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Evaluating Drinking Water Quality in Salem District Using the DEMATEL Method

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Abstract. *Access to safe drinking water is a fundamental human right and crucial for maintaining a healthy life. This study focuses on the analysis of drinking water quality in the Salem district, assessing the concentration of various pollutants and their associated health risks. Water samples were collected from bore wells, tube wells, and hand pumps. Major sources of contamination identified include the improper disposal of sewage and solid waste, excessive use of agrochemicals, and the poor condition of the piping and transportation network. Water pollution, particularly contamination with coliform bacteria, is linked to water-borne diseases such as gastroenteritis, diarrhea, dysentery, and viral hepatitis. These contaminants are a significant cause of health issues. To mitigate health risks, it is crucial to immediately stop using contaminated drinking water sources and limit the excessive use of agricultural chemicals that contribute to water pollution. The current study also aims to examine the factors influencing the selection of supply chain management (SCM) suppliers, utilizing the Neutrosophic Decision-Making and Evaluation Laboratory (DEMATEL) method. A proactive approach was adopted to enhance DEMATEL's performance and achieve a competitive edge, using neutrosophic set theory to mark values on a new scale. A case study implementing this method is presented, which involved collecting data through interviews with experts on the Neutrosophic DEMATEL model. The research is intended for use in management, procurement, and production contexts. In terms of drinking water quality, the study found that R+C Omalur ranked highest, while Sankari ranked lowest. Conversely, Ri-C Sankari scored the highest, with Omalur ranking the lowest in another drinking water quality metric.*
Keywords: *manufacturing commercial enterprise, manufacturing organizations, Manufacturing businesses, MCDM*

1. INTRODUCTION

U.S. utilities have also raised concerns about drinking water quality. In response, Congress mandated that they start issuing annual reports to their customers by October 1999. These reports are required to contain at least the minimum necessary information, such as data and reading aids that help the reader understand the content. Research on public perceptions of drinking water quality, integrated water resource management, and monitoring of drinking water quality is being conducted in various sectors. Since the public is the primary beneficiary of a safe water supply, they are also the first to experience the effects of declining water quality (WHO, 2011). Public perceptions of drinking water hazards foster communication between governments, water service providers, and community leaders. These perceptions reflect the public's thought processes and reactions to perceived risks associated with drinking water. The International Water Association, in its 2004 "Pan Charter on Safe Drinking Water," specifically called for increased efforts to provide drinking water that consumers can trust.

To address the challenges in adopting sustainable online consumption, an integrated method based on Enhanced DEMATEL, Interpretive Structural Modeling (ISM), and rough set theory has been proposed. This method is designed to identify and visualize complex, ambiguous relationships among barriers. The improved DEMATEL method combines the strengths of these approaches to investigate cause-effect relationships while managing ambiguity and subjectivity, even in the absence of corroborative information or prior assumptions.

2. DRINKING WATER QUALITY

In communities in Western Newfoundland, questions were raised about the quality of household tap water (collected directly from the tap, before any domestic treatments such as filtering or boiling), the health risks associated with drinking tap water, and the use of water filtration methods. At least seven input parameters are measured at sampling stations and characterized by the Drinking Water Quality Index (DWQI) at least four times a year.

The Aesthetic Quality Index (AQI) describes the sensory properties (taste, smell, and appearance) of drinking water. The level of contamination in drinking water depends on the type of water sources and the contaminants present, raising concerns about adverse health effects. This has led to extensive research to assess and characterize various contaminants, which, although not essential for human nutrition, can have serious health implications. Essential trace nutrients in drinking water are vital to human health, but low-income and minority communities often face a disproportionate burden of environmental pollution, even after accounting for income differences, with associations persisting along racial and ethnic lines. Some studies have explored the connection between drinking water quality and environmental justice indicators, finding a correlation between poor drinking water quality and these indicators. For instance, Community Water Systems (CWSs) serving lower-income communities tend to have higher levels of contaminants like nitrate and arsenic. In Quebec, smaller rural water systems in high-volume scarcity areas, often serving low-income populations, show disparities in access to improved water treatment and overall health outcomes.

Health-based violations of the Safe Drinking Water Act (SDWA) are more common in poorer communities, particularly those with a higher proportion of Hispanic or African-American residents; conversely, in wealthier areas, the effects of race are less pronounced. Environmental justice concerns related to drinking water quality often remain overlooked, depending on the specific contaminants studied and the geographic scope of the research. For example, a study of water systems in Arizona by Corey and Rahman highlighted disparities in arsenic exposure but found limited evidence of environmental justice concerns related to hazardous waste facility locations. Small water supplies, particularly those serving low-income or minority communities, may have poorer source water quality due to proximity to pollution sources and may lack the technical, management, and financial (TMF) capacity needed to meet regulatory testing requirements. A nationwide analysis indicated that smaller CWSs are more prone to SDWA violations related to management issues. These challenges are compounded by limited internal factors (such as the reduced ability to increase customer rates) and external factors (like difficulty accessing loans). These issues are particularly evident in areas outside municipal boundaries, where communities lack a tax base and are governed by district or state agencies.

3. MATERIALS AND METHODS

The gas release process is incorporated to assess critical risks. They derive the model based on the linguistic Parameter with triangular fuzzy numbers. In an ambiguous environment for organizations that face problems that require group decision-making Fuzzy DEMATEL method can be used. It shows the bias and opinions of conflicting criteria. The model proposed by Hung (2011), Accurate costing in DSC forecasting, Management controls While designing competitive advantage analysis and risk management and supply chain of multi-objective production planning Key factors can be effectively combined. Fan et al. (2012) using the extended DEMATEL method Identified the risk factors of IT outsourcing using interdependent information. Fan et al. (2012) rank the risk of failure, then fix them to avoid the risks that are fuzzy sorted Averaging (OWA) and Results Testing and Evaluation Laboratory (DEMATEL) were used. In other research to improve emergency systems the expert system is also examined. For navigation, emergency management and identification of fuzzy numbers Extended to the fuzzy DEMATEL method IFNs are not directly converted to sensitivity values but are instead converted to BPAs. By doing so, the estimation uncertainty remains. Later, the Dempster-Shafer theory was adopted, across multiple disciplines. DEMATEL method of interdependent factors is commonly used to obtain a cause-effect diagram. This method is superior to conventional techniques, because of the ability to express relationships between criteria, sorting criteria according to the type of relationships and expressing the severity of their effects on each criterion. Because once is not enough, to solve the problem considered there is a need to use an integrated approach. Therefore, to represent flexible information Fuzzy Linguistic Modeling is used to handle this accordingly, the DEMATEL method expresses the effect, is also used to establish criteria, and is also used to increase model applicability. DEMATEL provides perspective to the assessment and analyzing the magnitude or strength of influence of the relationship.

4. RESULT AND DISCUSSION

TABLE 1. Drinking Water Quality in Salem

	PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate	Sum
Salem West	6.80	1350.00	543.00	324.00	423.00	489.00	574.00	3709.80
Salem South	7.90	1400.00	573.00	529.00	432.00	539.00	583.00	4063.90
Yercaud	7.80	1278.00	577.00	364.00	462.00	573.00	482.00	3743.80
Sankari	8.30	1398.00	589.00	298.00	482.00	480.00	593.00	3848.30
Edapadi	7.10	1595.00	689.00	308.00	462.00	593.00	402.00	4056.10
Mettur	6.90	1537.00	535.00	375.00	498.00	567.00	643.00	4161.90
Omalur	7.70	1378.00	683.00	398.00	472.00	527.00	530.00	3995.70

Table 1 shows the DEMATEL Decision making trial and evaluation laboratory in Drinking water quality in Graphs with respect to Salem West, Salem Youth, Yercaud, Sankari, Edappadi, Mettur and Omalur.

TABLE 2. Normalizing of direct relation matrix

	Normalizing of direct relation matrix						
	PH	**TDS**	**TH**	**Calcium**	**Magnesium**	**Chloride**	**Sulphate**
Salem West	1.133333	225	90.5	54	70.5	81.5	95.66666667
Salem South	1.316667	233.3333	95.5	88.16667	72	89.83333	97.16666667
Yercaud	1.3	213	96.16667	60.66667	77	95.5	80.33333333
Sankari	1.383333	233	98.16667	49.66667	80.33333	80	98.83333333
Edapadi	1.183333	265.8333	114.8333	51.33333	77	98.83333	67
Mettur	1.15	256.1667	89.16667	62.5	83	94.5	107.1666667
Omalur	1.283333	229.6667	113.8333	66.33333	78.66667	87.83333	88.33333333

Table 2 shows the Normalising of the direct relation matrix in Salem West, Salem Youth, Yercaud, Sankari, Edappadi, Mettur and Omalur with respect to.

TABLE 3. Calculate the total relation matrix

	PH	**TDS**	**TH**	**Calcium**	**Magnesium**	**Chloride**	**Sulphate**
Salem West	1.1333333	225	90.5	54	70.5	81.5	95.6666667
Salem South	1.3166667	233.333333	95.5	88.166667	72	89.833333	97.1666667
Yercaud	1.3	213	96.166667	60.666667	77	95.5	80.3333333
Sankari	1.3833333	233	98.166667	49.666667	80.333333	80	98.8333333
Edapadi	1.18333333	265.833333	114.83333	51.333333	77	98.833333	67
Mettur	1.15	256.166667	89.1666667	62.5	83	94.5	107.166667
Omalur	1.2833333	229.666667	113.83333	66.333333	78.6666667	87.833333	88.3333333

Table 3 Shows the Calculate the total relation matrix in Accurate Domination in Graphs. Salem West, Salem Youth, Yercaud, Sankari, Edappadi, Mettur and Omalur.

TABLE 4. I- Identity matrix

	PH	**TDS**	**TH**	**Calcium**	**Magnesium**	**Chloride**	**Sulphate**
Salem West	1	0	0	0	0	0	0
Salem South	0	1	0	0	0	0	0
Yercaud	0	0	1	0	0	0	0
Sankari	0	0	0	1	0	0	1
Edapadi	0	0	0	0	1	0	0
Mettur	0	0	0	0	0	1	0
Omalur	0	0	0	0	0	0	1

Table 4 Shows the I= Identity matrix in drinking water quality in Graphs. Salem West, Salem South, Yercaud, Sankari, Edapadi, Mettur and Omalur are the common Value.

TABLE 5. Y

	PH	**TDS**	**TH**	**Calcium**	**Magnesium**	**Chloride**	**Sulphate**
Salem West	1.133333	225	90.5	54	70.5	81.5	95.66667
Salem South	1.316667	233.3333	95.5	88.16667	72	89.83333	97.16667
Yercaud	1.3	213	96.16667	60.66667	77	95.5	80.33333
Sankari	1.383333	233	98.16667	49.66667	80.33333	80	98.83333
Edapadi	1.183333	265.8333	114.8333	51.33333	77	98.83333	67
Mettur	1.15	256.1667	89.16667	62.5	83	94.5	107.1667
Omalur	1.283333	229.6667	113.8333	66.33333	78.66667	87.83333	88.33333

Table 5 shows the Y Value in Drinking water quality in Graphs Salem West, Salem South, Yercaud, Sankari, Edapadi, Mettur and Omalur Calculate the total relation matrix Value and the Y Value is the same value.

TABLE 6. I-Y

	PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate
Salem West	-0.13333	-225	-90.5	-54	-70.5	-81.5	-95.6667
Salem South	-1.31667	-232.333	-95.5	-88.1667	-72	-89.8333	-97.1667
Yercaud	-1.3	-213	-95.1667	-60.6667	-77	-95.5	-80.3333
Sankari	-1.38333	-233	-98.1667	-48.6667	-80.3333	-80	-97.8333
Edapadi	-1.18333	-265.833	-114.833	-51.3333	-76	-98.8333	-67
Mettur	-1.15	-256.167	-89.1667	-62.5	-83	-93.5	-107.167
Omalur	-1.28333	-229.667	-113.833	-66.3333	-78.6667	-87.8333	-87.3333

Table 6 Shows the I-Y Value Drinking water quality in Graphs Salem West, Salem South, Yercaud, Sankari, Edapadi, Mettur and Omalur

TABLE 7. (I-Y)-1

	PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate
Salem West	0.132524735	-1.43694	-0.87001	-2.54966	-0.36388	2.244018	2.635571
Salem South	0.012406007	0.007839	0.031266	0.023065	-0.01081	-0.03842	-0.02147
Yercaud	-0.038843144	-0.04565	-0.02991	-0.09012	-0.01102	0.126248	0.075346
Sankari	0.041433299	0.041975	0.055385	0.124972	0.01979	-0.12623	-0.14332
Edapadi	0.131473652	0.241164	0.134358	0.356487	0.071957	-0.43104	-0.46155
Mettur	-0.068232735	-0.09393	-0.1251	-0.14995	-0.02514	0.20118	0.234727
Omalur	-0.065216443	-0.09464	-0.06773	-0.17094	-0.00643	0.185316	0.196613

Table 7 Shows the (I-Y)-1 Value Drinking Water quality in Salem West, Salem South, Yercaud, Sankari, Edapadi, Mettur and Omalur Table 6 shown the Minverse Value.

TABLE 8. Total Relation matrix (T)

	PH	TDS	TH	Calcium	Magnesium	Chloride	Sulphate
Salem West	-0.867475265	-1.43694	-0.87001	-2.54966	-0.36388	2.244018	2.635571
Salem South	0.012406007	-0.99216	0.031266	0.023065	-0.01081	-0.03842	-0.02147
Yercaud	-0.038843144	-0.04565	-1.02991	-0.09012	-0.01102	0.126248	0.075346
Sankari	-0.023783144	-0.05267	-0.01235	-1.04596	0.01336	0.059087	0.053296
Edapadi	0.131473652	0.241164	0.134358	0.356487	-0.92804	-0.43104	-0.46155
Mettur	-0.068232735	-0.09393	-0.1251	-0.14995	-0.02514	-0.79882	0.234727
Omalur	-0.065216443	-0.09464	-0.06773	-0.17094	-0.00643	0.185316	-0.80339

Table 8 shows that in The Total Relation Matrix and T matrix is same Value the direct relation matrix is multiplied with the inverse of the value that the direct relation matrix is subtracted from the identity matrix. Calculate the matrix and their threshold values (alpha) Alpha 1.346391 T thicken if the matrix value is greater than the threshold value.

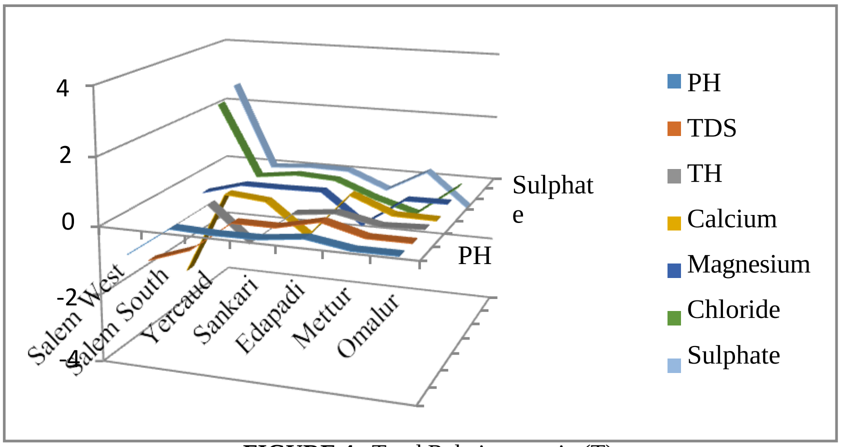

FIGURE 4. Total Relation matrix (T)

Figure 4 shows The Total Relation Matrix the direct relation matrix is multiplied with the inverse of the value that the direct relation matrix is subtracted from the identity matrix.

TABLE 9. Ri, Ci, Ri+Ci and Ri-Ci

	Ri	Ci	Ri+Ci	Ri-Ci	Identity
Salem West	-0.11234	-0.91967	-1.03201	0.807336	effect
Salem South	-1.01249	-2.47484	-3.48733	1.462343	effect
Yercaud	-1.94342	-1.93947	-3.88289	-0.00394	cause
Sankari	-1.94159	-3.62709	-5.56868	1.685494	effect
Edapadi	-2.28694	-1.33196	-3.61889	-0.95498	cause
Mettur	-1.89074	1.346391	-0.54434	-3.23713	cause
Omalur	-1.8862	1.712528	-0.17367	-3.59873	cause

Table 9 shows the Calculation of Ri, Ci, Ri+Ci and Ri-Ci to Get the Cause and Effect. Salem West, Salem South, Yercaud, Sankari, Edapadi, Mettur and Omalur there are alternative parameters.

TABLE 10. Rank

	Rank RI+Ci	**Rank RI-Ci**
Salem West	3	3
Salem South	4	2
Yercaud	6	4
Sankari	7	1
Edapadi	5	5
Mettur	2	6
Omalur	1	7

Shows table 10 that drinking water quality is Ri+Ci and Ri-Ci Rank using the DEMATEL for Accurate Domination in Graphs. Drinking water quality Ri+Ci The Omalur got the first rank whereas the Sankari is having the lowest rank. Drinking water quality Ri-Ci the Sankari got the first rank whereas the Omalur is having the lowest rank.

5. CONCLUSION

Drinking water quality of the study areas All Physico-chemical parameters it was decided to comply and WHO Standards for Drinking Water Quality at all college drinking water sampling sites. Water samples in concentrations of cations and anions do not show extreme variations. From college drinking water quality sources Bacteriological determination of water, it confirmed that it is safe for drinking water and other household uses. The study revealed the absence of faecal coliforms at all college water sampling sites. At three water sampling sites, Total coliforms were present.For causal factors of important occupational hazardsit aims to develop a fuzzy DEMATEL approach. Therefore, to assess the natural causes of accidents in the construction industry this study presents a new occupational risk assessment approach, it is in the construction industry It helps managers to develop appropriate prevention strategies for accidents. The proposed method is superior to conventional techniques;it exposes relationships between factors and Ranks the criteria with respect to the type of relationships and the intensity of their effects on each criterion. Imprecise and inaccurate information was handled by using the fuzzy linguistic scale. Due to these advantages, on the implications of the analysis of cause and effect criteria to demonstrate excellent knowledge and DEMATEL is used to increase model applicability. Hence, the proposed method has the ability to represent the causal relationship of criteria and Favorable to handle group decision making in ambiguous environment.The current study uses the DEMATEL methodology to evaluate actors to develop a strategic plan to effectively structure e-waste, to solve this problem short-term and Target long-term flexible decision-making strategies. Ri+CiOmalur also ranked first in drinking water quality, and Shankari is also ranked lowest. Ri-Ci Sankari ranked first in drinking water quality. Omalur is also ranked low.

REFERENCES

[1]. Ailamaki, Anastassia, Christos Faloutos, Paul S. Fischbeck, Mitchell J. Small, and Jeanne VanBriesen. "An environmental sensor network to determine drinking water quality and security." ACM Sigmod Record 32, no. 4 (2003): 47-52.

[2]. Tasisa, Yirgalem Bekele, and Kogila Palanimuthu. "Psychosocial Impacts of Imprisonment among Youth Offenders in Correctional Administration Center, Kellem Wollega Zone, Ethiopia." *Medico-legal Update* 21, no. 2 (2021).

[3]. Meride, Yirdaw, and BamlakuAyenew. "Drinking water quality assessment and its effects on residents health in Won-do genet campus, Ethiopia." Environmental Systems Research 5, no. 1 (2016): 1-7.

[4]. Storey, Michael V., Bram Van der Gaag, and Brendan P. Burns. "Advances in on-line drinking water quality monitor-ing and early warning systems." Water research 45, no. 2 (2011): 741-747.

[5]. Gangadharan, Shanmuga Boopathy, Sunita Satapathy, Tanu Dixit, C. Sukumaran, Selvan Ravindran, and Prasanta Kumar Parida. "Platelet-rich plasma treatment for knee osteoarthritis: A systematic investigation." *Multidisciplinary Reviews* 6 (2023).

[6]. Khan, Sardar, Maria Shahnaz, Noor Jehan, ShafiqurRehman, M. Tahir Shah, and Islamud Din. "Drinking water quali-ty and human health risk in Charsadda district, Pakistan." Journal of cleaner production 60 (2013): 93-101.

[7]. Bain, Rob ES, Stephen W. Gundry, Jim A. Wright, Hong Yang, Steve Pedley, and Jamie K. Bartram. "Accounting for water quality in monitoring access to safe drinking-water as part of the Millennium Development Goals: lessons from five countries." Bulletin of the World Health Organization 90 (2012): 228-235.

[8]. Sukumaran, C., M. Ramachandran, Vimala Saravanan, and Sathiyaraj Chinnasamy. "An Empirical Study of Brand Marketing Using TOPSIS MCDM Method." *REST Journal on Banking, Accounting and Business* 1, no. 1 (2022): 10-18.

[9]. Johnson, Branden B. "Do reports on drinking water quality affect customers' concerns? Experiments in report con-tent." Risk Analysis: An International Journal 23, no. 5 (2003): 985-998.

[10].Ochoo, Benjamin, James Valcour, and Atanu Sarkar. "Association between perceptions of public drinking water quali-ty and actual drinking water quality: A community-based exploratory study in Newfoundland (Cana-da)." Environmental research 159 (2017): 435-443.

[11].Palanimuthu, Kogila, Birhanu Gutu, Leta Tesfaye, BuliYohannis Tasisa, Yoseph Shiferaw Belayneh, Melkamu Tami-ru, and Desalegn Shiferaw. "Assessment of Awareness on COVID-19 among Adults by Using an Online Platform: 26 Countries View." *Medico-legal Update* 21, no. 1 (2021).

[12].Sukumaran, C., D. Selvam, M. Sankar, V. Parthiban, and C. Sugumar. "Application of Artificial Intelligence and Ma-chine Learning to Predict Basketball Match Outcomes: A Systematic Review." *Computer Integrated Manufacturing Systems* 28 (2022): 998-1009.

[13].Balaji, G. N., T. S. Subashini, and N. Chidambaram. "Automatic classification of cardiac views in echocardiogram us-ing histogram and statistical features." *Procedia Computer Science* 46 (2015): 1569-1576.

[14].Goswami, Chandrashekhar, and Rahul Shahane. "Transport Control Protocol (TCP) enhancement over wireless envi-ronment: Issues and challenges." In *2017 International Conference on Inventive Computing and Informatics (ICICI)*, pp. 742-749. IEEE, 2017.

[15].Baxter, C. W., Q. Zhang, S. J. Stanley, R. Shariff, R-RT Tupas, and H. L. Stark. "Drinking water quality and treat-ment: the use of artificial neural networks." Canadian Journal of civil engineering 28, no. S1 (2001): 26-35.

[16].Mohebbi, Mohammad Reza, Reza Saeedi, Ahmad Montazeri, KooshiarAzamVaghefi, ShararehLabbafi, Sogol Oktaie,

MehrnooshAbtahi, and AzitaMohagheghian. "Assessment of water quality in groundwater resources of Iran using a modified drinking water quality index (DWQI)." Ecological indicators 30 (2013): 28-34.

[17].Sukumaran, C., and P. J. Sebastian. "Effect of Inclusive Games and Physical Exercises on Selected Physical Variables among the Intellectually Challenged Children." *Annals of the Romanian Society for Cell Biology* 26, no. 01 (2022): 1442-1450.

[18].Dahunsi, S. O., H. I. Owamah, T. A. Ayandiran, and S. U. Oranusi. "Drinking water quality and public health of selected towns in South Western Nigeria." Water Quality, Exposure and Health 6, no. 3 (2014): 143-153.

[19].Meunier, Laurence, Silvio Canonica, and UrsVonGunten. "Implications of sequential use of UV and ozone for drinking water quality." Water research 40, no. 9 (2006): 1864-1876.

[20].Palansooriya, KumuduniNiroshika, Yi Yang, Yiu Fai Tsang, Binoy Sarkar, DeyiHou, Xinde Cao, Erik Meers, JörgRinklebe, Ki-Hyun Kim, and Yong Sik Ok. "Occurrence of contaminants in drinking water sources and the potential of biochar for water quality improvement: A review." Critical Reviews in Environmental Science and Technology 50, no. 6 (2020): 549-611.

[21].Balaji, G. N., T. S. Subashini, and N. Chidambaram. "Detection of heart muscle damage from automated analysis of echocardiogram video." *IETE Journal of Research* 61, no. 3 (2015): 236-243.

[22].Anand, L., Mahesh Maurya, J. Seetha, D. Nagaraju, Ananda Ravuri, and R. G. Vidhya. "An intelligent approach to segment the liver cancer using Machine Learning Method." In *2023 4th International Conference on Electronics and Sustainable Communication Systems (ICESC)*, pp. 1488-1493. IEEE, 2023.

[23].Goswami, Chandrashekhar, and Parveen Sultanah. "A Study on Cross-Layer TCP Performance in Wireless Ad Hoc Network." In *International Conference on Intelligent Data Communication Technologies and Internet of Things (ICICI) 2018*, pp. 56-70. Springer International Publishing, 2019.

[24].Sukumaran, C., M. Ramachandran, Chinnasami Sivaji, and Manjula Selvam. "Ranking of Product in E-store using WASPAS method." *REST Journal on Banking, Accounting and Business* 1, no. 1 (2022): 1-9.

[25].Kumar, Ashish, Ketan Rathor, Snehit Vaddi, Devanshi Patel, Preethi Vanjarapu, and Manichandra Maddi. "ECG Based Early Heart Attack Prediction Using Neural Networks." In *2022 3rd International Conference on Electronics and Sustainable Communication Systems (ICESC)*, pp. 1080-1083. IEEE, 2022.

[26].Ayyadurai, M., K. Sujatha, R. Pavithra Guru, D. Sasirekha, A. Umamageswari, and S. Deepa. "An Ensemble Learning Approach for Fast Disaster Response using Social Media Analytics."

[27].Abtahi, Mehrnoosh, NajmehGolchinpour, KamyarYaghmaeian, Mohammad Rafiee, MahsaJahangiri-Rad, Alidad-Keyani, and Reza Saeedi. "A modified drinking water quality index (DWQI) for assessing drinking source water quality in rural communities of Khuzestan Province, Iran." Ecological indicators 53 (2015): 283-291.

[28].Zhang, Jing. "The impact of water quality on health: Evidence from the drinking water infrastructure program in rural China." Journal of health economics 31, no. 1 (2012): 122-134.

[29].Tholkapiyan, M., Sudhir Ramadass, J. Seetha, Ananda Ravuri, Pellakuri Vidyullatha, S. Siva Shankar, and Santosh Gore. "Examining the Impacts of Climate Variability on Agricultural Phenology: A Comprehensive Approach Int e-

grating Geoinformatics, Satellite Agrometeorology, and Artificial Intelligence." *International Journal of Intelligent Systems and Applications in Engineering* 11, no. 6s (2023): 592-598.

[30].Bekkanti, Ashok, Gayatri Parasa, Azmira Krishna, Syed Karimunnisa, and Cmak Zeelan Basha. "Computer based detection of alcohol consumed candidates using face expressions with SIFT and bag of words." In *2021 5th International Conference on Trends in Electronics and Informatics (ICOEI)*, pp. 1636-1640. IEEE, 2021.

[31].Wu, Hsin-Hung, and Shih-Yu Chang. "A case study of using DEMATEL method to identify critical factors in green supply chain management." Applied Mathematics and Computation 256 (2015): 394-403.

[32].Shieh, Jiunn-I., Hsin-Hung Wu, and Kuan-Kai Huang. "A DEMATEL method in identifying key success factors of hospital service quality." Knowledge-Based Systems 23, no. 3 (2010): 277-282.

[33].Palanimuthu, Kogila, Eshetu Fikadu Hamba Yigazu, Gemechu Gelalcha, Yirgalem Bekele, Getachew Birhanu, and Birhanu Gutu. "Assessment of Stress, Fear, Anxiety and Depression on COVID-19 Outbreak among Adults in South-Western Ethiopia." *Prof.(Dr) RK Sharma* 21, no. 1 (2021): 440.

[34].Maithili, K., Y. Madhavi Latha, Amit Gangopadhyay, Issac K. Varghese, Ajith Sundaram, Chetan Pandey, and Ajmeera Kiran. "Optimized CNN model for diabetic retinopathy detection and classification." *International Journal of Intelligent Systems and Applications in Engineering* 11, no. 7s (2023): 317-331.

[35].Goswami, Chandrashekhar, Anupam Das, Karrar Imran Ogaili, Vivek Kumar Verma, Vijay Singh, and Dilip Kumar Sharma. "Device to Device Communication in 5G Network using Device-Centric Resource Allocation Algorithm." In 2022 4th International Conference on Inventive Research in Computing Applications (ICIRCA), pp. 467-472. IEEE, 2022.

[36].Suryanarayana, S. Venkata, G. N. Balaji, and G. Venkateswara Rao. "Machine learning approaches for credit card fraud detection." *Int. J. Eng. Technol* 7, no. 2 (2018): 917-920.

[37].Wu, Hsin-Hung, and Ya-Ning Tsai. "A DEMATEL method to evaluate the causal relations among the criteria in auto spare parts industry." Applied Mathematics and Computation 218, no. 5 (2011): 2334-2342.

[38].Akyuz, Emre, and ErkanCelik. "A fuzzy DEMATEL method to evaluate critical operational hazards during gas freeing process in crude oil tankers." Journal of Loss Prevention in the Process Industries 38 (2015): 243-253.

[39].Abdel-Basset, Mohamed, GunasekaranManogaran, Abduallah Gamal, and FlorentinSmarandache. "A hybrid approach of neutrosophic sets and DEMATEL method for developing supplier selection criteria." Design Automation for Embedded Systems 22, no. 3 (2018): 257-278.

[40].Rathor, Ketan, Sushant Lenka, Kartik A. Pandya, B. S. Gokulakrishna, Susheel Sriram Ananthan, and Zoheib Tufail Khan. "A Detailed View on industrial Safety and Health Analytics using Machine Learning Hybrid Ensemble Techniques." In *2022 International Conference on Edge Computing and Applications (ICECAA)*, pp. 1166-1169. IEEE, 2022.

[41].N. Vinay, M. Sudha, M. Ramachandran, Chandrasekar Raja, "Maximizing the Benefits of Conflict Management In Business", Recent trends in Management and Commerce 4(2), 2023: 58-63.

[42].Riya, K. S., R. Surendran, Carlos Andrés Tavera Romero, and M. Sadish Sendil. "Encryption with User Authentication Model for Internet of Medical Things Environment." *Intelligent Automation & Soft Computing* 35, no. 1 (2023).

[43].Dara, Suresh, C. H. Srinivasulu, CH Madhu Babu, Ananda Ravuri, Tirumala Paruchuri, Abhishek Singh Kilak, and Ankit Vidyarthi. "Context-Aware auto-encoded graph neural model for dynamic question generation using NLP." *ACM transactions on asian and low-resource language information processing* (2023).

[44].Sukumaran, C., B. Karpagavalli, R. Hariharan, and V. Parthiban. "Preclusive Strategies of Obesity to Lead a Healthy Life-A Review‖." *Pharmaceutical Sciences and Research* 1, no. 1 (2022): 42-45.

[45].Deepa, S. N., and B. Aruna Devi. "A survey on artificial intelligence approaches for medical image classification." *Indian Journal of Science and Technology* 4, no. 11 (2011): 1583-1595.

[46].Sujatha, K., and V. Ceronmani Sharmila. "Enhanced Mutual Authentication Technique using Id (Matid) in Fog Computing."

[47].Tripathy, Ramamani, Rudra Kalyan Nayak, V. Saravanan, Debahuti Mishra, Gayatri Parasa, Kaberi Das, and Priti Das. "Spectral clustering based fuzzy C-means algorithm for prediction of membrane cholesterol from ATP-binding cassette transporters." In *Intelligent and Cloud Computing: Proceedings of ICICC 2019, Volume 2*, pp. 439-448. Springer Singapore, 2021.

[48].B. Chakradhar, Abrar Hussai, M. Ramachandran, Chinnasami Sivaji, "A Study on Corporate Social Responsibility", Recent trends in Management and Commerce 4(2) 2023, 85-92.

[49].Altuntas, Serkan, and TürkayDereli. "A novel approach based on DEMATEL method and patent citation analysis for prioritizing a portfolio of investment projects." Expert systems with Applications 42, no. 3 (2015): 1003-1012.

[50].Han, Yuzhen, and Yong Deng. "An enhanced fuzzy evidential DEMATEL method with its application to identify critical success factors." Soft computing 22, no. 15 (2018): 5073-5090.

[51].Murthy, Vishnu G., B. Vishnu Vardhan, K. Sarangam, and P. Vijay Pal Reddy. "A comparative study on term weighting methods for automated telugu text categorization with effective classifiers." *International Journal of Data Mining & Knowledge Management Process* 3, no. 6 (2013): 95.

[52].Kumar, Praveen. "Analysis of dynamic topology wireless sensor networks for the internet of things iot." (2017).

[53].Li, Ya, Yong Hu, Xiaoge Zhang, Yong Deng, and SankaranMahadevan. "An evidential DEMATEL method to identify critical success factors in emergency management." Applied Soft Computing 22 (2014): 504-510.

[54].Song, Wenyan, Yue Zhu, and Qiuhong Zhao. "Analyzing barriers for adopting sustainable online consumption: A rough hierarchical DEMATEL method." Computers & Industrial Engineering 140 (2020): 106279.

[55].Seker, Sukran, and EdmundasKazimierasZavadskas. "Application of fuzzy DEMATEL method for analyzing occupational risks on construction sites." Sustainability 9, no. 11 (2017): 2083.

[56].Sathiyamoorthi, V., A. K. Ilavarasi, K. Murugeswari, Syed Thouheed Ahmed, B. Aruna Devi, and Murali Kalipindi. "A deep convolutional neural network based computer aided diagnosis system for the prediction of Alzheimer's disease in MRI images." *Measurement* 171 (2021): 108838.

[57].Sake Karunakar, Harshitha. T. N, Ramachandran, Chinnasami Sivaji, "A Review on New Accounting History and Empirical Research", Recent trends in Management and Commerce 4(2) 2023, 93-100.

[58].Thanuja, R., and A. Umamakeswari. "Unethical network attack detection and prevention using fuzzy based decision

system in mobile ad-hoc networks." *Journal of Electrical Engineering & Technology* 13, no. 5 (2018): 2086-2098.

[59].Sharma, Manu, Sudhanshu Joshi, and Ashwani Kumar. "Assessing enablers of e-waste management in circular economy using DEMATEL method: An Indian perspective." Environmental Science and Pollution Research 27, no. 12 (2020): 13325-13338.

[60].Siva Shankar, S., Bui Thanh Hung, Prasun Chakrabarti, Tulika Chakrabarti, and Gayatri Parasa. "A novel optimization based deep learning with artificial intelligence approach to detect intrusion attack in network system." *Education and Information Technologies* (2023): 1-25.

[61].Narayanan, Srikanth, N. M. Balamurugan, K. Maithili, and P. Bini Palas. "Leveraging machine learning methods for multiple disease prediction using Python ML libraries and flask API." In *2022 International Conference on Applied Artificial Intelligence and Computing (ICAAIC)*, pp. 694-701. IEEE, 2022.

[62].Schaider, Laurel A., Lucien Swetschinski, Christopher Campbell, and Ruthann A. Rudel. "Environmental justice and drinking water quality: are there socioeconomic disparities in nitrate levels in US drinking water?." Environmental Health 18, no. 1 (2019): 1-15.

[63].Seetha, J., Ananda Ravuri, Yamini Tondepu, and T. Kuntavai. "DETECTING THE SIDE CHANNEL ATTACK IN EMBEDDED PROCESSORS USING FEDERATED MODEL."

[64].Gutu, Birhanu, Genene Legese, Nigussie Fikadu, Birhanu Kumela, Firafan Shuma, Wakgari Mosisa, Zelalem Regassa et al. "Assessment of preventive behavior and associated factors towards COVID-19 in Qellam Wallaga Zone, Oromia, Ethiopia: A community-based cross-sectional study." *PloS one* 16, no. 4 (2021): e0251062.

[65].Sukumaran, C., and P. J. Sebastian. "Effect of Inclusive Games and Physical Exercises on Selected Physical Variables among the Intellectually Challenged Children." *Annals of the Romanian Society for Cell Biology* 26, no. 01 (2022): 1442-1450.

[66].Thanuja, R., E. Sri Ram, and A. Umamakeswari. "A linear time approach to detect wormhole tunnels in mobile adhoc networks using 3PAT and transmission radius (3PAT w)." In *2018 2nd International Conference on Inventive Systems and Control (ICISC)*, pp. 837-843. IEEE, 2018.

[67].Praveen Kumar, R., Jennifer S. Raj, and S. Smys. "Performance analysis of hybrid optimization algorithm for virtual head selection in wireless sensor networks." *Wireless Personal Communications* (2021): 1-16.

[68].Nachimuthu, Deepa Subramaniam, and Arunadevi Baladhandapani. "Multidimensional texture characterization: on analysis for brain tumor tissues using MRS and MRI." *Journal of digital imaging* 27 (2014): 496-506.

[69].Arivazhagan, N., M. A. Mukunthan, D. Sundaranarayana, A. Shankar, S. Vinoth Kumar, R. Kesavan, Saravanan Chandrasekaran et al. "Analysis of Skin Cancer and Patient Healthcare Using Data Mining Techniques." *Computational Intelligence and Neuroscience* 2022 (2022).

[70].Sujatha, K. "Trustworthy Mutual User Authentication using Inherent Techniques for Cloud and Fog Computing."

[71].Ananthi, S., M. Sadish Sendil, and S. Karthik. "Privacy preserving keyword search over encrypted cloud data." In *Advances in Computing and Communications: First International Conference, ACC 2011, Kochi, India, July 22-24, 2011. Proceedings, Part I 1*, pp. 480-487. Springer Berlin Heidelberg, 2011.

[72].Kodati, Sarangam, R. Vivekanandam, and G. Ravi. "Comparative analysis of clustering algorithms with heart disease

datasets using data mining Weka tool." In *Soft Computing and Signal Processing: Proceedings of ICSCSP 2018, Volume 1*, pp. 111-117. Springer Singapore, 2019.

[73].Arul, U., V. Arun, T. Prabhakara Rao, R. Baskaran, S. Kirubakaran, and MI Thariq Hussan. "Effective Anomaly Identification in Surveillance Videos Based on Adaptive Recurrent Neural Network." *Journal of Electrical Engineering & Technology* (2024): 1-13.

[74].Prabhakara Rao, T., and B. Satyanarayana Murthy. "Extended group-based verification approach for secure M2M communications." *International Journal of Information Technology* (2023): 1-10.

[75].Rathor, Ketan, Keyur Patil, Mandiga Sahasra Sai Tarun, Shashwat Nikam, Devanshi Patel, and Sasanapuri Ranjit. "A Novel and Efficient Method to Detect the Face Coverings to Ensurethe Safety using Comparison Analysis." In *2022 International Conference on Edge Computing and Applications (ICECAA)*, pp. 1664-1667. IEEE, 2022.

[76].Tamilvizhi, T., R. Surendran, Carlos Andres Tavera Romero, and M. Sadish Sendil. "Privacy Preserving Reliable Data Transmission in Cluster Based Vehicular Adhoc Networks." *Intelligent Automation & Soft Computing* 34, no. 2 (2022).

[77].Jhade, Srinivas, V. Senthil Kumar, T. Kuntavai, Purnendu Shekhar Pandey, Ajith Sundaram, and Gayatri Parasa. "An Energy Efficient and Cost Reduction based Hybridization Scheme for Mobile Ad-hoc Networks (MANET) over the Internet of Things (IoT)."

[78].Rao, T. Prabhakara, M. Nagabhushana Rao, U. Arul, and J. Balajee. "Detection of MRI Medical MRI Images of Brain Tumors Using Deep Learning & Secure the Transfer of Medical Images Using Blockchain." *Journal of Algebraic Statistics* 13, no. 3 (2022): 374-377.

[79].Seetha, J., D. Nagaraju, T. Kuntavai, and K. Gurnadha Gupta. "THE SMART DETECTION AND ANALYSIS ON SKIN TUMOR DISEASE USING BIO IMAGING DEEP LEARNING ALGORITHM." *ICTACT Journal on Image & Video Processing* 13, no. 4 (2023).

[80].Kumar, R. Praveen, and S. Smys. "A novel report on architecture, protocols and applications in Internet of Things (IoT)." In *2018 2nd International Conference on Inventive Systems and control (ICISC)*, pp. 1156-1161. IEEE, 2018.

[81].Thanuja, R., and A. Umamakeswari. "Black hole detection using evolutionary algorithm for IDS/IPS in MANETs." *cluster computing* 22, no. Suppl 2 (2019): 3131-3143.

[82].Kodati, Sarangam, and R. Vivekanandam. "Analysis of heart disease using in data mining tools Orange and Weka." *Glob. J. Comput. Sci. Technol. C Softw. Data Eng* 18, no. 1 (2018): 16-22.