid particles in the modified settling tank and a conventional vertical settling tank was also conducted. The results indicated a significant increase in the settling rate within the modified settling tank compared to the conventional vertical tank. The results in the form of solid volume fraction along the tank height have been demonstrated.

Keywords: Boycott Effect, Inclined Channels, Settling, Segregation, Wastewater treatment.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

An analysis of traffic noise pollution and its impact on schools in Hyderabad: A modeling approach

Soomal shabir*, Abdul Razaque Sahito

Institute of Environmental Engineering & Management (IEEM) Mehran University of Engineering and Technology Jamshoro

*Corresponding author email: soomal17ee27@gmail.com

Abstract. Noise is considered the world's third most hazardous type of pollution after air and water, according to the WHO. High traffic volumes and high speeds on highways create problems for surrounding areas due to traffic noise. The issue of vehicular traffic noise is contributed to by a variety of vehicles, including heavy and medium trucks, buses, cars, and two-wheelers. The goal of this study is to evaluate the noise emission levels generated by road traffic in Hyderabad and its effects on the learning environment of schools. The traffic noise levels inside different classes of Government Elementary College of Education Men Hyderabad, Noor Muhammad High School, and Muslim Science College vary from 55 to 72 dB. These levels are very high for a conducive learning environment. In MS excel with help of regressions analysis correlation equations have been obtained. Correlation equations have been obtained between noise levels and the number of vehicles, type of vehicles, atmospheric temperature, wind speed, and relative humidity. Traffic noise pollution modeling predicts traffic noise levels very accurately.

Keywords: Noise pollution, Impact on schools, Regression modelling.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Developing nanomaterial-based adsorbents for removing dyes from textile wastewater

Mehwish Altaf and Muhammad Yasir Khan *

*Department of Chemical Engineering, University of Karachi, Main University Road
Karachi - 75270 Sindh, Pakistan*

*Corresponding author email: myasir@uok.edu.pk

Abstract. Industrial wastewater treatment is always a significant issue worldwide because of its impact on health and the environment. Industrial wastewater has become a major source of water pollution, particularly in third-world countries. In the presence of these natural resources, their dependent ecosystems, and the environment, chemically contaminated textile effluent damages the soil and water quality. Researchers and the textile industry are working to develop new methods to treat textile wastewater. Environmental pollution is a serious issue facing the textile industry.

There is a great deal of attention needed to the issues caused by textile wastewater in Pakistan, as textiles are one of the largest industries in the country. As the textile industry consumes a large amount of water, there is an increased emphasis on sustainable water use in industry these days. Consequently, textile wastewater treatment continues to be costly, inefficient, and consumes more time and energy.

Studies have shown that nanomaterials tend to remove metal oxides, salts, and other organic and inorganic compounds from water. As a result of these properties, nanomaterials like zinc oxide and graphene are suitable for treating textile effluent that is both energy efficient and cost-effective. Different nanoparticles will be allowed to contact textile wastewater containing salts, emulsifiers, alkali and a substantial amount of dyestuff, and their adsorption capacity will be studied. Water testing will be conducted on a physical and chemical level to determine if it meets the water quality parameters for use in the wet processing of textiles. Recovering dye from the adsorbent will also be an important objective of this study.

Keywords: Nanomaterials, Adsorbents, Dyes, Wastewater.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Tracing Veins using Near Infrared Imaging Techniques

Anoosh Fatima*, Shanzae Zubair, Amna Wagley
Salim Habib University, Karachi, Pakistan

*Corresponding author: anufatima92@gmail.com

Abstract. Venipuncture is widely used in hospitals for a variety of treatments like drug administration, supplying nutrients, drawing blood samples etc., with a reported 95% of hospitals reporting its use on daily basis. Phlebotomists mainly depend on use of tourniquets and skin palpitation for detecting and locating the site of a venipuncture that leads to a 46% error rate due to peripheral difficult venous access (PDVA) which is often a result of dehydration, baby veins, dark skin complexion etc. This leads to hematoma, nerve damage, extravasation, arterial puncture, thrombus and emboli which can sometimes prove fatal. A vein locator is a device that aids in reducing this error by clearly drawing out the venous patterns. It uses principles of near infra-red (NIR) to capture vein patterns as NIR has the ability to be absorbed by deoxygenated blood whereas the peripheral structures reflect it. The obtained images aren't very lucid which is why it is to be processed. After preprocessing, the vein will be traced by using medical image technique such as CLAHE and RSHE. Gaussian filters, Gabor filters etc. which draws out a clear pattern of the vein in terms of its eigenvalues. The processed images are subjected to feature extractors like BSIF and HoG that are used to define these images into distinct features like different histogram and eigenvalues that can be used to train a supervised machine learning algorithm using KNN (k nearest neighbor) and decision tree techniques. CNN is used to produce an elaborate model that is integrated with the camera to trace a pattern that assists phlebotomists during venipuncture, significantly reducing the error in interpreting the veins pattern. The device would mostly depend on its software which would comprise of an image processing unit, which would extract the vein pattern from the dataset. The hardware of this device would comprise of an NIR sensitive camera which has a CMOS filters unit which is specialized in processing the NIR wavelengths because instead of photochemical films they use sensors to convert light signal into electrical signals. Implementing the principles of AI specifically Machine Learning sub-categorized as Supervised Learning where the role of classifiers such as CNN or KNN can be implemented in image acquisition and processing.

Keywords: Venipuncture, Machine learning algorithm, Infrared Imaging Techniques



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Sustainable Modular Recovery Units

Beenish Babar

Dawood University of Engineering & Technology

Corresponding author email: beenishbabar3@gmail.com

Abstract: Architecture of this era is moving towards state of compaction and visualizing reality of the future, making you face the challenges of today's problems. This research paper focuses on architectural design techniques of sustainable modular recovery units used for emergency or any pandemic crisis. The aim is to showcase new alternatives to hospital projects and emphasize the importance of less time-consuming, lightweight structures that fulfill social duty, provide effective counteraction against diseases, and offer quick isolation rooms for underprivileged citizens. The research methodology employed in this study involves the analysis of case studies from literature sources worldwide, with a focus on the Leishenshan construction process in China. The key findings emphasize the suitability of assembled structures for disaster response and therapeutic emergency systems. The use of modular composite design and prefabricated construction methods plays a significant role in the success of these structures. The results have implications for governments, healthcare authorities, and architectural professionals, urging them to collaborate and develop standardized guidelines for the construction and amalgamation of modular structures. The emphasis should be on creating insubstantial and easily deployable units that can be quickly assembled during emergencies. The research highlights the significance of prefabricated construction for recovery units in managing potential virus outbreaks in the future. By adopting these findings, societies can enhance their preparedness and response capabilities to effectively address healthcare crises.

Keywords: Modular, prefabricate, sustainable, emergency, recovery units



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

**ANALYSIS AND UTILIZATION OF RESIDUAL SPACES UNDER FLYOVER
BASED ON SUSTAINABLE DEVELOPMENT: A POST PANDEMIC SCENARIO**

Safia Saleem

*Department of Architecture and Planning, Dawood University of Engineering and
Technology, Karachi, Sindh, Pakistan*

Corresponding author email: afyasaleem123@gmail.com

Abstract. Rapid urbanization in Karachi is destroying the nature of inner-city spaces and as a result of isolated and inadequate planning, spaces under flyovers are becoming a physical barrier acting as dead space which is then been damaged because of illicit activities being performed there. Nowadays, adaptive reuse has become a hot topic worldwide and can be applied to explore the grey spaces left under these flyovers with creation and innovation to regenerate the appealing beauty of renewal fabric. This study focuses to analyze the current status of the most neglected spaces left under elevated bridges in the city Karachi, and aims to assess and compare available national and international case studies considering socio-economic aspects. Research methodology will depend on the sampling technique in which questionnaire surveys and interviews will be carried out in groups that collect both qualitative and quantitative information on criteria that includes the current conditions, the required facilities and the demographics.

Instead of being occupied by the local druggist, these spaces can be used for modular shelter purposes, worship or children play area. They can improve overall pedestrian network connection. Can provide vending opportunities, cohesive well lit public spaces in the form of pocket parks, shaded communal spaces for aged people and turning this residual area in green space and installing air purification systems to attain healthy air quality. Endless possibilities are there to turn these haunted spaces into friendly ones which are only possible with the collaboration of urban designers, government and local communities.

Keywords: residual spaces, leisure venues, representation of urban fabric, sustainability, modularity



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

System Identification of the VCM process

Tuba Siraj Ansari

NED University of Engineering & Technology

Corresponding author email: tubasiraj@cloud.neduet.edu.pk

Abstract. This study presents the development of a steady-state simulation for a Vinyl Chloride Monomer (VCM) production plant utilizing the Aspen Plus process simulation software. The investigated plant involves reactors and columns characterized by inherently nonlinear behavior, rendering conventional linear modeling approaches inadequate for accurate representation. The research delves into the challenges posed by the nonlinear nature of the system components and underscores the limitations of linear models in capturing the intricacies of the VCM plant.

The development of a suitable model is the most challenging problem for the reactors due to their nonlinear and complex behavior. First Order Plus Time Delay (FOPTD) models using transfer functions and Nonlinear Autoregressive with Exogenous Input (NLARX) models described by sigmoid function were used in this study to identify the dynamics of the industrial direct chlorination reactor, oxy-chlorination reactor and EDC Cracking unit.. The results demonstrated that linear models were not able to approximate the behavior of system whereas the NLARX models performed well in capturing the nonlinear dynamics of reactors.

Keywords: nonlinear, dynamics, Vinyl Chloride Monomer (VCM).



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Challenges and Limitations of Glucose Monitoring Devices and its Future Perspectives: A concise overview

Amna Shaikh^{1,2,*}, Rahima Ismail¹, Hina Shah¹ and Sidra Batool¹

¹*Sir Syed University of Engineering & Technology, Karachi, Pakistan*

²*Salim Habib University, Korangi Creek, Karachi, Pakistan.*

*Corresponding author email: amnashaikh1607@gmail.com

Abstract: The rapid increase in diabetic patients is alarming for the world. In wake of this startling condition, the glucometer is of great concern for the diabetic patients to monitor their glucose level. Rapid action devices are developed to test sudden drop or rise in the blood glucose level of the body which can be deadly for the diabetic's patients. However, many of these devices have limitations. The prime concern of this review is to discuss and emphasize the limitations of available glucometers and to suggest possible ways which can be practice in future research to find the possible solutions. Different articles have been reviewed to understand and focus on the challenges faced by currently available glucometers, and their scope in the future. This paper indicates that further research in the field of AI (artificial intelligence) would result in noninvasive or minimally invasive glucose monitors that can monitor glucose continuously with a high degree of accuracy.

Keywords: Glucometer, CGM, Prickles Glucometer, Invasive and Noninvasive Glucometer Minimally Invasive Glucometer.



Diverse load management in renewable energy system based smart distribution grid using battery management system

Fiza Fatima Arain* and Wasi Hyder Larik

Department of Electrical engineering, Energy system engineering

*Corresponding author email: ffiza630@gmail.com

Abstract: Divergence in electricity demand is caused by rapid industrialization, inadequate maintenance, and impractical regulatory systems. Unfortunately, depletion of fossil fuels resources from the earth surface has urged the world towards the installation of Renewable Energy System (RES) based Distribution Generation (DG). Renewable energy system (RES) based DG system have been challenged with many technical issues and their optimization is also not easy to achieve due to their intermittent nature. Hence, load management is considered as an open challenge for RES based DG system. Various algorithms and techniques are used to achieve load management in RES based DG system. The promotional way to achieve the balanced load is to store power during low demand hours and utilize it during peak hours, so they require strong battery management units. There are various algorithms and techniques to overcome this challenge. Arguably, the most effective way to achieve balanced load is to store power during low demand hours and utilize it during peak hours. Accomplishment of this task requires Battery Management Units (BMUs). There are two different algorithms used in battery management systems. The first algorithm determines the BES (Battery energy storage) participation in voltage regulation in terms of their installed capacity whereas the second one modifies the BESs performance in terms of their state of charge (SoC) to prevent the excessive saturation or depletion of batteries. This study aims at proposing a controller that enables the effective use of storage capacity in different conditions. Finally, the simulation results based upon real data of a radial distribution feeder validate the effectiveness of this approach.

Keywords: Renewable Energy systems (RES), Battery Management Systems (BMS), Distributed Generation (DG)



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Solar Panel Dual Management System Using IoT

Muhammad Faiz Ul Hassan*, Mirza Umair Ul Haq and Ali Hassan

Department of Electrical Engineering, University of Engineering & Technology Taxila

*Corresponding author email: mfaizulhassan65@gmail.com

Abstract. The rapid growth of solar energy systems has necessitated the development of innovative approaches to maximize energy generation and ensure optimal system performance. This abstract presents a solar panel dual management system utilizing IoT (Internet of Things) for tracking, cleaning, theft protection, and load management. The system incorporates advanced IoT technologies, including sensors, monitoring devices, communication networks, and data analytics, to enable real-time monitoring, control, and optimization of solar panel installations. Dual-axis tracking mechanisms precisely orient the panels to track the sun's movement, maximizing energy capture throughout the day. Automated cleaning mechanisms, triggered by real-time data or predefined thresholds, ensure optimal panel cleanliness, leading to sustained energy production and system efficiency.

Real-time data analysis enables quick identification of issues, facilitating timely responses and minimizing system downtime. Load management capabilities optimize energy consumption and switched load between Solar and WAPDA according to storage and load condition. one is primary load and other is secondary load.

The future working scope of this dual management system holds significant potential for advancements. Advanced tracking and positioning algorithms, intelligent cleaning mechanisms, predictive maintenance models, and self-healing capabilities will further enhance system efficiency and reliability. Energy forecasting, grid integration, blockchain-based peer-to-peer energy trading, integration with smart buildings and IoT ecosystems, and robust cybersecurity measures will contribute to the system's seamless integration into the broader energy landscape. In conclusion, the solar panel dual management system using IoT offers a comprehensive solution for maximizing energy generation, improving system reliability, optimizing load management, and integrating renewable energy into the grid. Through continuous advancements in IoT technologies and system optimization, this approach represents a significant step towards achieving a sustainable and efficient future powered by solar energy.

Keywords: Solar Panels, Tracking, Cleaning, Monitoring, Load management



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Reinforcement effect of NCC on the mechanical properties of NBR

Asra Nafees*, Saud Hashmi, Rafiq Ahmed and Nabiha Syed

Department of Polymer & Petrochemical Engineering, NED University of Engineering & Technology.

*Corresponding author email: asra@neduet.edu.pk

Abstract. Reinforcing fillers are the additives that are used to improve the mechanical properties of the rubber. The reinforcing filler physically bond the fillers network and provide strong coupling between polymer and other fillers. Conventional fillers used with rubbers such as carbon black and silica are reported for their hazards to environment and human health. To overcome this challenge organic fillers are used to maintain sustainability. In mastication and processing of rubber, the incorporation of organic (nano) filler as a reinforcing material is one of the important success of researchers. The organic (nano) filler increases the surface area and give outstanding strength. The properties of the rubber product decreases if these filler are not dispersed properly in rubber compound. In this study, organic fillers such as Nano Cellulose Crystal (NCC) are used with Nitrile Butadiene Rubber (NBR) for enhancement of mechanical properties. NBR latex was initially mixed with NCC ranging from (1-4) PHR in a beaker using a magnetic stirrer followed by drying in oven at 90°C for 24 hours. The dried sample with initiator, accelerator, wax and curing agent was masticated using a two roll mill at 70 °C. NBR NCC nano-composites sheets were prepared using hot press at 160 °C. The addition of NCC as reinforcement in NBR resulted in increased tensile strength up to 2 PHR and the hardness of the composite also increased whereas the cure time decreased. Increasing the filler content further reported decrease in properties due to poor dispersion of particles in the matrix.

Keywords: Nano Fillers, Nano Cellulose Crystal, Nitrile Butadiene Rubber.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Ergonomics Assessment of Work-Related Musculoskeletal Disorders using Vicon Motion Capture System- A case study of Sedentary Tasks

Jahangeer Shakeel*, Miskeen Ali, and Shakeel Ahmed Shaikh

Department Industrial Engineering & Management, Mehran University of Engineering and Technology, Jamshoro

*Corresponding author email: jahangir2002k@yahoo.com

Abstract. This work studies different sedentary postures and their effects on the vertebral column. It is based on subjective as well as objective measures. The subjective measures were taken with the help of Physical well-being and Vicon. The objective measurement was taken on RULA. The experiment conducted on computer and six persons perform task by the subject 20 minutes each the task performs on the desktop in different posture in which the subject sit for 20 minutes duration and the second experiment were the pilot study of the research. The advancement in technology has resulted in long hours sitting jobs and playing video games on computer have restricted the physical activities on young generation. This research compares different postures of subjects performing desktop computer to understand their impacts on musculoskeletal system. The comparison will expose the angles that effect the vertebral column and cause the discomfort in the vertebral column while performing any sedentary task. With the help of comparative analysis, I will be able to determine the correct sedentary postures for performing various tasks. The level of discomfort experienced while working at a computer was significantly lower when active sitting compared to the position of recline.

Keywords: Work Related Muscular Disorder, Sedentary task, Motion Capture, RULA.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

**Prioritizing the Ventilation Index System for Sustainable Underground Mining
(A Case Study of Lakhra Coalfield)**

Mushtaque Ali Panhwar¹, Saleem Raza Chalgri^{1, *}, Shakeel Ahmed Shaikh², Muhammad Burhan Memon¹

¹ *Department of Mining Engineering, Mehran University of Engineering & Technology Jamshoro*

² *Department of Industrial Engineering & Management, Mehran University of Engineering & Technology Jamshoro*

*Corresponding author email: saleem.raza@faculty.muet.edu.pk

Abstract. In the underground mining operation, a safe ventilation system is an essential component. A good ventilation system always ensures that the regulatory requirements are properly met within the mine, ensuring sufficient fresh air supply within economic limits. Many factors may influence the decision makers for designing and constructing the key factors for designing an efficient ventilation system. In this study Lakhra Coalfield were taken as case study and multiple factors were identified from relevant literature. Experts were chosen from the field and were given identified factors to weight the factors using Saaty scale (1 to 9). Major identified factors were sent in Delphi rounds to Experts. Result suggests that five major criteria were prioritized after consultation with Mine experts i.e., Mine Dimension, Mine Environment, Fan type and characteristics, technical and workforce deployment. These criteria were further sub-divided in 23 sub-criteria, all these criteria were evaluated using Fuzzy AHP. The evaluation suggests that current ventilation system at Lakhra Coalfield need upgradation to improve the operational capability for safe and sustainable underground mining operation.

Keywords: Ventilation index system, Sustainable underground mining, Lakhra coal



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Design and development of a neural network controller for a submarine

Muhammad Azeem*, and Mukhtiyar Ali Unar

Mehran University of Engineering & Technology

*\

Corresponding author email: muhammadazeem01@gmail.com

Abstract. By the survey of several organizations on the international standard for the marine vehicles it is to conclude that the dynamics of marine vehicles are classified into two main areas such as kinematics and kinetics. The kinetics deals to the force and moment of the ship while the kinematics deals with the orientation and position of the ship. The design of automatic controller for time varying non-linear system has always remained a challenge for researchers. Usually linear controllers are used for the controlling the parameters of submarine such as PID, Linear Gaussian LQG or pole placement the submarine vehicles dynamics are generally non-linear. The parameters of the submarine vary with operating conditions as well as environmental condition. The operating condition includes waves and sea current while the environmental condition includes waves and depth of water. The submarine control is a multivariable control system.

Both heading and depth of the vehicles are to be controlled through the development of the artificial neural network (ANN) controller. These above problems have been reduced with the appropriate control model design. We propose a feed forward type of ANN which controls and supports all the possible parameters of submarine.

Keywords: Neural network control, Submarine dynamics, MATLAB environment, Linear Gaussian LQG.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Musical & Non-musical Song Classification Using Neural Network

Areza Bhanbhro^{1,*}, Abeer Mukhtiar¹, Sunbul Bhangwar¹, Mohsin Ali¹, and Akhtar Hussain Jalbani²

¹*Department of Information Technology, Quaid-e-Awam University of engineering science and Technology, Nawabshah, Pakistan*

²*Department of Computer Science, Quaid-e-Awam University of engineering science and Technology, Nawabshah, Pakistan*

*Corresponding author email: bhanbhroareeza@gmail.com

Abstract. This paper focuses on solving the problem of pattern classification between songs (musical or non-musical) and non-song audio clips. The use of a machine learning model will help us to achieve our goal which is to automatically detect if a recording is a song (musical or non-musical) or non-song. As songs are of two categories musical and non-musical since it is difficult to differentiate between non-musical songs and non-song patterns. Therefore, there is a need for such systems that differentiate between song (musical or non-musical) and non-song patterns from the given audio clip. The preprocessing steps have been applied for feature selection and extraction. The features extracted are tempo, sample rate, duration, pitch, and intensity. The Back-propagation Multi-layer perceptron neural network model is used for training the model and testing the dataset. This system will distinguish between a song (musical or non-musical) and a non-song (such as speech and dialogues). The training data for the dataset included speeches and conversations recorded in Hindi and Urdu language for non-song audio files, as well as the audio of various male and female singers from Pakistan and India for song audio files in Hindi and Urdu language. After testing the classifier with various audio files, the results for the categorization of the song (musical or non-musical) and non-song are 90% correct accuracy.

Keywords: Songs (musical or non-musical), Non-songs, Pattern Classification, Multi-layer Perceptron Neural Network.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Machine Learning Approach for Cyber Bullying Detection on Social Media Platform

Saba Yousha¹, Sajjad Ali Memon², Shahnawaz Talpur¹

¹Department of Computer Information & Engineering, Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan

²Department of Telecommunication Engineering, Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan

Corresponding author email: sabayusha@gmail.com

Abstract. The Internet and Electronic Media have taken over the world and Social media platforms are now among the most popular way to communicate. However some users harm these platforms and “Cyber bullying” is the major problem in this regard. Cyber Bullying is the type of bullying that uses technology to disrespect and hurt others. To combat this issue numerous researchers have prevented ways and methods but still detection is needed to overcome this menace. This study attempts to highlight an approach to detect Cyber bullying on Social Media platform on Twitter criticizing someone might have negative impact on the victim. Literature claims that past research did not account for bullying on Twitter. In this study, cyber bullying was recognized using a machine learning technique called the Support Vector Machine (SVM) Classifier. Additionally, our suggested model performs at its highest level of accuracy, precision, and recall across a variety of datasets.

Keywords: Cyber bullying; Support Vector Machine (SVM); Machine Learning, Social Media Platforms.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Study of Energy Consumption in Universities of Jamshoro, Sindh

Muazam Memon¹, Tanveer Hussain Phulpoto², Muhammad Shuaib Shaikh³

¹*Department of Energy Systems Engineering, Mehran University of Engineering and Science Technology, Jamshoro*

²*Department of Mechanical Engineering, Mehran University of Engineering and Science Technology, Jamshoro*

³*Department of Chemical Engineering, Mehran University of Engineering and Science Technology, Jamshoro*

Corresponding author email: muazam66@hotmail.com

Abstract. In view of the Pakistan's sustainable development goal, energy consumption plays a vital role. Among many other energy consumption areas, energy consumption in Higher Educational Institutions (HEIs) has also been neglected for a long period of time. The urbanization trend shows that in upcoming 10 years above 50 more big scale universities will be founded in Pakistan occupying hectares of land and utilizing mega powers of electricity and natural gas.

Among the 167 universities of Pakistan, we have chosen two major universities of the region. Comparing the consumption of electricity and natural gas of the sector diversified universities that are, Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro and Mehran University of Engineering and Technology (MUET), Jamshoro would be the major objective of this research. The findings were taken from July-2021 to August-2022. The comparison analysis show that in the months of March and April, 2022 LUMHS had the highest electricity consumption whereas, in the months of September and October, 2021 MUET had the highest electricity consumption. Considering natural gas consumption, LUMHS had the highest consumption in the months of January and February, 2022 whereas MUET consumed highest in the month of May 2022. Reason for this variation in consumption was found to be the difference in vacation schedules, difference in study based infrastructure i.e. labs, air conditioned lecture halls, number of libraries etc.

Keywords: Energy, Universities, Jamshoro.



03-05 October 2023

OPTIMIZING WELLBORE INTEGRITY: XANTHAN GUMS CONTRIBUTION TO CEMENT SLURRY PERFORMANCE

Chaker Khan, Irshad Ali Gopang, Ghulam Abbas

Institute of petroleum and natural gas engineering, Mehran University of engineering and technology Jamshoro

Corresponding author email: chakerkhanazeem@gmail.com

Abstract. Oil well cementing is considered one of most important operations to improve the wellbore integrity in term of blowouts, well failures and environmental disasters. Various additives have been used to improve the API properties of cement slurry to enhance the effectiveness and success of cementing operations. The aim of the study is to use Xanthan gum as a viscosifying agent in cement slurry to improve the properties of cement slurry. This work demonstrated laboratory experiment, in which rheology, thinking time and compressive strength of cement specimen were determined using Xanthan gum with other additives. The improvement in plastic viscosity, yield point and gel strength using different concentrations reveals that Xanthan gum acts as a rheology enhancer in cement slurry. Furthermore, addition of Xanthan gum with other additives increases the thickening time of slurry and makes it pumpable at surface conditions. The compressive strength of cement specimen was 724 Psi after one day of curing. The compressive strength of the xanthan-gum based cement specimen further increased to 856 psi after 3 days of curing and to 1032psi after 7 days of curing. In is concluded that xanthan gum improves the API properties of cement slurry in terms of rheology and thickening time while provide sufficient strength that could reduce the risk of cementing operation failure.

Keywords: Xanthan, Cement slurry, rheology, compressive Strength, Additives



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Enhancing Access to Legal Information: AI-Driven Constitution of Pakistan Search Engine

Hafiz Muhammad Faisal Shehzad¹, Rabia Naz
University of Sargodha

Corresponding author email: rabianaz935@gmail.com

Abstract. The Pakistani constitution does not have an automated mechanism that we can use to retrieve data in accordance with our specified search. Law enforcement authorities (FIA, NAB, PFSA, NCM, FBR, etc.), NGOs, lawyers, public, national, and international organizations, as well as other associated communities, frequently obtain information from this extensive record. We suggest a neural network-based automated search engine. This search engine helps in searching for information in a report, papers taken by an individual, and metadata that characterizes data and databases of text messages, photos, and sounds. The so-called "information overload" is combated by using automated data retrieval techniques. The content of a search engine result, which normally presents search results in a linear manner, may include links to web pages, images, videos, graphics, documents, journal articles, and other file types. We first get our dataset from Pakistani Constitution. When data is obtained, we employ information retrieval for additional processing. After completing the preprocessing phase, we use one or more strategies to turn the tokens and phrases in our dataset into vectors. The next phase includes creating and training a neural networking-based model on this dataset to create token and sentence vectors. Before determining if the supplied query and the dataset are comparable, our model vectorizes the input, and the resulting output is created appropriately. Instead of using the other available metrics to determine similarity, we employ Cosine similarity. It would be a cutting-edge method with positive outcomes.

Keywords: Search Engine, Constitution of Pakistan, Data, Database, AI



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Digitally Guarded Doorways

Preety Narwani* and Muhammad Taha Khanzada

Quaid-e-Awam University of Engineering Science & Technology Nawabshah

*Corresponding author email: preetinarwani7@gmail.com

Abstract. The rapid advancement of technology has made progress leading to the development of creative solutions, for security concerns in different areas. This project focuses on creating a secure door lock system based on the Internet of Things (IoT). By combining motion detection, facial recognition and integration with Telegram this system aims to enhance access control and security.

The primary objective of the IoT based Digitally Guarded Doorways project is to create a smart door lock system capable of recognizing authorized individuals, granting them access, and alerting the owner in case of an unauthorized entry attempt. The system integrates a Passive Infrared (PIR) sensor to detect motion around the door. Upon detecting motion, an ESP32-CAM captures an image of the individual. The captured image is then processed using Open CV and a pre-trained facial recognition model to identify known faces. If a recognized face is detected, the system unlocks the door by controlling a servo motor.

In the event of an unrecognized face, the system sends the captured image to a Telegram bot, which notifies the owner. The owner can remotely decide whether to grant access through the Telegram bot interface, providing an additional layer of security and convenience.

Keywords: Motion Detection, Facial Recognition, Telegram Integration.



Comparison of Machine Learning Algorithms for Urdu Hand Written Character Recognition

Tooba Ali*, Tabasum, Jawaria, Alia and Akhtar Hussain Jalbani

Department of Computer Science, Quaid-Awam University of Engineering, Science and Technology, Nawabshah

*Corresponding author email: toobaali266@gmail.com

Abstract. Handwritten character recognition is a crucial task with applications in various domains. This research project focuses on the application of machine learning (ML) models to recognize handwritten Urdu characters. The primary objective is to compare and contrast the performance of different machine learning algorithms for this specific task. This paper presents an in-depth analysis of Urdu handwritten character recognition using various machine learning algorithms which are RF, LR, DT, SVM, SGDC and CNN. The study encompasses two distinct datasets: one digital characters using paint tool and the other featuring scanned handwritten characters. These datasets encompass ten distinct Urdu character classes, including (Alif, Bay, Jeem, Daal, Zaa, Raa, Saa, Cheey, Taa, and Dhaal). The research addresses the core challenge of accurately recognizing handwritten Urdu characters, considering the inherent complexities and variability's associated with handwriting styles. Through a systematic approach, our study investigates the performance of various machine learning algorithms on both painted and scanned datasets. In digital paint tool dataset Convolutional Neural Network (CNN) achieved an impressive 94% accuracy, showcasing its ability to capture complex patterns using Scanned Hand Written Characters CNN displayed consistent performance with an 89% accuracy, even with variations in scanned handwritten characters. These results guide algorithm selection based on dataset complexity and task requirements. Our study contributes to the field of character recognition, offering insights into algorithm performance for real-world applications.

Keywords: Convolutional neural network, machine learning, Support vector machine, Logistic Regression.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

A Review on Cybersecurity Threats, Vulnerabilities, Their Countermeasures, and Emerging Trends

Eesha Rehman¹ and Adnan Ahmed²

¹*Department of Information Technology, Quaid-e-Awam University of Engineering, Science and Technology, Nawabshah.*

²*Department of Cybersecurity, Quaid-e-Awam University of Engineering, Science and Technology, Nawabshah.*

*Corresponding author email: aeesharehman7788@gmail.com

Abstract. Technology becomes more intertwined with our daily lives, the field of cybersecurity has become more critical than ever before. It is increasingly important to protect our data from attackers and ensure that our information is secure. Cyber security has become a top priority for individuals, businesses, and governments, as the threat of cybercrime is constantly evolving and becoming more sophisticated. Rapid advancements in technology are intensifying the battle of cybersecurity between hackers and cybersecurity experts. Due to ever-increasing data breaches, the cyber-attacks are also on the rise. This research article presents a comprehensive review of the dynamic landscape of cybersecurity, focusing on the evolving threats, vulnerabilities, countermeasures, and emerging trends that shape the contemporary cybersecurity landscape.

These threats encompass a wide spectrum, from traditional malware and phishing attacks to more advanced threats such as ransomware, zero-day exploits, and nation-state-sponsored cyber espionage. By identifying these weaknesses, organizations can take proactive steps to shore up their cybersecurity posture. In response to the evolving threat landscape, cybersecurity practitioners and researchers continue to develop innovative countermeasures. This article surveys a range of cybersecurity solutions, including intrusion detection systems, firewalls, encryption techniques, and security awareness training. Furthermore, the research article explores emerging trends that are reshaping the future of cybersecurity. Topics such as artificial intelligence and machine learning for threat detection, block chain for secure transactions, and the implications of the Internet of Things on cybersecurity are discussed. Understanding these emerging trends is vital for staying ahead of cyber adversaries and adapting to evolving digital ecosystem.

Keywords: Cyber security, Cyber-attacks, Emerging trends, Vulnerabilities, Countermeasures



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Efficient Solar Power Generation

Waqar Imdad, Kashif Nawaz, Shahzad Ali, and Bakhat Ali

Women Engineer Development Committee, Pakistan Engineering Council (PEC)

*Corresponding author email: waqaralikhooharo@gmail.com

Abstract. In an era defined by the urgent need for sustainable energy solutions, this research paper serves as a beacon of knowledge, shedding light on the intricate design and optimization of solar Photovoltaic (PV) systems. With renewable energy sources at the forefront of global efforts to combat climate change, the development of a practical methodology for the construction of solar PV systems capable of harnessing the full potential of sunlight is paramount. Solar PV systems have risen to prominence as a transformative source of clean energy. Their effectiveness hinges on the careful orchestration of numerous variables, including system components, sizing considerations, and optimization strategies. By meticulously dissecting these facets, this research empowers engineers, scientists, and environmentalists alike with the tools to engineer solar PV systems that are not only eco-friendly but also remarkably efficient in converting sunlight into vital power. Our comprehensive paper begins with an easy-to-follow process for calculating energy requirements and moves on to practical advice on choosing solar panels, inverters, and batteries. Solar energy's appeal as a sustainable, readily available resource is no secret, and this research emphasizes its incredible potential: just an hour and a half of sunlight can power the world for a year. This research concludes a roadmap to unlocking the full potential of solar power generation. It not only highlights the critical aspects of system design but also underscores the optimization of the solar PV systems.

Keywords: Solar PV, Photovoltaic, Sizing, Designing, Stand alone



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Deformation Monitoring of Underground Mine Roof by Using Ultrasonic Sensors

Kashif Nawaz, Agha Shafi Muhammad Pathan, Muhammad Naeem and Waqar Imdad
Women Engineer Development Committee, Pakistan Engineering Council (PEC)
Corresponding author email: kashifnawaz4464@gmail.com

Abstract. In the underground mining, accidents occur frequently due to the roof fall. It is risky to work under hazardous conditions in underground mines. The roof fall in underground mine should be detected and provide the safety to mine workers and mine machinery for more production. The prime objective of this research study is to detect the roof fall in underground mines, as well as to monitor the workings of mine by using the application of ultrasonic sensors. Ultrasonic sensor will detect the roof fall in the working face and other locations in the underground mines. Roof fall detection sensor gives early warning. This paper puts forward control method of roof fall detection, which will give us the real time warning of the detected roof fall. Furthermore, it gives the reading to the upper-level monitoring system. Thus, it encourages safe production, ensures efficient work under safety premise, protects rescuer's life and minimize personnel and property losses.

Keywords: Underground Mine, Earth, Mine Roof, Sustainability



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Identification of Green Construction Barriers in the Construction Industry of Pakistan

Shahzad Ali*, Muhammad Fahad Ali and Zeeshan Amir
*Department of Civil Engineering, Mehran University of Engineering & Technology,
Jamshoro, Sindh 76020, Pakistan*

*Corresponding author email: shahzadnawazbirahmani868@gmail.com

Abstract. Green construction strives to reduce the construction sector's environmental impact by using recyclable and renewable materials, lowering energy use and waste, and fostering a healthy and eco-friendly atmosphere. Green building construction promotes low operational expenses despite several obstacles and strategies for enhancing green building trends, especially in Pakistan's construction sector of Pakistan. Hence, identifying the barriers to green construction in the construction sector of Pakistan is the aim of this research. The tertiary data has been collected through an extensive literature study for this research. However, the primary data was gathered using a questionnaire survey in a Google form link. 62 responses from industry stakeholders and leaders were collected and analyzed using the 5-point Likert Scale technique. The findings of this study suggest that Pakistan's construction sector needs to have a higher acceptance of barriers to green building. That is due to the lack of environmental public awareness, insufficient research, inadequate information, poor management practices, lack of technical aspects, contractor-related barriers, the time overrun factor, lack of regulations and policy, client-related barriers, cost impact, and lack of technical aspects. Moreover, lack of integration in the supply chain, financial constraints, outdated design and technology, political limitations, lack of trained workers, lack of sustainable materials, and use of outdated design and technology are key barriers to green construction in Pakistan. This research recommends that tackling the stated barriers may create ease for implementing green building construction in Pakistan.

Keywords: Green Construction, Green Barriers, Likert Scale, Sustainability, and Pakistan



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Technological advancement and trends in modern high-rise buildings in Pakistan

Muhammad Fahad Ali*, Shahzad Ali, Abdul Moaiz, and Asmar Haider
*Department of Civil Engineering, Mehran University of Engineering & Technology,
Jamshoro, Sindh 76020, (Pakistan)*

*Corresponding author email: alimuhammadfahad@gmail.com

Abstract. The trend in high-rise structures has boomed with advances in technology and engineering. For Pakistan, the growing population and land shortage have promoted this trend in the construction sector. This research identifies these trends and studies the extent to which the industry has been accepting technological advancements. For this research, various industry stakeholders were asked to identify and assess the modern technologies in Pakistan through a questionnaire. A total of 30 responses were collected from key industry leaders. Later, the data was analyzed in SPSS software, and two reliability and descriptive analysis tests were performed. As per results, a rising trend has been identified in the application of free forms, shear frames, diagonal bracing, laser scanning, lightweight concrete, mild steel bars, reflected glasses, photo voltaic energy systems, and VRF temperature systems. Moreover, for the level of use of different trends quoted above, the alpha value of the reliability test is 0.845, which verifies the internal consistency of collected data, and for descriptive statistics, for a minimum value of 1.86 and 5.0, the mean value is 3.59, which suggests that “to some extent” modern technological advancements are being used for the construction of modern Highrise buildings in Pakistan.

Keywords: Technological Advancement, Highrise Buildings, Construction Sector, and Pakistan.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Exploring Tech Trends: Analyzing Web-Scraped Data

Huma Jamshed*, Urooj Waheed and Yusra Mansoor
DHA Suffa University

*Corresponding author email: huma.jamshed@dsu.edu.pk

Abstract. The internet serves as a wide repository of big data, irrespective of end-user purpose, be it for business, academic, or personal reasons, World Wide Web can unveil a treasure trove of data. Although retrieving information pose a formidable challenge but web scraping appears to be an optimal choice for data extraction, predominantly as many organizations for instance online stores, brand monitoring, market research etc. pursue to harness large volumes of web-based information. These specialized software emulates human web browsing behavior, enabling the collection of abundant amounts of data that would then be difficult for a human to extract. This paper delves into a comprehensive explanation of the process of web scraping and present a framework to extract data from the cyberspace. The implementation comprises three distinct components: a Web Crawler responsible for fetching desired links, a data extractor that retrieves information from these links, and the storage of data after normalization into database. Python serves as the chosen programming language for this implementation. As a practical illustration of web scraping, the paper present a scenario involving the extraction of content from multiple technology blogs. The collected data will find its place in a database for future domain-specific analysis.

Keywords: Web Data Extraction, Web Scraping, Data Acquisition.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

The drivers of Green Innovation practices and its impact on organizational & environmental performance: Evidence from pharmaceutical sector of Pakistan

Sana Hassan¹ and Rida Zainab²

¹*Lecturer at Department of Industrial Engineering and Management, University of the Punjab, Lahore Pakistan*

²*MS. Industrial Engineering and Management, Department of Industrial Engineering and Management, University of the Punjab, Pakistan*

*Corresponding author email: sana.iqtm@pu.edu.pk

Abstract. Globally in manufacturing sector, Green concept is becoming the main focus and creating hype to adopt bio-degradable products and reduce energy consumption. This study enlightens the impact of drivers of green innovation (GI) consequent influence on organizational performance (OP) and environmental performance (EP) in pharmaceutical sector of Pakistan. In this empirical study, quantitative method was adopted. A close ended questionnaire was designed in which sample size was of 130 responses. Data was collected from pharmaceutical sector of Punjab, Pakistan through convenient random sampling method. Four hypotheses were developed which shows the effect of competitor pressure and regulatory pressure on green innovation and its subsequent impact on organization and environmental performance. Statistical analysis of this study confirm the positive effect of competitor and regulatory pressure on (GI) with path co efficient value of (0.855 & 0.66), t-value of (18.65 & 10.10) and p-value (0.00). Moreover, (GI) practices have a significant impact on (OP) and (EP) with path co efficient value (0.767&0.853), t-value of (18.502) and p value (0.00). This study helps to highlight the importance of GI practices for sustainable development of pharmaceutical sector of Pakistan.

Keywords: Green innovation, organizational performance and environmental performance



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Efficient Control of a Construction Project by Earned Value Analysis

Tayyiba Rashid, Sheza Khurshid* and Dur-e-Shawwal

Department of Industrial Engineering & Management, University of Punjab

*Corresponding author email: shezamughal9@gmail.com

Abstract. This study seeks to enhance efficient construction project management within budget and schedule constraints. The potential lies in proactive monitoring of project performance, early deviation detection, and informed decision-making offering a systematic way to achieve project success amidst the complex and dynamic nature of construction environments. The purpose is to bridge the gap of unstructured methodology that leads to budget overruns, schedule delays, and compromised project outcomes through the application of fundamental principles of Earned Value Analysis, focusing on how it facilitates the quantification of project progress in terms of both cost and schedule dimensions. The methodology involves a comprehensive review of existing literature, case studies, and real-world construction projects by providing a structured approach for implementing EVA and addressing challenges that may arise during its application in construction projects. Additionally, a dashboard specialized in EVA are is utilized to simulate various project scenarios and analyze the impact of different variables including Cost Performance Index, Schedule performance Index, Scheduled Variance and Cost Variance on project outcomes. The proposed model's EVA shows 90% improvements to the project and a balance between Earned Value and Scheduled budget. Hence this project advocates for the wider adoption of Earned Value Analysis in the construction industry as a strategic approach to ensure projects are completed on time, within budget, and to the desired quality standards.

Keywords: Earned Value Analysis, Performance Indices, Scheduling, Variances, Project Management



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Estimation of minimum distance between public places and roads based on simulation of vehicle exhaust

Muzafar Hussain, Naqash Saagar* and Janbaz Hassan

Department of Mechanical Engineering, Mehran University of Engineering and Technology, Jamshoro, Sindh76020, Pakistan

*Corresponding author email: naqashkolhi123@gmail.com

Abstract. The environment is rapidly being polluted with the exhausts of the vehicles. Different public places as schools, colleges, colonies, public parks, restaurants and Gyms are located very near to the roads. Therefore the people of there are being affected by the exhaust gases of the vehicles. Exhaust gases constitutes CO_2 , O_2 , N_2 and water vapors, CO_2 is a greenhouse gas, considered as major contributing factor to climate change. It also constitutes CO , NO_x , HC and PM . Emission of these gases is very harmful to human health.

Vehicle exhaust is a significant contributor to air pollution, which has adverse effects on human health and the environment. By reducing the exposure of vehicle exhaust to human-influencing places, this research could help in improving the air quality and subsequently lead to better health outcomes for individuals living or working in those influencing areas. This Research may lead to advocacy for policies and regulations which prioritize public health and environmental well-being in urban planning and transportation decision-making processes.

Ansys Fluent presents a module of similar situation which shows the dispersion of different constituents present within the exhaust gases. The data is first measured with the help of Flue gas analyzer and anemometer. Then the observed data is utilized in Ansys Fluent for simulation. Software simulation of the exhaust helps us in finding the range of effective dispersion. The range is found to be 70m; up to this distance constituents of exhaust gases are found to be thick and harmful.

Keywords: Exhaust gas, environment, dispersion, range, Flue Gas Analyzer.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

To optimize a work system's performance by integration of Ergonomics tools

Zahid Abbas Shah, Ramisha Hashmi

Department of Industrial Engineering & Management, University of Punjab

Corresponding author email: ramishahashmi017@gmail.com

Abstract. In today's world, Pakistan's textile industry, which ranks 8th in textile exports, is grappling with ergonomic challenges among its workforce, comprising 15 million people or nearly 30% of the country's total labor force, significantly contributing to the industry's 9.5% share of the GDP.1 Thandapani Sakthi Nagaraj's study is in Sri Lanka about the integration of ergonomics and lean principles in textiles to reduce waste and boost sustainability, underscoring ergonomics' vital role. 2 This study aims to enhance work system performance in Pakistan's jeans manufacturing apparel industry by integrating ergonomics tools and aligning them with UN Global Sustainable Development Goals (SDGs) and ISO-45001:2018 standards, focusing on worker well-being and safety. The management has shown a keen interest in this initiative, and its primary objective is to propose a comprehensive framework. The study employs risk assessment tools to identify high-risk areas within various departments. Surveys utilizing proactive and reactive questionnaires revealed a need for ergonomic interventions, with results exceeding the acceptable threshold, reaching 81%. A particular workstation in a critical department has emerged as a major concern, with workers frequently adopting awkward positions during their tasks, resulting in musculoskeletal disorders. The study concludes that there is a need to improve the distance between the worker's body and the machine/trolley center (HM), currently at 0.14/0.13. Therefore, machine redesign becomes a priority in the subsequent phase to enhance ergonomics and work system performance. This endeavor promises to address critical health and safety concerns while optimizing the efficiency of the industry.

Keywords: Musculoskeletal Disorders, QEC, RULA, Nordic Questionnaire, NIOSH Equation.



03-05 October 2023

Fashion Image Analysis and Comparative Research Using Different Optimizers

Fatima Khanzada¹, Asif Aziz Memon², Rizwan Badar Baloch³ and Mehwish Shaikh⁴

¹*Department of Information Technology, Mehran UET, Jamshoro*

²*Department of Computer Systems Engineering, Mehran UET Jamshoro*

⁴*Department of Software Engineering, Mehran UET Jamshoro*

Corresponding author email: fatimakhanzada1996@gmail.com

Abstract. Fashion sector is one of the most important in the world, having a yearly revenue growth rate of 8.4%. Fashion image analysis proves to be more intricate than conventional image analysis due to the considerable diversity in styles, designs, and appearances. These variations frequently add complexity to the tasks of detecting and retrieving clothing items, making them challenging and intricate. One of the performance indicators for this research is accurate clothing detection; nevertheless, technological problems like the accessibility of huge datasets and the amount of time it takes to detect should be considered. The proposed network is a one-stage detector designed for rapid identification of diverse clothing items within the Kaggle (Fashion Product Images Dataset). This suggested network enhances its backbone feature network by employing compound scaling and simultaneously training key input features at varying resolutions. It carefully balances the trade-off between speed and accuracy through dedicated networks for bounding box prediction. Furthermore, it achieves efficiency gains by maintaining a low computational cost and a minimal parameter count. Through a comprehensive comparative analysis of diverse optimizers, encompassing Momentum, RMSProp, and Adam, it was determined that the Adam optimizer outperformed the rest, delivering a commendable accuracy rate of 96%. Remarkably, the trained model distinguishes itself by not only detecting single clothing items but also multiple garments within a single image. Furthermore, the model is incredibly lightweight and well-suited for use on low-power devices.

Keywords: One-stage detector, Optimizers, low-power devices, Fashion image analysis



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Thermal Problems in Gas Turbine Blades – An Assorted Review of Issues and Remedial Measures

Osama Ali Ahmed Awan, Ali Sarosh and Usama Sarfraz

Department of Mechanical and Aerospace Engineering, Air University, Islamabad 44230, Pakistan

Corresponding author email: usamasarfraz118@gmail.com

Abstract. Turbine blades undergo high thermal stresses therefore effective cooling mechanisms are required to sustain higher turbine inlet temperatures. In recent years, researchers have proposed newer methods for resolving problems of discrete and conjugate heat transfer to attain higher turbine efficiencies and turbine inlet temperature. In this paper it is envisaged that the thermal problems of turbine blades can be broadly assorted into two distinct classes – the “direct” and “indirect” thermal issues. The direct thermal issues result from insufficient thermal management techniques while indirect ones are caused by conditions which in turn attenuate the cooling of turbine blades. A survey of recent research works indicate that the direct thermal issues originate from possible restrictions in heat transfer mechanisms whereas indirect issues originate elsewhere in the flow field such as from flow variations, geometrical effects etc. The direct thermal issues are proposed to be resolved by solution strategies involving configuration changes and/or novel mechanisms for cooling. While the solution techniques proposed for indirect thermal issues are primarily those that reconfigure geometry and flow field conditions. Finally, a comprehensive comparison of both classes of assorted issues and their proposed methods of resolution is also included as a quick reference table. The assortment and comprehensive review of thermal issues in turbine blades and critical review of their possible solution techniques offer basis for more directed effort of future research to design high efficiency turbine blades.

Keywords: Gas turbine blades, direct thermal issues, indirect thermal issues, cooling effectiveness, secondary flow injection.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

An SDG-based Design Evaluation of Supercritical Sahiwal Coal-Fired Power Plant

Osama Ali Ahmed Awan, Ali Sarosh , Usama Sarfraz , Muhammad Awais and Muhammad Asadullah Khan⁵

¹*Department of Mechanical and Aerospace Engineering, Air University, Islamabad 44230, Pakistan*

Corresponding author email: usamasarfraz118@gmail.com

Abstract. Energy is a necessity of modern living. However, its production has raised concerns about Earth's prosperity and sustainability as almost 81% of energy is being produced from the burning of fossil fuels. This adds a major portion of *CO*₂ to environment resulting in global warming. Therefore, United Nations member states have devised 17 Sustainable Development Goals (SDGs) to move the world toward a sustainable future. On one side, it is important to replace non-renewable energy resources with renewable ones, and on the other side, we need to evaluate the conventional power plants for their conformance with UN SDGs. In the same context, the Sahiwal coal-fired power plant is one of the flagship power-sector projects that has been completed under the China-Pakistan Economic Corridor (CPEC). SCPP serves as one of the mainstay sources of electrical power generation in Pakistan. This paper evaluates supercritical SCPP from the standpoint of evaluating its conformance to the UN's SDGs. Specifically for SDG numbers 7, 11, and 13 for which evaluation of harmful emissions is made along with performance and operating parameters. The evaluation also includes thermodynamic cycle analysis, coal analysis, and plant economics of a 660MW supercritical cogeneration unit. The analysis and evaluation provided in this paper give an insight into the degree of compliance of SCPP to UN SDGs and also propose measures for further improvements in this regard. In addition, a comparative study has been included in this paper between SCPP and two other supercritical coal-fired power plants located in South Asian region. **Keywords:** UN SDGs, Sahiwal coal-fired power plant, Cogeneration, Plant economics, Coal analysis.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Divorce Prediction Using Artificial Neural Network

Muhammad Rizwan Jamil* and Adnan Ghafoor
Begum Nusrat Bhutto Women University Sukkur
*Corresponding author email: comsian82@gmail.com

Abstract. "Marital dissolution has become a pressing issue, with the number of divorces increasing significantly over the past few decades. In Indonesia, for instance, the divorce rate has escalated from 175,713 to 365,633 in each year from 2007 to 2016. Consequently, marriage counselors and therapists are increasingly concerned about this trend. To address this concern, an effective technique for predicting divorce severity is required to assist professionals in assessing the severity of individual cases. This research study investigates the prediction of divorce cases using Neural Network machine learning techniques. The accuracy of different algorithms is compared to assess their effectiveness. The Gottman method, a widely recognized approach in relationship therapy, is employed as the prediction criteria. By training these algorithms, the model is able to predict the likelihood of divorce, enabling therapists to assess the level of tension between a couple and offer suitable counseling. This research paper delves into the transformative power of neural networks and machine learning in the realm of divorce prediction. By combining these cutting-edge technologies with comprehensive datasets, including socio-demographic, behavioral, and emotional indicators, we aim to construct robust predictive models that can assist couples, therapists, and policymakers in making informed decisions.

Over the years, traditional methods of divorce prediction have been limited by their reliance on static variables and simplified models. In contrast, the adaptive nature of neural networks enables them to recognize intricate patterns, nonlinear relationships, and subtle shifts in dynamics over time. Coupled with machine learning's capacity to analyze vast quantities of data efficiently, these AI-driven techniques can offer a more nuanced understanding of marital stability and vulnerability.

The authors attained a remarkable accuracy of 98% utilizing the Neural Network approach.

Keywords: Divorce prediction, Machine learning, Neural Network, Keras and Confusion matrix



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Numerical Investigation of Design Parameters for Flat Plate Solar Collector (FPSC)

Shoaib Almani¹, Sheeraz Ahmed Memon¹ and Imran Nazir Unar²

¹ *Institute of Environmental Engineering & Management (IEEM), Mehran University of Engineering & Technology, Jamshoro*

² *Department of Chemical Engineering, Mehran University of Engineering & Technology, Jamshoro*

Corresponding author email: almanishoaib786@gmail.com

Abstract. Due to a high reliance on fossil fuels, increasing depletion of indigenous fossil fuel supplies, a large burden on the national exchequer due to oil imports, and so on, Pakistan has been grappling with a severe energy challenge for decades. Solar energy has the potential to solve our energy problems. Despite the fact that Pakistan is located in the Sun Belt and receives over 2 MWh/m² of solar irradiation and 1500-3000 sunshine hours per year, we have not been successful in harnessing solar energy. Solar energy is routinely collected with flat-plate sun collectors. Solar thermal systems are becoming commonplace in both residential and business settings. The flat plate solar collector (FPSC) was numerically simulated in this work. Nano fluid and Water were used simultaneously in a novel FPSC as the thermic and operating fluid respectively. Ansys FLUENT, a commercial CFD package, was used to run the numerical simulations. The performance of FPSC was studied for four cities (Quetta, Sibbi, Jacobabad and Lahore) with hot climates and for three tilt angles (15°, 30° and 45°). Results concluded that the maximum exit water temperature in Jacobabad at a tilt angle of 30° was 97.8 °C.

Keywords: Computational Fluid Dynamics, Flat Plate Solar Collector, Tilt angle, Twin Chamber Twisted Tube



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Exploring the Resource Recovery Potential of Fecal sludge using Anaerobic Co-Digestion

Nida Maqbool *, Aiman Gul, Zukhruf Khalid, Abdul Wahab Akram, Asfand Yar, Sher Jamal Khan

Institute of Environmental Sciences and Engineering (IESE), School of Civil and Environmental Engineering (SCEE), National University of Science and Technology (NUST), Islamabad, Pakistan

*Corresponding Author: nidamaqbool@iese.nust.edu.pk

Abstract: Worldwide, around 3.1 billion people rely on on-site sanitation (OSS) systems while the fecal sludge contained in the OSS requires proper treatment and safe disposal. In order to reliably design and operate community-scale to semi-centralized anaerobic digestion of fecal sludge in dense urban areas, more information is needed on the anaerobic digestion potential of fecal sludge. The biomethane potential (BMP) of fecal sludge was investigated and compared to co-digestion of fecal sludge and foodwaste. The C/N ratio of the fecal sludge varied from 20-30:1. Analysis included daily biogas production, total solids (TS), volatile solids (VS), chemical oxygen demand (COD), volatile fatty acids (VFA), alkalinity, and pH. At the optimized conditions, a pilot scale anaerobic digester was designed. The cumulative biogas (CBG) from mono-digestion of fecal sludge resulted in 470ml/gVS and co-digestion increased the CBG by 42-55% at C/N ratio of 20-30:1. At C/N 30, the highest CBG observed was 670ml/gVS. The observed increase in CBG was speculated to be due to priming, which boosts BMP by adding readily biodegradable organic matter. The VS(%TS) and COD were reduced by 63 and 48% respectively. The co-digestion potential indicated that foodwaste can be a potential co-substrate for the anaerobic digestion of fecal sludge. Based on the results, a 150L pilot scale digester was designed which would be able to produce 100L of methane for nearby household requirements. It can also reduce 0.00325tons CO₂ eq/day and 1kWhr energy can be produced from only 2.5kg of a waste mixture of fecal sludge and fruit waste.

Keywords: Fecal Sludge, Anaerobic Digestion, Biogas, Co-digestion



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Sustainable use of Waste Material for Controlling Leachate Infiltration

Dr. Erum Aamir¹*, Maria A. Ghori¹ Zunaira Anum²

¹ *Institute of Environmental Science & Engineering (IESE), National University of Sciences & Technology, H-12 Islamabad.*

² *Pakistan Engineering Council Islamabad Pakistan*

Corresponding Author: erum@iese.nust.edu.pk

Abstract. Pakistan is ranked 5th among the most populated countries in the world, with a count of 240,485,658 people at mid of the current year according to United Nations data, UN 2023. Consequently, with this increased population there is a lot of consumerism which consequently creates more waste. According to the International Trade Administration of the US, “Pakistan generates approximately 49.6 million tons of solid waste a year, increasing more than 2.4 percent annually, 22-Feb-2023. Solid waste management, its handling, and the conservation of groundwater contamination associated with it is quite an issue for the entire world. A lack of sustainable solid waste management is posing threats and risks to human life in urban areas, however, this challenge may prove to be a great source of opportunities in terms of income and employment generation for the companies and individuals involved in solid waste recycling. Pakistan being a developing country seriously lacks, the infrastructure for solid waste management, especially recycling. Recycling is amongst the most effective means by which solid waste can be reduced and natural resources can be conserved by reusing materials and putting them back into productive use. Solid waste in Pakistan is mostly managed through three ways open dumping, incineration, and landfill. Pakistan requires both open dumping and landfill liners to protect its groundwater resources and citizen health from leachate infiltration. Because leachate is one of the main sources of soil and groundwater contamination. To address this critical problem, this research is dedicated to designing sustainable liners using waste material and plastic to promote recycling, reduce contamination, decrease solid waste, and conserve natural resources by reusing them. The novelty of the study is to make simple affordable, cost-effective, efficient sustainable open dumping and landfill liners with the help of plastic and straws. It will reduce Municipal Solid Waste (MSW) by using them as raw materials for liners. Liners are subjected to different tests to check and compare their performance. First, the permeability test, Moisture Content (MC), cracking, seepage, and life span were carried out with different amounts of Plastic Waste (PW) and Straw Waste (S.W). Both P.C and S.C were mixed with compacted clay at (0.3%, 0.5% and 0.8%). Seepage depth



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

was figured out by measuring the Moisture Content (MC) at different depths of soil. Cracking of both liners was observed by examining the texture of the liners, to determine their loading capacity and stabilization. The mechanism supports that the lesser the leachate penetrates, the lower the permeability of the liner and the greater the efficiency of the liner. The research protects the environment and reduces pollution conserved natural resources by reusing them. Research also addresses two SDGs namely SDG# 3 (good health and well-being), and SDG# 11(sustainable cities and communities).

Keywords: Municipal Solid Waste, leachates, infiltration, straw, groundwater, soil, and pollution



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Influence of Climate Change on Water Cycle

Dr. Erum Aamir ¹, Zunaira Anum ²

¹ *Institute of Environmental Science & Engineering (IESE), National University of Sciences & Technology, H-12 Islamabad.*

² *Pakistan Engineering Council (PEC), Islamabad*

Corresponding author email: erum@iese.nust.edu.pk

Abstract. Water is life. A balanced water cycle is an enormously important process because it ensures the availability of water for all living organisms and regulates weather patterns on our planet. If water wasn't naturally recycled itself, our planet Earth would run out of clean water, which is essential to life. And there is no concept of life without water. Life and water are integrated together in an intricate and interactive manner. Any change in the balance initiated by nature or anthropogenic activity will have a deep devastating, catastrophic impact and consequences on humans as well as on the environment. These environmental impacts could be of micro to planetary scales. Researchers through experiments and studies have successfully established the impact of climate change on a different aspect of life. The water cycle is among the top on the list. This research paper targets the water cycle first because water is essential for life. The study not only investigates the impact of climate change on the water cycle, but also proposes various remedial, corrective, and deterrent measures. These measure plans, and strategies will surely bring a sustainable environment if adopted and practiced in our life without delay. Pakistan is heading towards water scarcity at an alarming pace. The deteriorating environment and its impact are well-established facts now. The study suggested practices that will improve our degrading environment before it is too late. Furthermore, the awareness acquired during this study also recommends being mindful of environmental impact and proposing adopting organic different measures, actions, practices, plans, and strategies to diminish the unpleasant impact on the environment. This study also addresses **Sustainable Development Goals (SDGs) number #13** i.e., **Climate action, also known as the Global Goals**, which were established by the United Nations (UN) in 2015 as a universal call.

Keywords: Water cycle, Environment, climate change, Sustainable Development Goals



03-05 October 2023

EVALUATING AND IMPROVING THE OVERALL EQUIPMENT EFFECTIVENESS (OEE) OF SHOVEL AND DUMPER AT QUARRY SITE OF CEMENT INDUSTRY

Muhammad Noman Mughal, Saleem Raza Chalgari, Shafi Muhammad Pathan
*Department of Mining Engineering, Mehran University of Engineering & Technology
Jamshoro*

Corresponding Author: saleem.raza@faculty.muet.edu.pk

Abstract. During the last few decades, quarry sites of cement industries have increased their productivity by using large sized, high capacity and self-automated equipment in order to get high production rate and to cope up with the international market demands. Almost all industries has two principal objectives, first is to maximize their profits and second is to minimize their losses. For achieving high production-rate with minimum unit price, it is therefore necessary to use equipments as efficiently as possible. One of the multiple methods that can be employed to improve the productivity rate is overall equipment effectiveness (OEE) that estimate the equipment's performance as accurately as possible so that the necessary improvements can be made accordingly. OEE-Tool has achieved considerable attention, it basically measures the optimum utilization of equipment in terms of availability, performance and quality. But up to now very less implementation of OEE has been found at quarry site of cement industry to measure the overall-effectiveness of loading and hauling equipments such as shovels and dumpers. Utilization of OEE tool for the measurement of shovels and dumpers have been discussed in this research paper. It determine the causes of time losses for shovel and dumper operations and presents the procedure to record time losses. The procedure to estimate OEE of both shovel and dumper has also been presented via descriptive and numerical data, suggest appropriate number of shovels and dumpers, effective operating time, timely maintenance of equipments, minimizing idle-time and minor stoppages are some of the important suggestions proposed to increase OEE.

Keywords: Overall equipment effectiveness, cement quarry, shovel efficiency, dumper efficiency, stoppage and idle time, benchmark value, equipment's utilization



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Development of Musa Fibre-Based Stone Matrix Asphalt

Asif Shah, Rizwan Ali Memon ,Ali Nizam , Mohsin Ali and Muhammad Fahad Ali
*Department of Civil Engineering, Mehran University of Engineering & Technology,
Jamshoro, Sindh 76020, Pakistan*

Corresponding Author: asifalishah098765@gmail.com

Abstract. In a world facing the urgent need for sustainable road infrastructure development with depleting natural resources and widespread societal and environmental challenges, innovative solutions are imperative, especially in the pavement industry grappling with the impacts of global warming and ever-changing traffic with increasing population. To address these pressing issues, this research paper aims to develop an innovative material called Musa Fiber-Modified Stone Matrix Asphalt (MFM-SMA) for road construction. This research has been conducted in four phases. Starting with the first phase, which included the collection of materials. The materials incorporated in this study are bitumen, banana fibers, and aggregates. The second phase was the preparation of distinct samples at different fiber lengths and optimum dosages which were found to be 0.3% at 20mm and 25mm length of fibers by the draindown tests. The third phase focused on the determination of the Mechanical properties of MFM-SMA at different fiber lengths by the tests of Marshall stability and Cantabro loss on the asphalt mix samples prepared at optimum dosages. Finally, in phase four, the test results of modified samples were compared with those of conventional SMA samples. For this material, initial laboratory tests, supported by existing literature ensure the enhanced performance of MFM-SMA at 20 and 25mm fibers length, Moreover, it has been found that the increased fiber length increases the mechanical properties of the MFM-SMA which strongly indicates the promising potential to effectively combat road issues such as rutting and fatigue, thereby offering the prospect of substantial cost savings in maintenance—a particularly daunting challenge for developing countries like Pakistan.

Keywords: Bitumen, Musa Fibers, Stone Matrix Asphalt, Green Roads, and Sustainability



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Numerical Simulation of Hemodialysis Membrane system for Removal of Urea and Salt from Blood

Urooba Memon, Khadija Qureshi, Imran Nazir Unar

*Chemical Engineering Department, Mehran University of Engineering and Technology,
Jamshoro 76062, Pakistan*

Corresponding Author: imran_unar@hotmail.com

Abstract: The advancement of medical technology has led to a growing need for efficient and accurate methods to facilitate hemodialysis, a critical procedure for individuals with impaired kidney function. This study focuses on the numerical simulation of a hemodialysis membrane system, specifically analyzing the removal of urea and salt from blood. The aim is to enhance our understanding of the intricate dynamics and transport phenomena occurring within the membrane, aiding in the design and optimization of hemodialysis systems.

In this research, we employ computational modeling and simulations to elucidate the convective and diffusive mass transfer processes within the hemodialysis membrane. Finite element analysis and computational fluid dynamics are utilized to characterize the behavior of urea and salt across the membrane interface, considering various factors such as membrane composition, pore size, blood flow rates, and dialysate properties. This research gives insights into the underlying mechanisms governing the removal of urea and salt during hemodialysis, contributing to the refinement of dialysis protocols and the design of improved hemodialysis membranes. Ultimately, this research aims to advance the effectiveness and efficiency of hemodialysis treatments, enhancing the quality of life for patients suffering from renal failure.

Keywords: Simulation, Hemodialysis, Removal of urea and salt



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

CO₂ Capture using Thin Film Composite Membrane: A simulation Study

Pirbhat*, Khadija Qureshi, Imran Nazir Unar

*Chemical Engineering Department, Mehran University of Engineering and Technology,
Jamshoro 76062, Pakistan*

*Corresponding author email: pirbhatnadir@gmail.com

Abstract. The rising concentration level of atmospheric CO₂ as a result of the burning of fossil fuels is recognized as a notable contributor to climate change. The utilization of membrane-based gas separation for CO₂ capture presents a promising approach to mitigate human-caused emissions. Thin film composite membranes offer the capability to handle significant gas flux demands and represent one of the most energy-efficient, industrially viable candidates for CO₂ capture. This study employs a mathematical numerical simulation model to investigate carbon capture from a CO₂/N₂ gas mixture using a polymeric TFC membrane. This approach allowed us to model fluid flow within the membrane module effectively. The research investigates how various parameters affect the efficiency of CO₂ removal from the mixture. An increment in gas flow rate and inlet gas temperature reduces the CO₂ removal efficiency, increasing the membrane area can improve CO₂ removal efficiency, and reducing the diameter enhances membrane separation performance. The modelling outcomes are compared with experimental data present in the literature to validate their accuracy. The findings demonstrate that the model effectively predicts CO₂ removal performance.

Keywords: CFD, CO₂ capture, Membrane



03-05 October 2023

Development of Sustainable Packaging Material by Using Bio-Degradable Polymers

Umm-e-Salma¹, Muhammad Abdul Haq² and Shagufta Ishtiyaque¹

¹ Department of Chemical Engineering, University of Karachi, Karachi 75270, Pakistan.

² Department of Food Science & Technology, University of Karachi, Karachi

Abstract. Food industry faces a significant challenge in ensuring that stored food products do not deteriorate or spoil over time. Some food items are packed in multilayer pouches, biaxially oriented polypropylene (BoPP) provides the bulk of the pouch. But, it is not sufficient to protect oxygen-sensitive food products such as spices, peanuts, fruit juice and oil-containing food products due to its poor oxygen barrier properties. The main objective of this work is to manufacture biodegradable multi-layer pouches by biodegradable polymers with excellent tensile, barrier, other properties and eco-friendly. To solve this problem, we have investigated a novel concept of *pouch in a pouch*. The packaging material was composed of two pouches, outer one was made of BOPP and inner one was made of biodegradable polymers, starch, polyvinyl alcohol (PVA), and their combination with tannic acid. The tannic acid was used to increase the mechanical strength and light barrier properties of biodegradable film. The modified packaging material manufactured by PVA and starch then characterized for mechanical test, PVA films exhibited significantly higher mechanical strength (3492 to 771 MPa) compared to starch (26 MPa to 7 MPa). The most significant effect of tannic acid was observed in case of light barrier properties in which tannic acid containing films block almost all the UV light. A very high oxygen barrier i.e., low oxygen permeability in the order of 10^{-5} cc-mm (/m².day.atm) was achieved for prepared biodegradable compared to nonbiodegradable film for BOPP. However the water vapor permeability was in the order of 36.7 to 3.67 g mm⁻¹ day⁻¹ atm⁻¹ for biodegradable films compared to non-biodegradable in case of BOPP. The modified packaging material shown excellent barrier properties. Similarly the food products were stored in a controlled environment at 40°C for a period of seven weeks and given excellent shelf life. Therefore the potential of using a combination of BOPP and biodegradable packaging polymer may give effective solution to tackle the problem of food spoilage during storage.

Keywords: Barrier properties, mechanical properties, BOPP, PVA, starch and shelf life



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Carbonization and Activation of Banana Leaves for Removal of Ni, Pb, Cr and mixed solution of heavy metals from wastewater

Safia, Tayyab Ahmed Qureshi, Tanveer Ahmed Gadhi *, Rasool Bux Mahar,
U.S. Pakistan Center for Advanced Studies in Water (USPCASW), Mehran University of Engineering and Technology, Jamshoro 76062, Pakistan

*Corresponding Author email: tanveer.uspcasw@faculty.muett.edu.pk

Abstract. Heavy metals contained in industrial effluent and wastewater are significant environmental contamination hazards. Copper, silver, zinc, cadmium, gold, mercury, lead, chromium, iron, nickel, tin, selenium, molybdenum, cobalt, manganese, and aluminum are a few examples of heavy metals that are considered. These metals pose a serious risk of entering the body and resulting in cancer, bone, brain, and nervous system harm. This study offers an affordable, widely available, and insoluble in most solvent adsorbents. A comparison study was investigated between non-activated, chemically activated carbon (CAC) and thermally activated carbon (TAC) for the removal of lead, nickel, chromium, and mixed solution of heavy metals from wastewater. Dried and ground banana leaves (BL) are used as adsorbents and precursors to produce activated carbon in a carbonization reactor. SEM and Fourier-transform infrared spectroscopy were used to characterize the synthesized banana leaves, which revealed that they possessed a rough surface, a porous structure, Aromatic ring, Nitro compounds, and other functional groups. The effects of first concentration and time were investigated. The results of the adsorption process showed significant sensitivity against the Lead, Nickel, Chromium, and mixed solution ions at optimum conditions; The ion uptake was increased with increasing contact time and agitation speed, and it achieved the best selectivity and removal efficiency of (Pb) 66%, 95% and 96%, (Ni) 60%, 93% and 97%, (Cr) 63%, 82% and 97% for Non-activated, chemically activated (CAC) and thermally activated (TAC), respectively, at pH 4 and 5. The removal efficiency in the mixed solution was less than individual ions. The kinetics studies show that the adsorption process follows the pseudo-first-order kinetic, and pseudo-second-order kinetic model fits well. The experiment results proved that the developed adsorbents were superior to those reported previously in use.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Innovation Capability measuring the Impact of Marketing Capability and New Product Development in Telecommunication Sector

Kanz ul Aziz, A. Mujtaba

Quaid-e-Awam University of Engineering, Science and Technology, Nawabshah.

Corresponding author email: siddiquikanza1997@gmail.com

Abstract. The key Objective of this research is to recognize the following relationships in the context of marketing and new product capabilities. The acumen of managers in the “Innovation Capability” to make their product market competitive that satisfies the need of the customer. The research objective can be classified as explanatory rather than exploratory. The purpose is to analyze the interaction between the triangle of marketing capability (MC), innovation capability (IC) and new product development (NPD). The research design in this study can also be termed as correlational. By analyzing the data using a structural equation model (SEM), the study explores the correlations between the three variables rather than establishing causal relationships. As per research framework marketing capability has significant influence on the process of new product development and it provides beneficial results on finding it that how the same can be made more effective. Although the research and analysis is made on the sample of population of one country and with one sector of business but the analysis shows promising results. So a future work may be conducted for multiple business sectors and then finally for generalization of the study the data of multiple countries can be taken.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Empowering Women in Sustainable Biomass Cooking: The Role in Rural and Low-Income Communities towards Energy Initiatives

Razia Begum¹, Shaheen Aziz¹, Suhail A. Soomro¹, Tooba Naveed^{2,*}

¹*Department of Chemical Engineering, Mehran University of Engineering & Technology
Jamshoro Sindh Pakistan*

²*KLC, PCSIR, Karachi, Pakistan*

*Corresponding author email: oiocesklc@gmail.com

Abstract. The work highlights the active role that women play in addressing fuel scarcity, health, and safety concerns within the realm of biomass cooking energy. In many parts of the developing countries of the world, especially in low-income communities are dependent on solid fuels (biomass, i.e, wood, crop residues, and animal dung) for household energy needs. Whereas, higher-income households in developing countries; the primary source of energy for cooking is electricity or processed fuels such as liquefied petroleum gas (LPG) and natural gas. However, these solid fuels are often burned in inefficient open fires and simple stoves with inadequate ventilation that are likely to cause accidents and burns. In addition, exposing families, in particular women and children, to toxic indoor smoke for hours daily for their lifetimes. It is also the main cause of Deforestation and time-consuming for fuel collection for women & children. Women, being primary users of these cooking methods, are uniquely positioned to initiate transformative change. Environmentally friendly technology is designed to burn wood more efficiently and with reduced emissions. Additionally, the promotion of alternative cooking fuels such as biogas, LPG, and electric stoves has gained attraction, providing cleaner and healthier cooking options. These technologies reduce the demand for traditional biomass fuels (Encouragement for Sustainable Fuel Sources), mitigating fuel scarcity and environmental degradation. This work explores the initiatives led by women, including the promotion of clean cooking technologies, community education on sustainable fuel sources, and the establishment of safety protocols. . By actively involving women in these initiatives, societies can mitigate the adverse impacts of biomass cooking, fostering healthier, safer, and more sustainable livelihoods.

Keywords: Biomass, Cooking, Energy Crisis, Fuel Scarcity, Health and Safety, cleaner solution, women & children, low income rural population



03-05 October 2023

Addressing Gender Disparities in Physical Education Participation among Women in an Underserved Region

Muhammad Ubair Shah

Mehran University Institute of Science, Technology and Development

Corresponding author email: ubairshah52@gmail.com

Abstract. This research paper explores the existing gender disparities in physical education participation among women in an underprivileged area. The study investigates the factors contributing to the lack of opportunities for women to engage in physical education activities and its subsequent impact on their overall health and well-being. Employing a mixed-methods approach, the research combines quantitative surveys and qualitative interviews to gather data from female students, teachers, and community members.

The findings reveal multifaceted barriers such as socio-cultural norms, inadequate infrastructure, limited access to facilities, and a lack of awareness about the importance of physical education for women. These barriers perpetuate the gender gap and hinder women from actively participating in physical activities. The paper highlights the necessity of targeted interventions, including educational campaigns, infrastructural improvements, and policy changes, to promote inclusivity and equal access to physical education.

By shedding light on the challenges faced by women in accessing physical education opportunities, this study contributes to a deeper understanding of the complexities surrounding gender inequalities in underserved regions. The paper concludes by proposing recommendations for policymakers, educators, and community leaders to create an environment that empowers women to engage in physical education, fostering their holistic development and bridging the gender gap in this crucial aspect of education.

Keywords: Gender Disparities, Physical Education, Women



**PRIORITIZATION OF AWARENESS CAMPAIGNS FOR A
DISEASE THROUGH FUSION OF PENTAGONAL INTUITIONISTIC
FUZZY NUMBER AND PROMETHEE**

Oyoon Abdul Razzaq

*Department of Humanities & Social Sciences, Bahria Humanities & Social Sciences School,
Bahria University Karachi Campus*

Corresponding author email: oyoon.abdulrazzaq@yahoo.com

Abstract. A novel method for assessing the effectiveness of enrichment evaluations PROMETHEE combining pentagonal intuitionistic fuzzy numbers (PIFNs) and preference ranking organization is presented in the present paper. PIFN suggests a new technique for multi-criteria group decision making (MCGDM) in which two characteristic values of membership and non-membership functions are involved. The key practicality of incorporating PIFN in decision-making is its effective capability of managing the vagueness and uncertainties of linguistic terms used during discussions. The designed algorithm is then applied to get an appropriate, cost-effective, and publicly accepted awareness campaign to be used to forewarn populaces about any virulent disease, which has not been studied before. Importantly, it is the only way to protect any huge population of a country from any fatal disease, i.e. to be timely aware of the disease's transmissibility, severity, and precautionary measures through any effectively approachable source. Here, we consider alternative sources of campaigns, such as commercial advertisement on television, on social media, on bills /other government circulars, billboards, and door-to-door volunteering for guidance. These alternative campaigns are based on five generalized criteria, where the weight of each criterion is evaluated via the fuzzy analytical hierarchy process (F-AHP). After using the F-AHP for complex decisions based on acceptance and effectiveness, the F- PROMETHEE algorithm is applied to achieve the closest ideal alternative.

Keywords: Pentagonal Fuzzy Number, Consistency Ratio, Group Decision Making, Score Function, Ranking



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Inclusive leadership on employee's psychological capital

Seeta Kumari*, Noor Fatima, Mehjabeen, Farha kainat, Atia Bano
Begum Nusrat Bhutto Women university

*Corresponding author email: seeta3.20bba001@bnbwu.edu.pk

Abstract: Based on the point of view of mental capital, this paper concentrates on the effect of inclusive leadership on employee's advancement execution. It is found that inclusive leadership can indirectly improve employee's innovation performance by enhancing their psychological capital. As per authoritative help hypothesis, when representatives see the association's help for their work, workers will act for the association. Inclusive leadership permits representatives to feel the association's help for their work, and their mental capital will increment, in this way working on their imaginative execution. The pioneer part trade directs the connection between inclusive leadership and psychological capital. Employees with high quality leader-member exchange will have higher levels of psychological capital, and furthermore, employees' innovative performance will be higher. The outcomes showed a positive impact of inclusive leadership on the undertaking execution of subordinates. The discoveries show that forerunners in neighbourliness business ought to take on a leadership style as it adds to representative undertaking execution, which works on the business' performance. Inclusive leadership can also help employees feel more connected to their work and more motivated to achieve their goals. When leaders encourage diversity and inclusivity, employees are more likely to feel that their work is meaningful and that their contributions are valued. Innovation drives enterprise development, and companies are relying more and more on their employees' innovative contributions to maintain and improve their competitiveness. By practicing inclusive leadership organizations can reap numerous benefits including increased employee engagement improved team performance.

Keywords: Inclusive leadership, Employee innovation performance, Psychological capital.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

**THE IMPORTANCE OF EARLY CHILDHOOD EDUCATION:
DISCUSSING THE BENEFITS OF INVESTING IN EARLY
CHILDHOOD EDUCATION AND ITS LONG IMPACT ON
CHILDRENS COGNITIVE, SOCIAL, AND EMOTIONAL
DEVELOPMENT**

Aleena Soomro*, Bisma Lakho, Asad Abbas Rizvi

Department of Education, Begum Nusrat Bhutto women university Sukkur

*Corresponding author email: aleena3.21edu024@bnbwu.edu.pk

Abstract. The purpose of this abstract is to briefly consider the benefits of investing in early childhood education and lightens its long-lasting effect on child's social, cognitive and emotional development. Qualitative method that involves in reviewing various studies and research conducted on early childhood education. These researches gave clues of the impacts of early education on social, cognitive and emotional development and has long-lasting benefits.

The findings suggested that here is positive impact of child's cognitive development, enhancing language skills, problem-solving abilities and school willingness. It also developed social skills by cooperation, empathy and conflict resolution. And it contributes towards, emotional development of children. By giving students an approach to quality early education programs, societies and individuals can acquire long-term benefits, including improved academic achievement, raise social competence and emotional and economic well-being. This is based on reviews of existing research and studies. So the findings are random on the efficiency and quality of the studies examined. This study does not inquire into definite implementation of policies and strategies, which could be important for the benefits of early childhood development. Early childhood plays crucial role in children's cognitive, emotional and social development. Investing in quality early education programs can leads to academic success, increased social skills, and better emotional well-being.

Keywords: Early childhood education, Development, Social, Emotional, Cognitive.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Investigating the Barriers and Opportunities for Women in Accessing and Utilizing Technology Resources in University Settings

Fiza Chachar*, Shahar Bano Kazmi, Ramsha Khalid, Asad Abbas Rizvi

Department of Education, Begum Nusrat Bhutto Women University Sukkur, Sindh, Pakistan

*Corresponding author email: fiza1.21ed001@bnbwu.edu.pk

Abstract: This article describes a study that looked into the potential and challenges faced by women when utilizing digital resources in academic settings. In order to offer solutions for fostering gender equity in technology usage, it is important to have a thorough understanding of the factors influencing women's engagement with technology in higher education. The study used a survey-based methodology to collect information from female university students, examining their opinions, difficulties, and experiences using technology in the classroom. The survey captured quantitative data on the frequency of technology usage, perceived challenges and opportunities for women. The results provided insights into the hurdles that women encounter when accessing and using technology resources in university settings such as restricted access to technology infrastructure, gender prejudices, and unequal resource allocation. Additionally, the data will identify the opportunities and strategies that can encourage women's use of technology, such as inclusive learning environments, support networks and offering specialized training programs. The research has the potential to support efforts to advance gender equity through interventions and programs in higher education.

Keywords: technology access, gender equity, barriers and opportunities



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Socio-Economic Challenges faced by female students at higher education. A Case study of BNBWU

Ruqia Memon*, Kaneez Fatima Memon, Fiza Chachar and Asad Abbas Rizvi
Department of Education, Begum Nusrat Bhutto Women University Sukkur, Sindh, Pakistan
Corresponding author email: ruqia1.21ed006@bnbwu.edu.pk

Abstract. Women's higher education plays crucial role in the human capital and socio-economic development of the country. As the ratio of women comprises the half of the total population from which only 8.3% of women attended the higher education which is the least number in the whole population. In Pakistan women face many challenges, obstacles, and gender stereotypes in their educational journey. So the purpose of this study was to examine the factors which resist the females to pursue their higher education which have needed to overcome it; and to address what gender stereotype female students have encountered in higher education and how they have handled them. The study used a qualitative approach, using survey to collect information from female university students. The data was collected through purposive sampling consisted of a diverse group of participants representing different socio-economic backgrounds. The findings of this study discovered several challenges, including financial issues, travel and security risks, limited access to resources, gender based discrimination. These challenges often hinder the educational opportunities and overall academic performances of students. The results highlighted the need for targeted intervention to address the challenges faced by female students. It emphasized on providing financial support, improving access to resources, promoting gender equality that empowers female students. This study recommends that providing mentorship programs, leadership opportunities, ensuring campus safety, and offering professional development trainings can support female students in higher education

Keywords: socio-economic, higher education, gender discrimination.



Analyzing the Impact of Employee Training Programs on Job Performance in Health Department District Jamshoro: A Case Study of Extended Program of Immunization

Fawad Ahmed

Corresponding author email: ahmed.fawadsolangi@gmail.com

Abstract. In the context of developing health care system, improving job performance in crucial sectors such as healthcare is vital for overall societal progress. This research focuses on analyzing the impact of employee training programs on job performance within the health department of District Jamshoro Sindh. The Study specifically examines the Extended Program of Immunization (EPI), which plays a critical role in public health and disease prevention. As the district grapples with limited resources and infrastructure, the need to ensure efficient and effective healthcare services becomes even more pronounced. The objective of this research is to assess the current state of employee training programs implemented within the Health Department and to analyze their influence on job performance. The research methodology involves both qualitative and quantitative approaches. Data collection involves on site visits to the taluka Hospitals and basic health units where EPI vaccinations are carried out in District Jamshoro and interviews with key personnel involved in the EPI. The gathered information is statistically analyzed to determine the correlation between the training programs and job performance using appropriate analytical tools. Through this study, I aim to identify the strength and weaknesses of existing training programs and propose strategies for improvement. By understanding the impact of employee training on job performance, the research seeks to provide valuable insights that can aid in enhancing healthcare services delivery in the region. This investigation will contribute to the body of knowledge on employee training and its effects on job performance, particularly within the context of public health in emerging health care system. The findings are expected to be relevant for policy makers, healthcare administrators, and other stakeholders, enabling them to make informed decisions and optimize the allocation of resources for training programs, ultimately leading to improved health care outcomes in District Jamshoro and similar settings.

Keywords: Employee Training, Job performance, Health care system



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

The Impact of Modern Technology in Education

Musrat Zulfiqar*, Shireen Ali, Nadia Hassan

*Department of Education, Begum Nusrat Bhutto Women University Sukkur, Sindh,
Pakistan*

*Corresponding author email: shireen3.20ed025@bnbwu.edu.pk

Abstract. This research aims to investigate the impact of modern technology on education, specifically focusing on its potential to enhance teaching and learning experiences. By examining the benefits, challenges, and implications of technology integration in educational settings, this study seeks to provide valuable insights for educators, policymakers, and researchers to shape the future of education in the digital age. Through a mixed-methods approach, including surveys, interviews, and observations, the research will explore the effects of technology on student engagement, motivation, and academic achievement. The findings are expected to contribute to the existing body of knowledge on technology integration and inform the development of effective strategies for leveraging technology in education.

Key Words: Modern technology, Education, Impact of Education



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Post-Pandemic Trends in Physical Education: Lessons Learned and Future Directions

Misbah Shaikh*, Afsheen Nisar

Department of Education, Begum Nusrat Bhutto women university Sukkur

*Corresponding author email: misbah3.21edu004@bnbwu.edu.pk

Abstract. The panorama of bodily schooling has gone through awesome shifts within side the wake of the pandemic, illuminating critical classes and charting new paths for the destiny. This summary delves into the evolving instructional troubles in cutting-edge society, highlighting the revolutionary and adaptable strategies which have emerged. In latest times, the pandemic has challenged traditional paradigms of bodily training, necessitating a fast transition to far flung getting to know and virtual platforms. The virtual divide, characterised through unequal get admission to era, and emerged as enormous instructional concern. However, this impediment caused educators to undertake innovative methods, mixing on line workouts, interactive videos, and digital challenges, fostering inclusivity and engagement. The lockdowns and regulations underscored the significance of bodily and intellectual well-being, main educators to reimagine holistic fitness schooling. Integrating mindfulness, stress-comfort techniques, and self-care practices into the curriculum have become paramount, reflecting a forward-searching method to nurturing resilient individuals. Moreover, the pandemic found out the constraints of conventional evaluation methods, sparking discussions on greater complete and adaptable assessment techniques. Educators leveraged era to evaluate skills, progress, or even emotional states, fostering a customized mastering revel in for every student. Looking ahead, the post-pandemic generation beckons a dynamic transformation of bodily schooling. A hybrid model, mixing in-man or woman and virtual instruction, stands as a promising technique to accommodate numerous gaining knowledge of preferences. This transition additionally requires renewed emphasis on instructor training, empowering educators to harness the whole capability of digital gear even as keeping the essence of bodily activity. The pandemic-prompted disruptions in bodily schooling have catalyzed a reimagining of tutorial methods. By addressing virtual disparities, embracing holistic fitness, and innovating evaluation methods, educators are carving a course in the direction of an extra inclusive, adaptable, and powerful destiny for bodily schooling.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keywords: Post-pandemic trends, Physical schooling, Educational problems, Holistic fitness, Teacher training, Adaptability.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Investigating How Artificial Intelligence Adapts Feedback and Content to Improve User Performance to enhancing Language Learning with AI: A survey study of Public University of Sukkur Sindh

Noor Fatima* and Humera Aijaz

Education Department, Begum Nusrat Bhutto Women University Sukkur

*Corresponding author email: fatima3.21edu022@bnbwu.edu.pk

Abstract. In an evolving landscape of language education, traditional methods are encountering challenges in effectively catering to the diverse learning needs and preferences of students. Conventional approaches often struggle to provide personalized feedback and adapt learning content in real-time based on individual performance. This limitation impedes the optimization of language acquisition processes, hindering learners' abilities to attain higher levels of proficiency efficiently. As technology, particularly artificial intelligence (AI), becomes more integrated into education, there arises a need to investigate whether AI-driven language learning platforms can effectively address these challenges. This research study investigates the impact of artificial intelligence (AI) on language learning, using a quantitative approach to gather and analyze data. The focus is on how AI provides personalized feedback and adjusts learning content based on user performance. Through surveys, tests, and usage data from language learning apps with AI features, we gather information about how learners interact with AI-driven tools. We measure how their performance changes after receiving personalized feedback and engaging with adapted lessons. By applying statistical analysis to the collected data, we aim to understand the effectiveness of AI in language learning. This study contributes insights into whether AI's individualized guidance and tailored content positively influence learners' language acquisition outcomes. The findings provide valuable information about the practical impact of AI in language education, offering guidance to educators and learners on leveraging AI tools for improved language proficiency.

Keywords: Technology integration, Artificial intelligence, AI-driven language learning platforms, AI tools, language education, Traditional methods.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

INVESTIGATING THE RELATIONSHIP BETWEEN SOCIOECONOMIC SUPPORT AND STUDENT ACHIEVEMENTS

Saima Maitlo*, Zamina Batool shaikh, Asad Abbas Rizvi

Department of education The Begum Nusrat Bhutto women university Sukkur

*Corresponding author email: saima3.21edu025@bnbwu.edu.pk

Abstract. The relationship between different types of socioeconomic support, such as financial assistance and access to educational resources, and student achievements were investigated. The study conducted interviews with five students from Begum Nusrat Bhutto Women University Sukkur to understand the relationship between socioeconomic support and student achievements. It was found that students who received financial support showed improvements in their CGPA and overall academic performance. It highlights the importance of financial support for students and suggests that the government should consider introducing stipends to provide additional financial assistance. By understanding the financial position of students, policymakers can better support their educational needs. It is important to acknowledge the limitations of this study. Future research could explore this relationship using quantitative methods or alternative research mechanisms to gain a more comprehensive understanding. In conclusion, this study found a positive relationship between socioeconomic support, including financial assistance, and student achievements. The findings emphasize the significance of providing adequate support to students to enhance their academic outcomes.

Keywords: Socioeconomic support, Financial assistance, Student achievements, Qualitative method.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Effect of physical education on students' academic performance

Farah Shar*, Ghanwa Shar and Asad Abbas Rizvi

Department of Education, Begum Nusrat Bhutto Women University Sukkur, Sindh, Pakistan

*Corresponding author email: farah3.21edu003@bnbwu.edu.pk

Abstract. In today's era physical activities are very important for both health and survival. It effects not only students' mental health but also academic performance including grades and scores. Physical education emphasis students hands on activities through which their cognitive abilities, attitudes, and academic behavior can be improved. It increased greater focus and attention as well as improved behavior in the classroom. The objective of this study were 1) to find out how physical education effects students academic performance at college level, 2) to find out how much it is effective for students academic performance at college. The study used a qualitative approach, using interviews to collect the data from female students studying at intermediate level in khairpur city. By using convenient sampling technique 25 students were selected. Interview was used as data collection tool. The data was analyzed by thematic analysis. The finding of the study revealed that physical education is significant for students to develop their cognitive skills specially those children which are at school or college level. Physical education also develops students' gross motor skills, spelling performance. Due to physical education students are more active in academic level. They more participate in the classroom. Physical education help students to reduce stress increase focus and enhance memory and problem solving skills. It was concluded that physical education improves academic achievement of all students also enhance their thinking power. This study recommends that enhance more physical activities in classroom and provide more opportunities to students so that they would become more competitive and get more opportunities in their academic work.

Keywords: Physical activities, Academic performance, Thematic analysis.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

**Reimagining a World without Poverty:
An Examination of the Effectiveness of SDG-1 and Future Prospects
Following the UN-SDG 2015 Agenda**

Hafsa Shaikh and Adnan Pitafi

Mehran University Institute of Science, Technology and Development Jamshoro

Corresponding author email: hfsashaikh12@gmail.com

Abstract. A set of global goals intended to end poverty, protect the environment, and bring prosperity to all people, the Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015. In order to ensure sustainable development for the world's poorest and most vulnerable communities, SDG-1 principally focuses on eradicating poverty in all of its manifestations. A quarter of the population in Pakistan lives below the poverty line, which presents serious problems for the country. One of the four provinces in the nation is Sindh, which is home to a sizable number of marginalized and disadvantaged people, especially in rural areas. The goal of the Sustainable Development Goals (SDGs) is to end poverty worldwide by 2030, and this research study examines whether Pakistan has achieved this goal. The paper looks at Sindh's progress towards SDG-1 since it was included in the UN-SDG 2015 Agenda, as well as the problems that have prevented it from being implemented. By considering the state of current efforts to combat poverty and their potential to achieve the UN's lofty goals, the research also examines the likelihood of achieving SDG-1 in the future. Policymakers, international organizations, and academics working on the topic of eradicating poverty can all benefit from this study's insights. According to the findings, combating poverty requires a comprehensive strategy that takes into account all of the different economic, social, and environmental factors that contribute to poverty in Sindh. The document concludes by calling for renewed efforts to eradicate poverty and accomplish SDG-1 by 2030.

Keywords: No Poverty (**SDG-1**), Sustainable Development Goals (**SDG**), United Nations.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Assessing the Effectiveness of Gamification Tools for Recruitment and Selection Process in Pakistan's Universities

Samar Siddiqui and Adnan Pitafi

Mehran University Institute of Science, Technology and Development Jamshoro

Corresponding author email: samarqadir630@gmail.com

Abstract. This paper explores the innovative field of gamification and what are its applications in the landscape of the hiring process. Recruitment is still an under-researched phenomenon, especially in Pakistan's universities. This paper aims to develop a gamification tool for recruitment and selection in Pakistan's universities, based on the principles of reliability, validity, fairness, and fun. The paper will review the existing literature on gamification in recruitment, identify the challenges and opportunities of applying gamification in Pakistan's context, and propose a conceptual framework for designing and implementing a gamified recruitment process. The paper will also present a prototype of a gamified assessment that can be used to evaluate candidates' cognitive abilities, motivation, creativity, and fit with the university culture. Our tool consists of three main components: a game engine, a game database, and game analytics. We use Unity 3D as the game engine to create and test various games that are designed to measure and enhance the skills and motivations of teacher applicants. The purpose of this paper is to discuss the potential benefits and limitations of the gamified tool, as well as the ethical and legal implications of using gamification in the recruitment and selection process

Keywords: Gamification, Universities, Recruitment.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Quantitative Study on the Impact of Autonomous Learning on University Students' Academic Motivation

Uzma Buriro* and Roshan Ali

Begum Nusrat Bhutto Women University Sukkur

*Corresponding author email: uzma3.22msed004@bnbwu.edu.pk

Abstract. This study aims to better understand how independent learning practices affect university students of Sindh desire to learn. This study, which is concentrated on the university environment, makes use of a correlational design to investigate the connection between students' levels of academic motivation and autonomous learning practices. The study's participants include a diverse group of university students from several academic fields, mirroring a situation that might occur in the real world. In order to obtain an in-depth understanding of students' experiences with autonomous learning and the levels of academic motivation that correlate to those experiences, data collection techniques include self-report questionnaires and academic performance records. The main quantitative analysis in this study centers on the evaluation of students' autonomous learning behaviors, such as time management skills, self-directed study habits, and use of resources for autonomous learning, is provided through the autonomous learning assessment. Measurement of Academic motivation, a standardized measurement method that has been approved and customized for this study is used to gauge participants' levels of academic motivation. Calculating correlation coefficients is a step in quantitative data analysis that reveals the direction and degree of the link between academic desire and autonomous learning activities. The identification of potential moderating variables, such as academic discipline or year of study, may also be done using inferential statistics. The study aims to evaluate the level of autonomous learning behaviors among university students, including self-directed study habits, time management skills, and engagement with autonomous learning resources. To examine the relationship between autonomous learning behaviors and academic motivation among university students. Compare the achievement results between student-directed learning and learning that is guided by a teacher.

Keywords: Autonomous learning, University students, Academic motivation



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Factors Affecting in Career Choice of Secondary School Student

Farah Naz* and Roshan Ali

Begum Nusrat Bhutto Women University Sukkur

*Corresponding author email: farah.akbar.shah@gmail.com

Abstract. The prime aim of the study is to evaluate how parental and economic factors affect the career choice of secondary school students in Sindh. We conducted primary research to collect data from 400 students asked to fill in a questionnaire containing close-ended questions pertaining to their career choice in future. The questionnaire consisted of 15 questions regarding parental and economic factors. Out of 400 students, only 263 students returned the completed questionnaire. Thematic analysis helped to understand main themes and sub-themes from the study. The four main themes included parental behavior, parental education, parental knowledge of career, and parental realization showed that they little care about the career choice of their children. Their harsh and unfriendly behavior, insufficient education and career choice knowledge depict that they do not positively encourage their children to select a right career choice. Parental realization of career choice is another factor that suggested that the majority of students feel that their parents do not realize how important career choice decision is for their future career and future prosperity. Economic factors, such as monthly income, daily income, annual income, and living style, basic necessities, show that they directly affect career choice. One respondent mentioned that his father earns hardly 700 rupees. It is difficult for them to meet their basic human needs.

Keywords: Parental factors, Economic factors, Human needs.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

WOMEN WORKING AS A FREELANCER IN TODAY'S DIGITAL ERA

Sheeba Memon^{1,*}, Saajid Hussain Mirbahar² and Naadiya Mirbahar³

¹*Government College University Hyderabad, Sindh, Pakistan*

²*Shaheed Benazir Bhutto University, Naushero Feroz Campus, Sindh, Pakistan*

³*University of Sufisim and Modern Sciences, Bhitshah, Sindh, Pakistan*

*Corresponding author email: sheeba.memon@gcu.edu.pk

Abstract. The changing world requires women to play the leading role in today's digital era in order to contribute for development of society in general, and family in particular. The transformation of world towards the online activities has opened a new window for the women's to come forward in leading position and start their own startups or to work for the organization that not only allows them to work remotely, but also it encourages them to build new contacts and explore new ventures. This change has allowed the women to work as a freelancer and start earning without moving from their homes. The majority of women in our country are forced to remain in their homes even after getting higher degrees and cannot continue their professional journey due to such restrictions. While, the businesses are striving to hire qualified and skilled workers, the Internet has opened a new window for the women's with skills can work from their home as Freelancer for any company around the world, however, this does open a new window, but brings other challenges as well as including balance of family and work responsibilities. This brings a new workload on women working from home which might create different problems such as difficulty in balancing work life and home activities. This paper presents an overview about the women working as freelancer and difficulties being faced in terms of family responsibilities and work life.

Keywords: Freelancer, women empowerment, women leadership, technology



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Investigating professional attraction and marketability of various disciplines university of Sindh, challenges and opportunities

Waqar Ali*, Qazi Moinuddin Abro and Adnan Pitafi
*Mehran University Institute of Science, Technology and Development
MUET Jamshoro*

*Corresponding author email: waqaralisoomro76@gmail.com

Abstract. Professional attraction and Marketability of disciplines have been important for students to consider before choosing a career path in today's quickly changing job market. This aims to provide better understanding of marketability and professional attraction of different disciplines, as well as the challenges and opportunities in pursuing careers., it empowers individuals to make decisions about their career paths and to prepare for the quickly changing job market. Investigating professional attraction and marketability of disciplines is an important factor provides valuable current and future state of the job market. This also highlights some of the challenges and opportunities faced by professionals and academics in different disciplines. Results of present research would help, academic institutions to update curriculum to ensure the marketability of graduates. Pure quantitative method /approach will be applied. The results of this research would help students to analysis the marketability and professional attraction. This study aims to investigate the challenges and opportunities associated with professional attraction and marketability of various disciplines in the current scenario.

Key words: Professional attraction, challenges and opportunities, Marketability, Disciplines



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

POLITICAL SKILLS AND IMPRESSION MANAGEMENT AS A MEANS TOWARDS SELF-PROMOTION IN ACADEMIA: BLESSING OR EVIL

Nida Kalwar and Adnan Pitafi

Mehran University Institute of Science, Technology and Development

MUET, Jamshoro Sindh Pakistan

Corresponding author email: nidakalwar67@gmail.com

Abstract. The purpose of the paper is to conduct a systematic review of political skills and impression management as a means of self-promotion in academia. Political skills and impression management tactics play a crucial role in the employee's success in the organization because such skills and tactics help employees build reliable, friendly, and social networks that are beneficial for them in excelling in their careers. The study also explains only employees with good political skills get recognized without power and influence, promotion is not possible in the organization and is based on merit/competence. Further, this study also explains that Self-promotion is an impression management tactic in which individuals promote his/her achievements to be seen as competent people in front of others. The review also states the importance of political skills and impression management tactics based on which employees adequately present themselves to enhance their future careers these tactics lead to enhance self-image and are positively related to an increase in performance and promotion. Moreover, the study claims that four dimensions are recognized as beneficial in the workplace social astuteness, interpersonal influence, apparent sincerity, and networking ability. Further studies may provide a significant abstraction that organizations need to get insight into why employee use their influence and power in their actions to get promotions. Such political skills and impression management tactics should be considered as positive that help employees to get favors at the workplace.

Keywords: Political Skills, Impression Management, Self-promotion, Academia.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH OF ASEAN COUNTRIES AND PAKISTAN

Nimra Noor and Waqar Ahmed Sethar

Mehran University Institute of Science, Technology, and Development MUET Jamshoro

*Corresponding author email: nimranoor055@gmail.com

Abstract. In this study, using data spanning a 12-year period (2011-2022), we analyze the short- and long-term effects of public debt on economic growth in South East Asian (ASEAN) countries and Pakistan. In essence, Pakistan's economic growth has been compared to that of Asean nations. While measuring economic growth, we utilized GDP growth rate, while measuring public debt, we used a proxy general government gross debt (as a proportion of GDP). In order to emphasize the influence of other factors on economic growth, our models also include a set of control variables. We used a number of econometric techniques linked to ARDL (autoregressive distributed lag models), including the pooled mean group (PMG), the mean group (MG), and the dynamic fixed effects (DFE) models. The study's findings demonstrate that an increase in public debt has a negative and considerable impact on economic growth over the short and long terms. Particularly, the predicted public debt coefficients look statistically significant and adverse, although the severity of the adverse effect on economic development varies significantly. These findings lead us to believe that it is vitally important to closely manage the level of public debt in order to promote economic growth. Managers, economists, investors, and the government might find the debt-to-GDP ratio helpful as they can utilize it to evaluate a nation's capacity to pay off its debt.

Keywords: Public debt, GDP, Economic growth, ARDL, ASEAN



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

What are the Factors affecting PSTs Job Satisfaction! An Investigation of the Motivating factors of teaching staff in district Dadu

Akash Soomro, Muhammad Moinuddin Qazi Abro and Adnan Pitafi
Mehran University of Engineering and Technology, Jamshoro
Corresponding author email: aakashazizsoomro2009@gmail.com

Abstract. The aim of the study is to evaluate the level of job satisfaction among government primary school teacher in district Dadu. The quantitative method was Applied to carry out this study. Data was gathered via Survey questionnaire based on five-point Likert scale. The population of the study Comprised of government primary school teachers, the 58 schools were chosen for this study from taluka Johi and Dadu of District Dadu. 343 PSTs were selected. Data collection instruments included 'Teachers' job satisfaction related questions. Data was analyzed in SPSS software version 25, and the descriptive test and independent T-test were conducted. Key Findings, according to the first objective, PSTs are not satisfied with PROMOTIONAL OPPORTUNITIES and SALARY, while to achieve the second objective the independent variables were examined through independent sample T-test with gender group and According to the Significant value of 0.006 (<0.05) the job satisfaction varies from Male to Female in terms of Promotional Opportunities and working environment with significant value of 0.013. According to the third objective a set of recommendations is developed which are given below according to the employee's job satisfaction. Several suggestions can be presented to enhance job satisfaction considering the findings related to PSTs. These include providing regular promotions, raising salaries annually, merging ad-hoc relief allowances into basic pay, increasing allowances such as medical, house rent, and conveyance allowances. The Primary School Teachers should be promoted to High School Teachers through DPC, PSTs must be promoted to Management Level based on their education level.

Keywords: Primary School Teacher, Job Satisfaction, Dadu



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

CHALLENGES FACED BY UNDERPRIVILEGED WOMEN IN DEVELOPING TECHNOLOGY SKILLS AT THE UNIVERSITY LEVEL

Summera Muhram, Uzma Akabr, Sana Sabayo, Shah Bibi khan
The Begum Nusrat Bhutto Women University Sukkur, Pakistan

Abstract. This study investigated the issues and challenges encountered by underprivileged women have when trying to develop their technological abilities in a university setting. The gender gap in the technology industry is still significant in this period of fast technical growth. In order to promote gender equity, social empowerment, and inclusive technological growth. The study aims to address the issue of underprivileged women's underrepresentation and marginalization in technology education. Despite improvements in gender equality, women still encounter obstacles in obtaining high-quality education in professions related to technology, especially those who come from underprivileged homes. This work aims to recognize and comprehend the complicated obstacles that stand in the way of students' pursuit of technology skills at the university level, and it then suggests solutions to these obstacles, this study employs a mixed-methods approach that blends qualitative and quantitative techniques. Preliminary findings underscore the multifaceted nature of the challenges faced by underprivileged women. Financial constraints emerge as a significant barrier, limiting access to essential resources and tools for technology education. Cultural expectations hinder their progress. The lack of mentorship and gender-inclusive policies exacerbates feelings of isolation and impedes progress. This study has both practical and sociological repercussions. The study's findings can help institutions and legislators understand how urgent it is to put in place targeted support systems, scholarships, and inclusive policies. A more conducive environment for underprivileged women can be created by removing financial obstacles, improving mentorship possibilities, and updating curricula to reflect different viewpoints.

Keywords: Underprivileged women, Gender inequality, Technological challenges



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

A Comparative Study of Pricing Strategies through Marketing Efficiency in Pesticides Market

Muhammad Mohsin Yousfani

Mehran University Institute of Science, Technology & Development, Jamshoro

Corresponding author email: mohsinyousfani@yahoo.com

Abstract. This study will contribute in understanding the pesticides marketing channels. The study of current marketing channels of pesticides market to calculate the marketing efficiency of existing marketing channels and factors affecting marketing efficiency and also evaluate the impact of marketing efficiency on the end-users in TandoAllahyar. Due to the existence of numerous functionaries between the manufacturing business and the user-farmers, the marketing channels of pesticides is a complex system. It is made worse by the fact that there are several pesticides present and that there are unauthorized vendors in the market. Previous research discusses the absence of links between manufacturers and traders of pesticides market, talks about the low quality of pesticides and lower price for farmers and highlights the distribution of pesticides as a challenging phenomenon for farmers. Since no research is yet conducted to explore the local marketing channels (i.e. Pakistan) as well as the adverse effect of these channels on end customers. There are multiple channels of pesticides delivery in TAY. However, this study has discussed channels of important pesticides. It has been observed that farmers pay higher price for pesticides because of the presence of a number of intermediaries in the channel. The marketing efficiency has been relatively low in the channel where farmer purchase pesticides from the dealers. A Comparative Analysis with adapted framework of marketing channels is used to study the marketing channels in the pesticides market within qualitative data collected from structured interviews conducted in TAY. Statistical Analysis is used to calculate the marketing efficiency of existing marketing channels to assess an impact on end-user(s). This research will provide the pathway to the concerned regulatory authorities to minimize the bad business practices in existing marketing channels of pesticides market.

Keywords: Pricing Strategies, Marketing Efficiency, Pesticides Market, Pesticides Marketing Channels, TandoAllahyar.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

PSYCHOLOGICAL CAPITAL INFLUENCE BURNOUT AND ORGANISATIONAL CITIZENSHIP BEHAVIOR AMONG CUSTOMER SERVICE: A MODERATING ROLE OF GENDER DIFFERENCES

Mahwish Saeed*, Sana Tahir and Muhammad Osama Siddiqui
Iqra University, Main Campus, Karachi

*Corresponding author email: mahwish.saeed@iqra.edu.pk

Abstract. The purpose of the study is to assess the impact of Psychological Capital on burnout and organizational citizenship among customer service with considering the gender difference in Psychological Capital as a moderating variable. Confirmatory factors Analysis (CFA) technique was used where partial least square (PLS) structural equation modelling (SEM) was adopted to undertake the empirical study. The population of the study was employees working in the services sectors, and a non-probability sampling technique was employed where 384 out of 500 responses were achieved successfully online. However, a reflective-reflective hierarchical model was used for validation and in this model a two-stage approach was adopted. Findings of the study have suggested that the effect of psychological capital on the employee burnout and organizational citizenship behavior has been positive, and this reveals that if an individual is in a positive state of mind then this can be translated into the lower burnout and influence organizational citizenship behavior. However, gender has been found to have no role in moderating the effect of psychological capital on the burnout and organizational citizenship behavior. This also reveals that employee burnout and organizational citizenship behavior is independent of gender and there can be a male employee or female employees equally exposed to burnout risk or develop organizational citizenship behavior over a period of time but subject to psychological capital. The present study primarily focused on the customer service organizations, hence future study is suggested on different sectors and organizations which will help to overcome this limitation and expand the scope of the study.

Keywords: Psychological Capital (PsyCap); Organizational Citizenship Behavior (OCB); Employee Burnout



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Analysis of sales Growth and firm size and its impact on sustainability practices of oil and gas sector of Pakistan

Afaque Ali

Corresponding author email: afaqueali370@gmail.com

Abstract. This research delves into the effects of sales growth, firm size, and leverage ratio on sustainability reporting practices within Pakistan's oil and gas sector from 2007 to 2021. Using annual reports and the financial statement analysis reports from the State Bank of Pakistan website, the study employs panel least squares and regression techniques in EViews software. The results indicate that larger firms are more likely to engage in socially responsible practices and exhibit proactive social responsibility. Conversely, a higher leverage ratio is associated with a decrease in sustainability reporting. Interestingly, sales growth does not demonstrate a significant correlation with sustainability reporting. These findings signify the economic benefits of comprehensive sustainability reporting, which can attract investment and validate transparency. Moreover, they underscore the broader societal and environmental advantages of such practices, contributing to a more sustainable and responsible oil and gas industry in Pakistan.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

The Implementation of Quality Management System in Healthcare: A Case of LUMHS Jamshoro

Mujeeb ur Rehman¹, Moin ud din Qazi¹, Asif Ali Shah

¹*Mehran University Institute of Science, Technology & Development, MUET Jamshoro*

Corresponding author email: mujeebrk39@gmail.com

Abstract. Quality Management Systems (QMS) are integral to healthcare institutions' efforts to provide high-quality care, improve patient outcomes, and ensure compliance with regulatory standards. This paper focuses on the successful implementation and outcomes of a QMS at LUMHS (Liaquat University of Medical and Health Sciences), shedding light on its transformative role in healthcare quality. LUMHS, like many healthcare organizations, faced challenges related to maintaining consistent quality, adhering to industry standards, and continuously improving healthcare delivery. The implementation of a QMS aimed to address these challenges and elevate the overall quality of care provided to patients. This paper presents a comprehensive examination of the QMS at LUMHS from patients' perspective. It delves into various factors and variables to understand the level of quality at LUMHS after the implementation of QMS. We data through structured surveys distributed among patients. Qualitative and Quantitative insights were gathered through responses to the survey. Statistical analysis techniques, including ANOVA and correlation, were applied to the survey data to understand the Impact of QMS on quality of service at LUMSH. Our findings indicate that the overall quality of healthcare services provided by LUMHS is a crucial driver of patient satisfaction and recommendations. Effective communication, respectful treatment from healthcare staff, facility cleanliness, reasonable waiting times, and privacy were identified as significant determinants influencing patient opinions. Particularly, clear and understandable communication about medical conditions, treatment options, and post-treatment care emerged as a pivotal aspect of patient satisfaction.

Keywords: Health Care, Quality Management System



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

INVESTIGATING THE EFFECT OF ISLAMIC FINANCIAL LITERACY ON THE ADOPTION OF ISLAMIC BANKING SERVICES: A MULTIPLE MEDIATION PERSPECTIVE

Sanober Baloch

Mehran University Institute of Science, Technology and Development, MUET Jamshoro

Corresponding author email: sanober.baloch24@outlook.com

Abstract. This work investigates the effect of IFL on AIB services from a multiple mediation perspective in Pakistan. Despite being an Islamic country, Islamic banking services are still not frequently used in Pakistan, which calls for the investigation of the factors that hinder its adoption. The study aims to explore the effect of IFL on the adoption of Islamic banking services and to analyze the mediating effect of Religiosity towards Islamic banking, SN, and PBC in this relationship. The methodology of research involves quantitative analysis, and data were collected from 440 participants in Hyderabad City, Pakistan, using a questionnaire survey. The SPSS software was used to analyze collected data, including descriptive statistics, correlation analysis, and regression analysis, to investigate the relationships among independent, mediating, and dependent variables to examine the hypotheses. The findings revealed that there is a significant direct relationship between IFL and SN on the adoption of the Islamic banking system. Moreover, there is no direct relationship between IFL and PBC, SN and AIB, PBC, and AIB, and R and IFL on the adoption of the Islamic banking system. The findings showed that social norms did have a major impact on the adoption of the Islamic banking system ($p=.013$) and that there was a significant direct relationship between perceived behavioral control and Islamic financial literacy ($p=.049$). However, the study found no direct relationship between religiosity and the AIB system ($p=.112$) and between social norms and IFL ($p=.001$). The findings of this study are in line with previous ones that have investigated the determinants of the adoption of the Islamic banking system. However, some studies have reported mixed findings regarding the impact of SN and PBC on the adoption of the IB system. By providing empirical findings, the current study reinforces the existing body of literature on the relationship between IFL, SN, PBC, and R, and the adoption of the Islamic banking system in the context of Hyderabad. The study adds to the body of knowledge on Islamic banking and financial literacy by presenting clear indications of the significance of Islamic financial literacy in the adoption of Islamic banking services in Pakistan. The study also highlights the mediating



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

roles of Religiosity towards Islamic banking, social norms, and perceived behavior control in influencing the relationship between Islamic financial literacy and the adoption of Islamic banking services. The results of this study have effective policy implications, for financial institutions, and marketers in developing effective strategies to promote IFL and increase the AIB services in Pakistan. The study recommends future research to explore other factors that could affect the use of Islamic banking services in Hyderabad.

Keywords: Islamic financial literacy, Islamic banking services, adoption of the Islamic banking system, multiple mediation perspectives, social norms, and perceived behavior control.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Analyzing the Effect of Responsible Leadership on Employee Turnover and Organizational Performance: The Mediating Role of Trust

Rifat Ul Ain

Mehran University Institute of Science, Technology and Development, Jamshoro

Corresponding author email: rifatsoomro1994@gmail.com

Abstract. The purpose of this study is to analyze the effect of the responsible leadership on employee turnover and organizational performance, mediating the role of trust. Using the quantitative method of research, deductive approach has been carried out & data has been collected from respondents of English Biscuit Manufacturing Company. Four number of research analysis techniques have been used which are frequency analysis, reliability analysis, correlation analysis & regression analysis. The software that has been utilized for analysis, is SPSS V.25. In order to check the mediating effect of trust between the independent variable and dependent variables, process v.4.1 regression analysis has been conducted. The results of this research emerged as the acceptance of all the 4 hypothesis, which describe that there exist a relation between responsible leadership, employee turnover & organizational performance. As a mediating role of trust is included, then there's impact of trust between the responsible leadership & organizational performance as well as with the Employee Turnover. The significance of this research is its real time application to an organization where employees leave their jobs very often and the company growth also decay. The effect of responsible leadership on the employee turnover as well as organizational performance may result in some profiteering outcomes which may be used to implement in any organization in order to reduce the employee turnover rate and to enhance the effective performance environment.

Keywords: Responsible leadership, Employee turnover, Organizational performance.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Evaluating the HEC's Smart-Universities initiative and its Implementation in Mehran UET Jamshoro

Muazam Ali, Shah Muhammad Kamran and Adnan Pitafi

Mehran University Institute of Science and Technology Development, Mehran University of Engineering and Technology, Jamshoro

Corresponding author email: moazzam.ali.alvi.shah@gmail.com

Abstract. The research paper aimed to conduct a comprehensive examination of the intricacies and challenges associated with implementing Smart University initiatives. Employing a robust mixed-method research design, the study pursues three central objectives: firstly, to assess the existing Information and Communication Technology (ICT) infrastructure at Mehran UET; secondly, to pinpoint the challenges and bottlenecks encountered during the implementation process; and thirdly, the research employs an Importance-Performance Matrix (IPX) based on stakeholder (students, faculty, administration and Project Team) feedback to identify areas requiring urgent policy intervention. Data collection involved using Google Forms and facilitating the distribution of structured questionnaires to stakeholders. The research employed Microsoft Excel for initial data analysis, encompassing descriptive and inferential statistics and the Importance-Performance Matrix (IPX). Further data validation was ensured through SPSS's Cronbach's Alpha Test, affirming survey instrument reliability. The findings offer a nuanced view of Smart University implementation at Mehran UET, revealing high satisfaction with specific features like Data-Com Security Protocols but identifying areas requiring policy intervention. Notably, stakeholders are shifting focus towards the quality and scope of essential services as foundational ICT infrastructure is established. The paper concludes with actionable recommendations for policymakers and university administrators to guide future strategies and enhance Smart University implementations' effectiveness and stakeholder satisfaction.

Keywords: Smart University, Importance Performance Matrix IPX, Policy Recommendations.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Impact of Capital Structure on Dividend Payouts Of Publicly Listed Firms of Pakistan: A Case Study From Pakistan Stock Exchange (Psx)

Syed Owais Ahmed Shah

Mehran University Institute of Science, Technology and Development

Faculty of Science, Technology and Humanities

Corresponding author email: owaisshahmsm@gmail.com

Abstract. This research paper delves into the analysis of financial data encompassing dividend per share (DPS), equity ratio (ER), current ratio (CR), and earnings per share (EPS) from a sample spanning 2017 to 2021. The study employs statistical and econometric techniques to provide insights into the relationships and underlying patterns within the dataset. Descriptive statistics unveil that the DPS exhibits substantial variation, with a mean of 10.42 and a median of 4.50, reflecting a skewed distribution. The equity ratio and current ratio similarly demonstrate skewed distributions, while earnings per share presents a mean of 19.01 and a median of 10.65. Notably, high standard deviations compared to means underscore the dataset's dispersion. Skewness and kurtosis values affirm the non-normality of the data, and the Jarque-Bera test confirms the rejection of the normality assumption. Correlation analysis reveals significant positive associations between DPS and ER, CR, and EPS, with the latter displaying a strong relationship. The absence of negative correlations indicates the absence of an inverse relationship in the dataset. The study employs the Hausman test, suggesting that a fixed effects model is more suitable than a random effects model. Subsequently, a panel fixed effect regression model is constructed, explaining 94% of the variability in DPS. The Durbin-Watson statistic supports the absence of autocorrelation, while the F-test underscores the model's overall significance. Residual analysis and normality tests validate the appropriateness of the fixed effect regression model, as residuals exhibit no discernible patterns and adhere to normality assumptions. Cross-section dependency tests reveal no evidence of correlation among panel observations, while heteroscedasticity tests confirm the homoscedasticity of residuals. In conclusion, this research provides valuable insights into the financial dynamics of DPS, shedding light on the significant impact of ER, CR, and EPS. The findings contribute to a deeper understanding of dividend policies and their determinants, offering implications for financial decision-making.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Keywords: Dividend policy, capital structure, Pakistan Stock Exchange, Liquidity, Profitability



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

A Fundamental Study on the Psychological Impact of Global Climate Change

Jamil Afzal^{1, *}, Ammar Bin Halim² and Soraya Sarwari³

¹*College of Hydraulic & Environmental Engineering, China Three Gorges University, China*

²*College of Civil Engineering and Architecture University: China Three Gorges University China*

³*College of Hydraulic & Environmental Engineering, China Three Gorges University, China*

*Corresponding author email: jamil@ctgu.edu.cn

Abstract. Global climate change is anticipated to have a direct and major impact on mental health, increasing the prevalence and severity of mental health problems in the impacted areas due to extreme weather patterns and other environmental stressors. This could significantly impact mental health services and economic, social, and environmental structural factors that contribute to overall mental well-being. This study has greater significance because natural catastrophes frequently result in an increase in somatic illnesses major depression, chronic and persistent post-traumatic stress disorder, and other issues like increased rates of substance misuse, suicide, and the danger of child abuse. More frequent and intense heat waves linked to climate change may also result in increased mortality, homicide, suicide, physical assault, and domestic violence. Despite the vastness of the issue, direct encounters with the effects of climatechange worldwide remain uncommon in many locations around the globe. Climate changedoesn't trigger intense reactions in some people, whereas, for others, it represents a "worldwide ecological crisis" causing unease and emotional turmoil.

Keywords: Climate Change, Psychological Impact, Environmental Impacts



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Perceptual Analysis of Tone Mapping Algorithms

Raazia Sosan*, Muhammad Hamza Qureshi, Zukhruf Basheer
DHA Suffa University

*Corresponding author email: raazia.sosan@dsu.edu.pk

Abstract. Tone mapping is a crucial step in rendering, as it maps the High Dynamic Range (HDR) images to a Lower Dynamic Range (LDR) for display on standard devices. In this research, we address the challenge of selecting the most appropriate Tone Mapping Operator (TMO) based on perceptual differences, which are essential for achieving visually aesthetic and physically plausible images. In this article, we evaluate several existing TMOs using two novel perceptual parameters: Structural Similarity Index (SSIM) and Color Difference Formula (CIEDE2000). By utilizing these novel parameters, we aim to provide a comprehensive analysis of the performance of various TMOs under different scenarios. Our experimental results reveal significant variations in the performance of the evaluated tone mapping operators. Some operators exhibit superior performance in preserving structural information and color accuracy, while others may excel in certain specific scenarios. By shedding light on the perceptual differences among the evaluated tone mapping operators, this article facilitates the effective utilization of tone mappers for achieving desired visual outcomes. Additionally, the proposed SSIM and CIEDE2000 metrics serve as valuable tools for future research and benchmarking in the field of image processing.

Keywords: Image Quality Assessment, Tone Mapping Operators, Image Processing



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Toxicity of insecticides bifenthrin and fipronil against *Oxya japonica* (Orthoptera: Acrididae)

Wajeeha Tanveer*, Sajida Mushtaq, Sadia Maalik, Qurat Ul Ain and Moazama Batool
Department of Zoology, Government College Women University Sialkot

*Corresponding author email: wajeeha.tanveer18@gmail.com

Abstract. Insecticides serve as an agent to control insect pests. However, frequent use of same chemicals can lead to development of resistance in insects. Orthoptera is known to be one of the largest order of insects and also a very common insect order in Pakistan. The present study aims to determine the toxicity (LC₅₀) of bifenthrin and fipronil against *Oxya japonica* of order Orthoptera and to evaluate the DNA damage caused in insects by using comet assay. Insects were collected from crops system of district Sialkot, Pakistan. Lethal concentration of insecticides for these insects was determined by using probit analysis. The LC₅₀ of bifenthrin and fipronil was 10µl/L and 16µl/L against nymph and 32µl/L and 48µl/L against adult grasshopper, respectively. Bifenthrin showed relatively less lethal concentration and higher toxicity in comparison to fipronil. High amount of DNA damage was present in the insecticide treated groups. Insects exposed to bifenthrin showed more DNA damage as compared to fipronil. Present study concludes if insecticidal application is needed to control insect pest then it should be used in least concentrations to reduce the chances of resistance development in insects and for sustainability of agroecosystem. The significance of the current research on *O. japonica* is that no previous work had been done to determine the LC₅₀ of selected insecticides and the DNA damage using comet assay.

Keywords: Orthoptera, *Oxya japonica*, Bifenthrin, Fipronil, Toxicity, DNA damage



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Effect of selected insecticides on Coleopteran foliage fauna of district Sialkot

Aleena Yousaf, Sadia Maalik*, Sajida Mushtaq, Moazama Batool and Qurat ul Ain
Department of Zoology, Government College Women University, Sialkot, Pakistan

*Corresponding author email: aleena.yousaf41@gmail.com

Abstract. Agriculture is considered as back bone of Pakistan's economy. An insect plant interaction is a major component in the trophic food chain. Coleoptera is one of the biggest orders of insects. When an insect exceeded from economic threshold level, insecticides are used to control insect pest. Present study was aimed to determine the diversity and relative abundance of foliage Coleopterans from selected crops of district Sialkot and to estimate lethal concentration on the abundantly selected species of order Coleoptera. A total of 1659 specimens were collected by sweep net and hand picking method. These specimens belonged to eight families. Highest abundance of insects was recorded in fodder (60.22%) while *Coccinella septumpunctata* (27.44%) was the most abundant species. In May, maximum fauna was collected (47.11%). LC₅₀ of bifenthrin and fipronil against adult of *Coccinella septumpunctata* was 19.2 µl/L and 20 µl/L with a mean value of (53.34±5.77) and (46.67±5.77) respectively. The sub-lethal concentrations (1/3rd and 1/7th) of bifenthrin and fipronil were also applied. Comet assay was done to determine extent of DNA damage in treated insects. The results showed that LC₅₀ of bifenthrin caused more DNA damage as compared to fipronil. So, fipronil is suggested to control insect population as it caused less DNA damage. When insect is at economic threshold level, sub-lethal concentrations of fipronil should be used but when insect is at economic injury level, where the use of insecticide is mandatory to control its population, suggested LC₅₀ should be used for ecosystem sustainability.

Keywords: Coleoptera, pest, economic threshold level, economic injury level, ecosystem sustainability



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

A Review of Motion Planning Algorithms for Autonomous Ground Vehicles

Aziz ur Rehman^{*}, Ahsan Tanveer^{*}, Umer Khan and M. Touseef Ashraf

Department of Mechanical and Aerospace Engineering, Institute of Avionics and Aeronautics, Air University, Islamabad 44000, Pakistan

^{*} Corresponding authors emails: ahsan.tanveer@mail.au.edu.pk; azizkhokhar11@gmail.com

Abstract. Autonomous systems are an increasing area of research and hold significant promise. Designing an autonomous vehicle poses a significant challenge, which is mainly concerned with a safe, and efficient path plan that is capable of navigating among a wide range of static and dynamic obstacles. This paper presents a survey of recent path-planning strategies that have been proposed in the design of autonomous ground vehicle systems. Various factors such as static and dynamic obstacle avoidance, real-time decision-making, and design scenarios are considered for the review, and an investigation of the design techniques is presented. The reviewed approaches encompass both the traditional design methods, such as graph-search and sampling methods, as well as more recent use of machine learning-based planning algorithms. The objective is to provide a comprehensive overview of the current state of art development techniques, identify the limitations, and provide recommendations for future research to foster continuous progress in the field.

Keywords: Autonomous ground vehicles, Path planning, Motion planning, Graph search methods, Machine learning.



Nickel Cobalt Oxide – Quantum Dot Nanocomposites for Photocatalytic Water Splitting

Nawal Haider^{*}, Ramsha Zafar Osama Mutahir and Muhammad Abdul Basit Saim
Institute of Space Technology, Islamabad

^{*}Corresponding author email: nawalhaider176@gmail.com

Abstract. Motivated by the prevailing mounting apprehension regarding global climate change, endeavors have been exerted to formulate novel alternative and ecologically mindful energy sources. One of the auspicious strategies involves the photocatalytic generation of hydrogen from natural reservoirs like water. Metal oxide nanocomposites have emerged as propitious contenders for the photocatalytic division of water, a pivotal procedure in accomplishing sustainable hydrogen synthesis. These nanocomposites offer distinctive traits such as heightened light absorption, segregation of charges, and surface reactivity, all of which markedly enhance the overall photocatalytic efficacy. Within this investigative undertaking, we aim to fabricate nanocomposites of Nickel Cobalt Oxide and Quantum Dots via pseudo-successive ionic layer adsorption and reaction (p-SILAR). A variety of characterization techniques, including SEM, EIS, UV-Visible spectroscopy, XRD, and FITR, will be employed to assess the structural, optical, and electronic features of synthesized nanocomposites. The proposed study will assist in the formulation of efficient, budget-friendly, and sustainable photocatalysts for water division.

Keywords: Photocatalytic water splitting, Nickel Cobalt Oxide - Quantum Dot Nanocomposites



Preparation, characterization of CuO, ZnO and series of new CuO/ZnO nano composites using precipitation method and their potential applications in the photo-catalytic degradation of Victoria blue R dye

Abdul Waheed Mastoi^{1,3,*}, Abdul Halim Bin Abdullah², Mohd. Haniff Bin Wahid², Saifullah Bullo³, Mohd Zobir bin Hussien¹, Ghulam Murtaza Mastoi⁴ and Zulkarnain Zainal^{2,*}

¹ *Material Synthesis and Characterization Laboratory (MSCL), Institute of Nanoscience and Nanotechnology, (ION2), Universiti Putra Malaysia, Serdang, Selangor, Malaysia*

² *Multifunctional Nanomaterials for Industrial Application (MULIA) Research Group, Department of Chemistry, Universiti Putra Malaysia, Serdang, Selangor, Malaysia*

³ *Department of Human and Rehabilitation Sciences the Begum Nusrat Bhutto Women University, Sukkur Sindh Pakistan*

⁴ *Dr. M. A. Kazi Institute of Chemistry, University of Sindh, Jamshoro, Sindh, Pakistan*

*Corresponding authors email: smastoi1@yahoo.com/ zulkar@upm.edu.my

Abstract. Fabrications of nanocomposites with different morphologies using novel approaches always attract much more interest in different research areas. The proposed study describes the synthesis of new series of CuO/ZnO nano composites using a very efficient, less time-consuming, and very simple precipitation method. The CuO/ZnO nano composites were obtained by precipitated from a reaction mixture of containing different of copper sulfate, zinc sulfate, as pre-cursors and ammonium oxalate (0.1 M) as precipitation reagent. The obtained products such as CuO oxalate powder, ZnO oxalate powder and CuO/ZnO oxalate powder were annealed at 750 °C. The synthesized CuO and ZnO and CuO/ZnO were characterized by Fourier transform infrared spectroscopy (FTIR), field emission scanning electron microscopy (FESEM), photoluminescence spectroscopy (EDX), ray diffraction analysis (XRD), etc. The photo-catalytic activity of CuO/ZnO composites for the Victoria blue R dye was investigated using UV-vis spectroscopy within 60 – 70 minutes (5 PPM) by exposing them to the UV light and Visible light.

Keywords: Photosynthesis, nanotechnology, water treatment, and dye degradation.



Advancement in Biocompatible Film's Fabrication for In-Vivo Wound Healing: Polyvinyl Alcohol-Based Innovations

Anoosh Fatima

Corresponding author email: anufatima92@gmail.com

Abstract. Traditionally, wound healing relies on topicals like creams, gels, and patches. But these struggle with active tissues enduring ongoing motion and biocompatibility. The core objective of this study is to engineer a series of PVA-based wound-healing films containing different additives like acetic acid (PVA/AcOH), Mg (PVA/AcOH/Mg) and Alpha-ketoglutarate (PVA/AcOH/Mg/AKG). A comparative study was carried out between four samples based on in-vitro tests like swelling, degradation, contact angle, pH sensitivity and moisture content to assess the biodegradability, biocompatibility, hydrophilicity and hygroscopicity of the samples. For in-vivo use, film reactions in the body and excretion time are crucial, whereas hydrophilicity and hygroscopicity would determine the adhesion of the films to the wound and potential inflammatory reactions it may cause.

Among the four experimental samples (PVA, PVA/AcOH, PVA/Mg/AcOH and PVA/AcOH/Mg/AKG) it was found that PVA/AcOH exhibited the highest degree of hydrophilicity with the contact angle of $64.5\% \pm 2\%$ whereas all samples appeared stable in acidic, neutral and basic conditions ruling out the potential for inflammation and/or disintegration in in-vivo environment. PVA/AcOH and PVA/AcOH/Mg showed a stable swelling rate which would maintain the mechanical stability and function inside the body, while PVA/AcOH and PVA/AcOH/Mg/AKG linearly (percentage) degraded over a period of 15 days, an optimum time for wound healing. Lastly, PVA/Mg/AcOH/AKG displayed high hygroscopicity, next to PVA/Mg/AcOH which was second second-highest. After statistically analysing each of the results, PVA/Mg/AcOH was extrapolated to be the best-suited material for the fabrication of wound healing suture films. Mechanical tests and in-vitro analysis need to be conducted further.

Keywords: Biocompatible Film, Vivo Wound Healing, Polyvinyl Alcohol



Development of New Protocol for Monitoring of Nalbuphine: An Opioid Analgesic Drug

Kanwal Hussain

Department of Pharmaceutical Chemistry, University of Karachi

Corresponding author email: kanwalshk1990@gmail.com

Abstract. Opioids are considered effective for management pain. The monitoring of these drugs are necessary because of hazards side effects such as addiction, drug abuse and misuse. In this study, zinc oxide nanoplatelets (ZnONPs) have been synthesized by sol-gel method for the electrochemical analysis of Nalbuphine hydrochloride. ZnONPs have great usage in electrooxidation of nalbuphine hydrochloride. Characterization of ZnONPs were carried out by X-ray diffraction (XRD) and scanning electron microscopy (SEM). Glassy carbon electrode (GCE) modified with ZnONPs has been utilized as a working electrode. Monitoring of Nalbuphine hydrochloride was carried out using cyclic voltammetry (CV) and linear sweep voltammetry (LSV) modes in presence of phosphate buffer solution (PBS) having a pH of 7. The linear response was noted in the range of 120 to 150 nM/mL using CV with R² of 0.9956. The limits of detection (LOD) and limit of quantification (LOQ) were calculated to be 8.369 and 25.362 nM/mL, respectively. Using LSV, the linear range was estimated to be 50–90 nM/mL with R² of 0.99847 with LOD and LOQ of 3.0 and 9.093 nM/mL, respectively. The nalbuphine hydrochloride has been monitored successfully in injectable formulations by this method.

Keywords: Nalbuphine, Opioid, Characterization.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Key Performance Indicators for evaluating Laboratory Performance of Academic Institution (A case study at Engineering University)

Ahmed Abdur Rehman¹, Saleem Raza Chalgri² Shakeel Ahmed Shaikh³

1 Department of Manufacturing Engineering, Mehran University of Engineering & Technology Jamshoro

2 Department of Mining Engineering, Mehran University of Engineering & Technology Jamshoro

3 Department of Industrial Engineering & Management, Mehran University of Engineering & Technology Jamshoro

Corresponding author email: saleem.raza@faculty.muet.edu.pk

Abstract. This research focuses on enhancing the evaluation process of academic research by employing the Analytical Hierarchical Process (AHP) technique to identify and prioritize Key Performance Indicators (KPIs). In the context of the contemporary academic landscape, where research assessment is crucial for institutions, researchers and funding agencies seek to provide a systematic and objective approach to measure academic performance. The AHP methodology is employed due to its ability to handle complex decision-making problems involving multiple criteria and alternatives. The study utilizes a structured process, involving expert opinions and data analysis, to construct a hierarchy of KPIs relevant to academic research. KPIs are then prioritized at cut of value achieved by determining and mean value $(\max + \min)/2$. This study was conducted to identify the potentials KPIs specific to the performance of Laboratory facilities, this was followed by in assessment of the KPIs by 10 respondents including 5 faculty members and 5 laboratory incharge. The KPIs were arranged in the form of questionnaire survey containing dichotomous response for Agree / Disagree, and importance Saaty's scale for evaluation. 20 KPIs for the performance facilities developed from the previous literature were classified into four categories including space, access, utility and waste and environmental conditions, which were perceived at varying levels of importance.

Keywords: KPIs, AHP, Academic Laboratory, Saaty Scale.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

An Ontology Based Approach for Characterizing Long Covid-19 Suspected Cases

Shabana Tanwari*, Qasim Arain, Isma Farah Siddiqui, Mehwish Shaikh
*Department of Software Engineering, Mehran University of Engineering and Technology
Jamshoro*

*Corresponding author email: shabanatanwari@gmail.com

Abstract: COVID-19 is an infectious disease caused by the SAR-CoV-2 virus. The COVID-19 symptoms and cases are gradually increasing in humans and accurate data is not accessible in Pakistan for the healthcare systems. However, because of the diverse range of data sources, there is a significant challenge in making COVID-19 information comprehensible to both humans and machines. Additionally, providing thorough responses to user concerns about every aspect of the COVID-19 pandemic is an innovative task. To tackle this issue this paper presents a long Coronavirus Disease Ontology (CODOnto) for the suspected cases. The ontology is built via Neo4j, a graph database management system. Subsequently, RDF is used to improve data portability, while SPARQL is used to validate queries. The use of ontology as a data model holds considerable importance in the identification of semantic web information pertaining to the discovery of Coronavirus illness (COVID-19). This paper presents an overview of the CODOnto, a comprehensive framework including several aspects within the field of coronavirus diseases, such as diagnostic purposes, vaccinations performed, and COVID-19 symptoms. The findings from the ontology research provide an extensive understanding of the COVID-19 situation, enabling us to effectively monitor and assess COVID-19-related circumstances in the future. This is achieved through the provision of precise data in the form of graphical representations, which are securely saved in a database. Furthermore, this research facilitates the anticipation of COVID-19 complications by categorizing them into low, medium, or high ranges.

Keywords: COVID-19, Healthcare, Semantic Web, Coronavirus Disease Ontology, SAR-CoV-2virus.



03-05 October 2023

Oxidative removal of a diclofenac using horseradish peroxidase immobilized soft gel

Tahira Qureshi^{1,*}, Rabel Soomro², Najma Memon² and M. Iqbal Bhangar³

¹Government College University Hyderabad, Sindh, Pakistan

²National Centre of Excellence in Analytical Chemistry, University of Sindh, Jamshoro,
Sindh, Pakistan

³H.E.J. Research Institute of Chemistry, University of Karachi, Karachi, Pakistan

*Corresponding author email: qureshitahira@gmail.com

Abstract. Nowadays aromatic pollutants are emerging contaminants which are potentially toxic on aquatic and terrestrial organisms. Among number of thousands of pollutants pharmaceutical active compounds (PACs) (drugs) are commonly found as wastewater effluents. Most frequently reported pollutant was diclofenac sodium (anti-inflammatory drug). Enzymatic oxidation could be one of the viable options for treatment of diclofenac sodium (DCF-Na). In this study, most active enzymes within peroxidase family are; *horseradish peroxidase* (HRP) used for the remediation/treatment of (DCF-Na). *Horseradish peroxidase* (HRP) is an iso-enzymatic protein which catalyze the oxidation of broad range of aromatic molecules by H₂O₂. *Horseradish peroxidase* (HRP) were successfully immobilized on microemulsion based organogel-silica composite material. Materials were characterized by FT-IR and SEM analysis.

Different parameters were taken to optimize the HRP-catalyzed conditions to eliminate diclofenac sodium (DCF-Na) from aqueous solutions. Some parameters were optimized in order to achieve immobilization of *Horseradish Peroxidase* (HRP) onto soft gels and their efficiencies were tested. These include surface and functional groups characterization of newly developed composite materials and optimization of effect of temperature, pH, contact time, oxidant concentration, analyte concentration, gel dose and string effect on oxidation of substrates using immobilized enzymes in gel matrix.

It was observed that HRP is appropriate for wastewater treatment over a broad pH and temperature range and its activity is not disturbed during the chemical reaction.

Keywords: Enzyme, Gel, *Horseradish peroxidase* (HRP), Drug



Polyaniline/Ag-Pd nanocomposite as an efficient catalyst for degradation of Eosin Dye

Noorzaman*, Farah Naz Talpur, Aamina Baloch, Jamil Baig
National Centre of excellence in analytical chemistry, University of Sindh

*Corresponding author email: noorzamanshar@yahoo.com

Abstract. Bimetal nanoparticles consisted of different metal elements have shown enhanced catalytic performances over the corresponding single-phase counterparts due to their unique properties and highly branched or dispersed nanostructures that makes them very useful for improving the catalytic activity of the nanomaterial. In metal nanocomposite the different metal are used as reinforced in polymer as a matrix. In current study we have synthesis the polyaniline/Ag-Pd nanocomposite by chemical method. After the successful synthesis the nanocomposite was characterized by different techniques such as Scanning electron Microscope (SEM), Fourier Transform infrared spectroscopy (FT-IR) Ultra violet visible spectroscopy, (UV-VIS) Energy Dispersive x-ray analysis (EDX). SEM reveals that surface morphology of composite is semi cubical structure, UV-Vis and FT-IR spectroscopy reveals that the red shift was observed in peak position of composite and polymer confirms the successful synthesis and EDX also confirms the required elemental content. After the successful synthesis of polyaniline/Ag-Pd nanocomposite applied in the degradation of eosin dye. The 96.63% degradation was achieved at microwave irradiation time thirty seconds using 25 μ l (1.25 mg/3ml) nanocomposite under microwave irradiation with 0.005M NaHB₄.

Keywords: Nanocomposites, Polyaniline, Microwave irradiation, Catalytic activity



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Halophytic derived Manganese and Zinc nanoparticle ameliorates salinity resistance in sunflower seedlings

Kainat Amin Bora¹, Rabia Anwar², Saud Hashmi¹, Zainul Abideen²

¹ Department of Chemical Engineering, Nadirshaw Eduljee Dinshaw (NED) University of Engineering and Technology, Karachi, Pakistan,

² Dr. Muhammad Ajmal Khan Institute of Sustainable Halophyte Utilization, University of Karachi, Karachi, Pakistan.

*Corresponding author email: kainatamin5@gmail.com

Abstract. Meeting food security and nutrition targets by 2030 will be a challenge for Pakistan and other developing countries of the world. Nano fertilization is a method to release nutrients in a controlled manner that can enhance the plant productivity and saline agriculture in dry arid saline habitats. In this study halophytes and zinc and manganese nanoparticles was used as substrate to synthesize nanoparticles to assess salinity resistance in sunflower plants. Plants were treated with the 25 mg per liter nanoparticles and 100mM NaCl to assess Eco physiological parameters under ambient greenhouse conditions. Result showed that combined application zinc oxide and manganese oxide nanoparticles NPs (25 mg per pot) significantly increased chlorophyll content 1.5 times as compared to control plant. While increase in chlorophyll content was 90.14% in zinc oxide and 56.6% in manganese oxide nanoparticles respectively. Plant height was increased 2.5 times by combined application of zinc oxide and manganese nanoparticles, 1.3 times by zinc nanoparticles and 91.17% by manganese nanoparticles. Similarly plant fresh weight was increase by 2.2 times by applying sole zinc oxide nanoparticles a while increase was 1.5 times in plants treated with manganese nanoparticles. The combined effect of both nanoparticles was about 100% increase by applying zinc oxide and manganese oxide nanoparticles. Combined effect of zinc and manganese nanoparticles could be effective in enhancing the biomass production of tomato seedling as compared to their separate application for attaining higher crop production and remediation of salt effected soils.

Keywords: Halophytic, Salinity resistance, Sunflower seedlings.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Women in Space Science: A spotlight on Pakistan

Intikhab Ulfat

Department of Physics, University of Karachi, Karachi-75270, Pakistan

Author email: iulfat@uok.edu.pk

Abstract. We explore the multifaceted realm of women in space science, shining a spotlight on the evolving landscape of this dynamic field within Pakistan. Space science stands at the forefront of human innovation, beckoning with both the promise of unlocking the mysteries of the cosmos and the imperative of fostering inclusivity, where equal opportunities and representation are pivotal.

Historically, space science has been a domain marked by gender disparities and underrepresentation, echoing broader societal trends. Yet, despite these historical challenges, women have demonstrated exceptional resilience and determination in carving out their distinct niches within the expansive universe of space science. They have not only broken through barriers but have also soared to remarkable heights in roles spanning research, engineering, leadership, and beyond.

Our journey begins by contextualizing the narrative on women in space science within the global landscape. Here, we pay homage to key female figures whose pioneering contributions have left indelible marks on the annals of space exploration. These remarkable women have navigated uncharted territories, both literally and figuratively, making significant strides while overcoming formidable challenges and prejudices.

As we pivot towards Pakistan, we encounter a dynamic shift in the narrative. Within this South Asian nation, women have been progressively asserting their presence and influence in the captivating world of space science. Their journey, often marked by determination and resilience, unfolds as a testament to the changing tides of gender dynamics within Pakistan's scientific community.

Keywords: Space Science, Gender Disparities, Pakistan



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Application of Lean tools along with Arena simulation to reduce patient waiting time in health care services: A case of the Radiology department

Sana Hassan and Saher Afshan

*Department of Industrial Engineering and Management, University of the Punjab, Lahore
Pakistan*

Corresponding author email: sana.iqtm@pu.edu.pk

Abstract. Value stream mapping (VSM) is an initial and critical tool for deploying lean concepts in manufacturing and service sector including hospitals. Therefore, the aim of this research is to analyze the working environment of a public sector hospitals' radiology department; as a case study, identify the bottleneck and waste in operations by mapping the current patient flow, and propose system improvements with the help of arena simulation. This study is based on the data collected for 15 days, through doctors and staff interviews and direct observation (Gemba walk). The research work is divided into two distinct phases: during the first phase waste checklist was developed using 5 why approach followed by Ishikawa diagram to identify the potential causes of long waiting time. The VSM tool mapped the current patient flow, with 13min processing time for routine patient and 59min for procedure patient. However, the total non-value adding time is found to be 188min (3hr) for routine and 388min (6hr) for procedure patients. The patients waiting for the scan reports is found to be the major bottle neck. During the second phase of work: to develop arena model initially best fit distribution is done on the obtained data. Arena simulation model is developed for the radiology department to analyze the number of patients out, waiting time per patient and average number of patients in the system. The model is verified by a specialist and validated using t-test, the model is replicated 200 times in arena to give best results with minimum deviation. Total 6 scenarios are analyzed to determine the impact on the above mentioned KPIs. Simulation results of current scenario showed 567 patients out of the system, with a maximum wait time of 31min/patient and average 43 patients in the system. The simulation results of the 5th scenario provided the optimum output, with 30% improvement in patient out, 3% reduction in waiting time per patient and only 19 patients in the system on average. Based on it a future VSM is created which provided a 26% and 19% decrease in processing time, while non-value added time is reduced by 73% and 61% for routine and procedure patients. This can lead to



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

increase in the number of patients to be entertained by the radiology services without adding any new resource.

Keywords: Value stream mapping, arena simulation, lean tool, health care system, radiology department



03-05 October 2023

Highly Active Carbon Material Derived from *Carica papaya* Fruit Juice: Access to Efficient Photocatalytic Degradation of Methylene Blue in Aqueous Solution under the Illumination of Ultraviolet Light

Muhammad Ali Bhatti ¹, Elmuez Dawi ², Aneela Tahira ³, Khalida Faryal Almani ¹,
Shymaa S. Medany ⁴, Ayman Nafady⁵, Zulifqar Ali Solangi ⁶, Umair Aftab ⁷ and Zaffar
Hussain Ibhupoto

¹ Centre for Environmental Sciences, University of Sindh Jamshoro, Jamshoro 76080,
Pakistan; mali.bhatti@usindh.edu.pk (M.A.B.); khalida.almani@usindh.edu.pk (K.F.A.)

² Nonlinear Dynamics Research Centre (NDRC), Ajman University, Ajman P.O. Box
346, United Arab Emirates; e.dawi@ajman.ac.ae

³ Institute of Chemistry, Shah Abdul Latif University, Khairpur Mirs 66020, Pakistan;
aneela.tahira@salu.edu.pk

⁴ Department of Chemistry, Faculty of Science, Cairo University, Cairo 12613,
Egypt; shymaasamir80@yahoo.com

⁵ Department of Chemistry, College of Science, King Saud University, Riyadh 11451,
Saudi Arabia; anafady@ksu.edu.sa

⁶ Department of Chemical Engineering, Mehran University of Engineering and
Technology, Jamshoro 76080, Pakistan; zulifqar.solangi@muet.edu.pk

⁷ Department of Metallurgy and Materials, Mehran University of Engineering and
Technology, Jamshoro 76080, Pakistan; umair.aftab@faculty.muet.edu.pk

⁸ Dr. M. A. Kazi Institute of Chemistry, University of Sindh, Jamshoro 76080,
Pakistan

Abstract. Herein, we describe a cost-effective, efficient, sustainable, and environmentally friendly pyrolytic method for the synthesis of highly active carbon materials from *Carica papaya* fruit juice for the photodegradation of various pollutants, such as methylene blue (MB), in aqueous solutions using ultraviolet (UV) light. Various analytical techniques were used to examine the morphology, crystal quality, functional group chemistry, particle size distribution, and optical properties of the materials. For evaluating the performance of the newly prepared carbon material, various photocatalyst parameters were investigated, including initial dye concentration, catalyst dose, pH of dye solution, cyclic stability, and scavenger studies. The obtained findings attest that the optimal degradation efficiency of carbon material for high MB concentrations (2.3×10^{-5} M) is around 98.08%, whereas at low concentrations of MB (1.5×10^{-5} M) it reaches 99.67%. Degradation kinetics indicate that MB degrades in a first-order manner. Importantly, as the pH of the dye solution was adjusted to ~ 11 , the degradation rate increased significantly. The scavenger study indicated that hydroxyl radicals were the predominant species involved in the degradation of MB. In addition, active surface site



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

exposure and charge transfer were strongly associated with efficient MB degradation. On the basis of its performance, this newly developed carbon material may prove to be an excellent alternative and promising photocatalyst for wastewater treatment. Furthermore, the synthetic approach used to produce carbon material from *Carica papaya* fruit juice may prove useful for the development of a new generation of photoactive materials for environmentally friendly applications, as well as for the production of hydrogen from solar energy.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Investigating the Performance of Magnetization of water to improve the water quality by numerical simulation

Surhan memon, Imran Nazir Unar and Masroor Abro
Mehran University of Engineering and Technology, Jamshoro
Corresponding author email: imran_unar@hotmail.com

Abstract. Magnetic water treatment or magnetic water conditioning is a non-conventional water treatment process used to condense the problem of water scarcity and the need for clean and portable water. To remove salts and impurities resourcefully, this technique utilizes the unique magnetic properties to alter the molecular structure of water. Even though there are positive effects demonstrated on water quality, numerical analysis provides robust visualization to the scientific basis for its purported effectiveness by 3D simulation. On comsol multiphysics 5.2 software, magnetic field passed through the water to experience the magnetic flux density and magnetic field strength by Lorentz force and for the resistivity of salts present in the water by fluid flow. This study finds salts diminish its property to cause scaling by deformation in the molecular structure of water. These results of numerical analysis can be the basis to optimize the use of this technology for domestic and industrial purposes.

Keywords: Water, Magnetic field, Magnetization, Magnetic strength, Numerical Simulation



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Synthesis of porous geopolymer by Si/Al metal powder

Abdul Qadeer, Dr. Khadija Qureshi, Dr Shaheen Aziz Dr. Imran nazir
*Chemical Engineering Department, Mehran University of Engineering and Technology,
Jamshoro 76062, Pakistan*

Corresponding author email: abdul.qadeer@admin.muet.edu.pk

Abstract. Geopolymers are a class of amorphous aluminosilicates with a three-dimensional structure consisting of SiO_4 and AlO_4 tetrahedrons, usually synthesized by low-temperature polycondensation of different materials such as metakaolin, and coal fly ash. In this study, the curing temperature, and metal powder additives were used as pore former. The reaction was carried out in the presence of water in an alkaline medium to produce H_2 gas and a hydroxide compound ($\text{M}_x(\text{OH})_y$). As aluminum metal powder retarded the reactions, silicon of different wt % was studied in order to recognize the reactivity of silicon metal powder and its ability to form porous geopolymers. The XRD and SEM results revealed that geopolymerization was attended by amorphous metakaolin phase and inelastic glassy surface morphology.

Keyword: Porous Geopolymer, metal powder



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Nanoporous Hydroxyapatite-Infused Thin-Film Cellulose Acetate Matrix for Hybrid Membrane Architectures in Engineering Applications

Abida¹, Ayatullah Qureshi², Dr. Ali dad Chandio³ and Khurshid Ali Mirza⁴

¹*Department of Biomedical Engineering and Technology, Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan*

²*Department of Metallurgy and Materials, Mehran University of Engineering and Technology, Jamshoro, Sindh, Pakistan*

³*Department of Metallurgical Engineering, NED University of Engineering & Technology, Karachi, Sindh, Pakistan*

⁴*Department of Biomedical engineering LUMHS jamshoro*

Corresponding author email: abidalaghari@yahoo.com

Abstract. This study is based on the preparation of hydroxyapatite (HA) from Caprine. The main objective of this study was to extract HA from the solid waste i.e., bones of Caprine by chemical solution method and thermal treatment. This was followed by preparation of HA and cellulose acetate (CA) blended membrane for hemodialysis operation. The membrane was tested for the effectiveness in blood filtration application. Moreover, Surface morphology of HA and CA blended membrane was studied using Scanning electron microscopy (SEM), Energy dispersive X-RAY spectroscopy (EDX), and Fourier transform infrared spectroscopy (FTIR). Results revealed the effective and homogenous blending of the membrane. The HA and CA blended membrane was also tested for urea clearance and antibacterial properties in order to interpret its application in blood filtration process. The addition of HA in doped solution improved Urea clearance up to 40%-45%. Prominently, addition of naturally extracted HA in doped solution reported better antibacterial property and porosity which lead to membrane with enriched Urea clearance and hydrophilicity. Keywords- Caprine bone, Extraction of Hydroxyapatite, HA-CA blended membrane, hemodialysis operation, Biocompatibility, and Urea clearance.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Examining the Impact of Artificial Intelligence in Journalism: The Perceptions of Pakistani Journalists and Experts

Bhavesh Chhipa

Central University of Haryana, India

Corresponding author email: bhaveshchhipa29@gmail.com

Abstract. Artificial intelligence has become increasingly prevalent across various industries, including healthcare, insurance, the stock market, manufacturing, construction, and journalism. Professionals in these fields are utilizing AI for a range of purposes. For example, doctors are leveraging AI to predict early-stage diseases, brokers are using it to forecast share prices, engineers are utilizing it to design buildings and bridges, and researchers are using it for tasks such as paraphrasing, grammar checking, citation generation, and journal finding. In the realm of journalism, AI is being employed to gather, create, and distribute content, detect fake news, and provide personalized content. The use of AI in journalism presents numerous opportunities, including the ability to produce content at scale, analyze large datasets, and personalize content for individual readers. Additionally, AI can be used to monitor social media and other sources for breaking news and to identify patterns that may be relevant to a particular story. However, the use of AI in journalism also poses certain challenges. To explore these opportunities and challenges in the context of Pakistani news media, the author conducted interviews with ten Pakistani journalists and experts using purposive non-random sampling. This article serves as a starting point for further research on AI in journalism in Pakistan and other countries' news media industries.

Keywords: Artificial Intelligence, Journalism, Perception, Pakistan



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Generative Artificial Intelligence in Academia: Comparative Analysis of Students' and Teachers' Perceptions in Higher Education

Prof. Dr. Muhammad Yousuf Sharjeel ^{1,*}, Fatima Qanita², Imrana Arif ²

¹ *Department of Teacher Education Federal Urdu University of Arts, Science and Technology*

² *Department of Business Administration Iqra University*

Corresponding author email: yousufsharjeel@gmail.com

Abstract. As Artificial Intelligence (AI) technologies proliferate in the contemporary era, the educational landscape undergoes rapid changes. These changes in everyday life and academia has bred several concerns for the higher education institutes around the globe, particularly in Pakistan. One of the concerns is whether or not the teachers and the students would be able to embrace the technological advancements equally. The cost of these AI and other chatbots may be beyond the affordance of a common man residing in this country. The advent of these technologies has evolved the teaching and learning styles, evoking questions that require comprehending the perceptions of the stakeholders in the educational context. Based on the Technology Acceptance Model (TAM), this comparative research study adopted the cross-sectional survey design to collect quantitative data from Generative Artificial Intelligence users to examine their perceptions of the educational impact of AI chatbots. The study, utilizing a Likert-scale TAM questionnaire, analyzes participants' perceptions as measured by perceived ease of use, perceived usefulness, attitude, behavioural intention, and actual use. Independence sample t-test was used to compare the means and determine whether or not the students and teachers in higher education consider the AI gadgets and chatbots essential and compatible. Quantitative insights obtained through the data analysis demonstrated the extent and direction of the variation in students' and teachers' perceptions. The research was likely to identify specific components that lead to differences in viewpoints.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Analyzing How Education Quality, Socio-Cultural Factors, and Policies Influence the Development of Women's Entrepreneurship in Pakistan

Kifayat Ali Larik

Aror University of Art, Architecture, Design & Heritage, Sukkur

Corresponding author email: kifayatalilarik@gmail.com

Abstract. This research seeks to explore the various elements that play a role in empowering women entrepreneurs in Pakistan. Additionally, this research aims to evaluate the impact of these factors on the development and growth of their businesses. The study uses a quantitative method to examine gender equality, quality education, sociocultural factors, and policy frameworks. A structured survey was given to 119 female entrepreneurs in Pakistan. This study aims to examine the perspectives of empowerment among female entrepreneurs in Pakistan. By using a simple random sampling technique, the researchers analyze the impact of various factors on women's involvement in business activities within the country. Statistical tests are employed to determine the significance of these factors. The research highlights how the empowerment of women plays a crucial role in driving business activities in Pakistan, contributing to both individual growth and the overall economy. While gender equality was found to have no significant impact, the study validates that access to quality education, sociocultural influences, and supportive policies greatly empower and motivate women to establish businesses in Pakistan. The study supports the ideas of empowerment and institutional theories and provides suggestions for promoting women's entrepreneurship in Pakistan. It emphasizes the need for policies that empower women and offers ways to enhance their progress in this field.

Keywords: Women empowerment, Women entrepreneurship, Pakistani women SDGs.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

**A Fuzzy Logic based System to mitigate the Challenges of Outcome-based Education faced by Students of Remote Areas:
A Case Study of Khuzdar Region**

Rehana Naseer*, Najeeb Ullah Jan, Shabbar Naqvi and Jalal Shah
Balochistan University of Engineering and Technology Khuzdar

* Corresponding author email: engrrehana@yahoo.com

Abstract. Outcome Based Education (OBE) is a concept that is spreading fast across the globe. In this regard, various accords are also signed. They include Washington Accord, Sydney Accord, Dublin Accord and Seoul Accord to name a few. Pakistan through Pakistan Engineering Council has adopted OBE through Washington Accord. Although OBE system has many advantages as being precise, clear, involving three domains of Bloom's Taxonomy including Cognitive, Psychomotor and Affective domains, still implementing it unanimously across the country is big challenge. This is due to different terrains of provinces, diversity of facilities and types of students, their understanding of the system etc. In this research, the challenges of OBE faced by Students of remote areas with a case study of Khuzdar have been investigated by creating a fuzzy inference system assisting to combat these challenges. This Fuzzy inference system based on quantifiable rule sets, having four inputs and one output variable. Input variables were identified with the help of existing literature and mapping that with the regional problems with the help of survey. We have created datasets based on literature and survey to obtain the output. Both Mamdani and Sugeno systems were created and their results were compared too. The results indicated that Mamdani system performed slightly better than the Sugeno system which implies that fuzzy inference system can mitigate the challenges of OBE and helped to achieve the SDG-4 of quality education particularly in context of Pakistan and specifically for Balochistan through quality tertiary education based on Outcome Based education.

Keywords: Artificial Intelligence, Outcome Based Education, Challenges, Khuzdar.



Investigation of a Fuzzy Expert System Leading Towards Eradication of Malaria in Balochistan: A Case Study of Khuzdar Region

Sahiba Kareem ^{*}, Najeeb Ullah Jan, Shabbar Naqvi and Noor Ahmed
Balochistan University of Engineering and Technology Khuzdar

^{*} Corresponding author email: sahibakarim04@gmail.com

Abstract. Malaria is one of the major public health problems in the third world countries. The harmful effects of Malaria for the human body cannot be underestimated. Balochistan province of Pakistan has also been affected by Malaria. In the literature, different fuzzy expert systems and other Artificial Intelligence based methods have been developed for eradication, however, systems based on complex ground realities of any specific region are less concentrated. In this context, during this research, a fuzzy expert system leading towards eradication of malaria has been developed for providing decision support platform which is based on factors majorly causing Malaria in Balochistan. To have better insight into the design, we have selected the Khuzdar region as a case study. Fuzzy logic has been selected because the causes of the Malaria in the region are based not just on medical ground but also on the ambiguity arising because of the Environmental, socio economic and others to name a few. The variables selected are socioeconomic status, Environmental and Education level. Based on these factors, the Mamdani type fuzzy inferencing has been developed. Optimization technique of Hill Climbing (HC) has been used for membership functions optimization. Single Optimization point from each for each membership function was selected. Those points were given as an input to the HC algorithm. The results indicated that over 90% cases were correctly identified for Low, Medium and High Eradication. The findings of the research can lead towards developing AI based systems for eradication of Malaria which is related with SDG 3 Health.

Keywords: fuzzy logic, Malaria, Khuzdar, healthcare, SDG



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

An Analysis of Wheat Supply Chain Risks using the Case of Tando Muhammad Khan

Maryam Saleem

Mehran University Institute of Science, Technology and Development, Jamshoro

Corresponding author email: mariamsaleem1398@gmail.com

Abstract: Supply chain (SC) consists of processes associated with flow of goods from raw material to end consumers. The SC is vulnerable towards risks which produce uncertainty and diminish its performance. Therefore, to analyze SC risks is crucial. Wheat SC (WSC) is selected as issues of food security and sustainability are of great importance. This research uses case of district Tando Muhammad Khan (TMK), Sindh. The aim of research is to identify risks and to investigate their interrelationship. The objectives to achieve this aim are to determine risks present in WSC, to analyze their interrelationship and to explore their influence. The purpose is to emphasize on significance of food security, SC performance and sustainability. However, previous studies explore correlations among risks but lack to identify their interrelationship since hidden effects of one risk related to another may cause damage to WSC. A multi-method approach is adopted such as thematic analysis is used to determine risks within qualitative data collected from structured interviews conducted in TMK, during March 2023 to August 2023 from the practitioners of WSC. Total Interpretive Structural Modeling is employed for defining variables, their relationship and reason for their causality. Fuzzy cross-impact matrix multiplication applied to classification is used to assign weightage and classifying variables in hierarchy. The analysis indicates that government restrictions, lack of investments and, policy making are influential risk in WSC. The mitigation strategies are suggested as identified risks influence WSC. This study enriches the existing literature and contributes towards the WSC sustainability.

Keywords: Wheat Supply Chain, Risk identification, Tando Muhammad Khan, Thematic Analysis, Total Interpretive Structural Modeling, and Fuzzy Cross-Impact Matrix.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Exploring the Factors that Cause Psychological Contract Breach among Healthcare Employees during the Covid-19

Aqib Ali Sahito*, Mahvish.K.Khaskheli and Adnan Pitafi

Institute of Science, Technology & Development, Mehran University of Engineering & Technology (MUET), Jamshoro, Pakistan

* Corresponding author email: akibsehto@gmail.com

Abstract: A Psychological Contract Breach (PCB) occurs when employers and employees break implicit obligations and expectations. It can negatively impact and lead to job dissatisfaction, low employee engagement, and low organizational commitment. The aim of this study was to explore the various factors that cause Psychological Contract Breach (PCB) among healthcare workers during COVID-19 so that organizations can manage employees in any other unforeseen situation that may arise in the future. The study used a qualitative approach using unstructured interviews with healthcare workers in the Hyderabad region who were directly involved in COVID-19 patient care. The data were collected from 17 participants with purposive sampling method. The face-to-face and telephonic interviews were conducted, and the data were analyzed using thematic analysis. The study found that the most prominent factors that caused PCB during COVID-19 were long working hours, inadequate personal protective equipment (PPE), increased workload, insufficient pay and benefits, and lack of support from management. The study recommends that the organizations should prioritize the well-being of healthcare worker and provide them adequate resources to ensure that they feel valued and supported.

Keywords: Psychological Contract Breach, Covid-19, Healthcare Workers



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

Impact of Structural Determinants on the Financial Variables: Evidence from Dairy Industrial Cluster of Hyderabad

Hasan Shoukat*, Iffat Batool Naqvi and Tooba Hashmi

Institute of Science, Technology and Development, Mehran University of Engineering and Technology (MUET), Jamshoro, Pakistan

* Corresponding author email: hasanshoukat93@gmail.com

Abstract. Dairy farms' failure and financial crises are consequences of less milk production, and it is of great importance when it comes to farming because it is more than a business. It is an essential need of people and country as it feeds children and they don't use technology and for this purpose, it is the basis of their failure or survival in the market. This study intends to examine the impact of geographical proximity on working capital management, also, the impact of technology on profitability. This is a cross-sectional study and primary data has been collected from various dairy farms (Old cattle colony Hyderabad) for the geographical proximity and use of technology as independent variables and working capital and profitability as dependent variables. By using Regression analysis as a statistical tool, this research concludes that there is a positive significant impact of geographical proximity on working capital, more the firms operating in an industrial cluster, the more chances a dairy farm must raise funds as an informal mode of financing. Furthermore, the usage of technology also has a significant impact on profitability, because due to the advancement in technology, sales revenue increases and it reduces the expenses of manual work.

Keywords: Dairy farming, Industrial cluster, Profitability, Technology adaption, Financial ratios.



1st International Conference on Women Development in Engineering, Science & Technology (WD-EST'23)

03-05 October 2023

The impact of the political and economic system on human development index: A Classification of Pakistan, India and Bangladesh

Aaisha Memon

Mehran University of Engineering & Technology Jamshoro

Corresponding author email: aaisha95memon@gmail.com

Abstract. The economic and political factors are elaborately interconnected with the United Nations' Human Development Index in multiple ways. The HDI primarily concentrates on its fundamental sub-index such as Gross National Income (GNI), Education, and Health. Human Development index (HDI) is standardized measurement of well-being that takes into account multipledimensions, designed to serve as a framework for both political and economic factors. By analyzing the Human Development Index, it becomes evident that there are economic and social inequalities between developed and developing countries, such an analysis assists in identifying these discrepancies. The study is based upon quantitative approach; data will be secondary source of period from 2004 to 2022 (even numbers) which are followed by hypothesis with the help of statistical tools. The source of Data will be collected from the SBP and Bertelsmann Foundation, evaluated based on their level of market economy, democracy, and governance quality, is being utilized to examine thekey factors influencing the HDI. Data is based upon three Asian developing countries such as Pakistan, Bangladesh, and India. The purpose of this research study is to identify the classification performances from which we discover the most significant economic and political factors predicting the level of HDI. And observe the impact of the economic and political factors on the HDI. As part of this study, the data will be analyzed and screened usingthe reliable and efficient data tool which is statistical package social science (SPSS), secondary data will be analyzed from this tool through the Artificial Neural Network Model.

Keywords: Political factors, Economic factors, Gross National Income, Human Development index.