REST Journal on Emerging trends in Modelling and Manufacturing
Vol: 11(1), March 2025
REST Publisher; ISSN: 2455-4537 (Online)
Website: https://restpublisher.com/journals/jemm/
DOI: https://doi.org/10.46632/jemm/11/1/1

Assessment of Waste Water Contaminants in The Textile Industry: A Multi Parameter Evaluation for Pollution Control

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Abstract: *With the release of several contaminants into water bodies, the textile industry is one of the main sources of wastewater pollution. Toxic substances, colours, heavy metals, and organic compounds are some of these contaminants. Their discharge into bodies of water harms aquatic ecosystems and puts the public's health and water sources at danger. Urgent action is required to stop and lessen these emissions as the industry of textiles develops further. To lessen the negative effects of wastewater from the textile industries on the environment and safeguard ecosystems and human health, effective techniques and cutting-edge technologies must be put into practise. In recent years, wastewater contamination from the textile sector has gained significant attention. Massive volumes of pollutants are produced during the textile production process and released into waterways, seriously harming the ecosystem. Toxic substances, colours, heavy metals, and organic compounds are some of these contaminants. In addition to endangering aquatic habitats, being present in wastewater has an impact on people's health and water sources. Effective methods and technology must be put in place to limit and mitigate the pollution caused by wastewater from the textile industries as it continues to expand. It is crucial to conduct research on the contaminants found in wastewater from the textile industry for a number of reasons. First, determining the types and quantities of pollutants produced during the textile manufacturing process aids in determining the level of environmental damage this industry is responsible for. For creating efficient pollution control policies and legal frameworks, this information is crucial. The second benefit is that it sheds light on potential health and environmental issues by researching how textile wastewater contamination affects fisheries and human health. Third, for sustainable textile production, it is critical to develop and assess cutting-edge technology and treatment approaches to reduce and remove textile wastewater contaminants. Finally, such studies can help provide recommendations and best practises for the textile industry to embrace eco-friendly practises and reduce their environmental impact. Evaluation parameters taken as pH Value, Temperature, (TSS), (TDS), (EC). pH Value in 1st rank, Temperature in 2nd rank, (TSS) in 5th rank, (TDS) in 4th rank, (EC) in 3rd rank. pollutants of wastewater textile industries in pH Value in 1st rank, Temperature in 2nd rank, (TSS) in 5th rank, (TDS) in 4th rank, (EC) in 3rd rank.*

Keywords: *pH Value, Temperature, Total Suspended Solids (TSS), Total Dissolved Solid (TDS).*

1. INTRODUCTION

One of the major polluters of our valuable water and soil is believed to be textile industrial wastewater (TIWW). Ecology. It threatens organisms by being allergic, cytotoxic, mutagenic, carcinogenic, and genotoxic Perfluorooctanoic acid (PFOA), pentachlorophenol, formalin, phthalates, phenols, surfactants, and numerous heavy metals like lead (Pb), cadmium (Cd), like arsenic (As), chromium (Cr), zinc (Zn), and nickel (Ni) continue to be present in the TIWW. High pH, the demand for chemicals (COD), the demand for biological oxygen (BOD), the total amount of suspended solid (TSS), Total Organic Charcoal (TOC), Chlorides, and Sulphates are all present in TIWW along with high dye content. In order to safeguard the environment and the general public's health, proper treatment is necessary prior to the final release into water bodies. Therapy for TIWW Here is no financially feasible therapy technique that can provide adequate treatment for TIWW, which makes it a significant challenge. Therefore, there is an urgent need to create novel, economical, and eco-friendly TIWW treatment technology. This study article focuses on the many processes used in the textile industry, the creation of wastewater, its nature plus chemical makeup, the effects on the environment and health risks, and treatment strategies for TIWW treatment. Additionally, it offers different analytical methods for TIWW's detection and characterises the difficulties, significant problems, and upcoming chances [1]. Physical, chemical, biological, or appropriate combinations of these treatment procedures must be used for textile waste can be properly released into the environment. In general, each technique offers benefits and drawbacks that should be considered. In addition, the presence of a few ring structures of benzene in the dye systems may render certain treatment techniques inefficient in the degradation of organic contaminants. Consequently, dye removal procedures should combine a variety of techniques. Only the transition of organic contaminants from a single stage to another can be accomplished by techniques including coagulation, filtration, and activated carbon adsorption. require afterwards of the waste because they cause the discharge of secondary contaminants into the environment. The sections that follow [2] detail a few dye removal methods. equilibrium ultrafiltration and dialysis. When the concentration of total unbound detergent falls below the threshold micelle concentration, several methods are practical. Both procedures call for a semipermeable barrier that preserves the protein-ligand combination while allowing rapid movement of the unbound ligand. The differential between the amphiphile concentrations on either side of the membrane represents the amount of bound ligand. Techniques are unreliable if micelles are present because equilibration times are quite long. chromatography using gel filtration. Although it needs a lot of amphiphile, this approach can be used above or below the required micelle concentration. The sample is applied over the ligand in a column buffer that has been produced with a certain concentration of ligand. Protein and extra amphiphile are examined in the protein peak that was eluted. For each experimental attachment point at a certain nonlimiting ligand concentration, a separate extraction experiment is required. The overlapping of both of these fractions can result in falsely high binding values, hence it is also required to demonstrate that this protein-detergent combination has a distinct elimination state than pure micelles [3]. Textile industry are having serious issues with environmental contamination as a result of the present-day issue of waste that is both solid and liquid. Therefore, the textile industry and researchers are concentrating on minimising textile wastewater and creating alternative effective treatment methods that don't harm the environment. Therefore, the advantages of various wastewater treatment systems are the main focus of the current literature review. The study also aimed to provide zero waste water handling solutions for reducing pollution and making effective use of reclaimed water. This study also covers alternative approaches of lowering textile waste. The final recommendation in this essay is to substitute wastewater for cement, which is frequently utilised in other industries like building [4]. The textile sector also produces a lot of wastewaters in addition to the problem of pigment loss during dyeing. If not appropriately managed, these wastes contain a complex mixture of several contaminants, including related pesticides, heavy metals, and original colours lost throughout the dyeing process (McMullan et al. 2001). proofs. Water is extensively used in the textile industry. Depending on the precise mill processes being employed, the equipment being used, and the prevalent water use philosophy, a wide range of water usage occurs (Verma et al. 2012). [5]. Investigated was the viability of employing electrocoagulation to remove contaminants from industrial liquid effluents produced by the textile sector. Analysis of the process's colour, turbidity, & chemical demand for oxygen (COD) helped determine how effective it was. The waste water from the linens dyeing manage, which is the most damaging of all effluents entering the Permanent Effluent Pond (REP), was used for the analyses' initial test. The statistical model was created using MODDE 7.0 software for the analysis. Response surfaces were derived from the model's output and experimental measurements. About various values of the investigated variables (pH, current density, and treatment period), these response surfaces forecast electrocoagulation behaviour [6]. The cathode served as a reservoir, and the anode's electrode substance had a bare surface. An 8 V regulated dc power source provided the necessary energy. The ranges for both voltage and current were 0 A to 0.6 A & 0 V to 8 V, respectively. The Chennai Public Wastewater Treatment Plant provided the effluent. Batch processing was used to carry out the treatment, which involved adding one litre of wastewater to the reservoir and adjusting the pH with a single milligram of sulfuric acid [7]. Adsorption is an effect of the surface that can be employed with the right interface to get rid of soluble organic contaminants. The adsorption procedure can be used to get rid of dyes like methylene blue, malachite green, and Congo red as well as highly dangerous substances including phenols, insecticides, and cyanides (Santos et al., 2007). The adsorb dimension, size of particles, time of contact, adsorbate-adsorbent concentration, pH, and temperature are only a few of the variables that affect adsorption. In the process of adsorption, activated carbon—which is made from carbonaceous materials including saw dust, coconut husk, other cellulosic materials, palm kernels, soybean skins, peanut shells, maple, hazelnut shells, tea and coffee waste—is the most often utilised adsorbent for wastewater treatment. Bunches of palm fruit, modified sugar beetroot pulp and leaves from maize. Metal ions, dyes, cations, and mordants can all be effectively absorbed by activated carbon [8]. The various chemicals used in each step include acidic or robust solutions of alkaline, inorganic receiving compounds, commonly agents, answer chemicals, flour, expanding agents, surface-active substances watering and dispersing agents of metals, and minerals. A variety of colours are used to enhance the goods' beauty, and different dyes—mostly azo dyes—are added for shading during the colouring process. Depending on the method, a variety of chemicals, such as metallic ones, salts, surfactants that assist have the potential to be added to the textile dyeing process to enhance the absorption of colour into the fibres [9]. All of these processes produce a significant amount of wastewater that contains a variety of contaminants, including reactive colours, chemicals, high COD, POD, and organic compounds. Long-term studies have been undertaken on the most effective and cost-effective ways to remediate textile effluent. Pollutant chemicals can be removed from water using a variety of techniques, such as physical, biological, combination, and other technologies. Environmental regulations are becoming more significant everywhere in the textile industry. Adopting a model for the textile sector that is environmentally friendly and addresses every issue from conception to manufacturing while carefully upholding environmental regulations is crucial. Creating a design that may be deemed cost-effective is the key challenge. and use safer or more easily treated chemicals in their place. Appropriate treatment procedures were suggested based on effluent parameters and a literature study [10].

2. METHODOLOGY

In order to tackle today's pressing business difficulties, modern global managers need to be skilled or have diverse perspectives. Expanding the skills for international managers is therefore becoming a crucial concern. Many academics and professionals have put forth various competency models with lists of necessary skills. Here, a compelling question about how to enhance the skills possessed by international leaders by breaking down a set of talents into components to support skill development gradually arises. We presented an efficient technique integrating fuzzy theory and Decision Tests and Evaluation Laboratories (DEMATEL) to identify the skills that are needed to optimise the professional growth of global managers more effectively in order to address the issue of the vagueness of human judgements. A real-world example is also provided to demonstrate the applicability [11]. Since Taiwan's National Health Insurance Programme was formally introduced in March 1995, its citizens have access to high-quality, yet still reasonably priced, medical treatment. Meeting the prospective demands of a wide range of patients is crucial to properly managing a hospital and recruiting and keeping as many individuals as feasible. At Sho San Memorial Medical Centre in Changhua City, Taiwan, this study initially performed a survey utilising the SERVQUAL model to find seven critical criteria from the point of view of patients or their relatives. A second survey was created utilising the Decision-Making Testing and Evaluating Laboratory (DEMATEL) approach and delivered to hospital management once the important criteria had been selected. This survey evaluated the significance of each requirement and established causal links between the criteria. The findings demonstrate that dependable medical staff via competency is the most crucial factor in health care, along with service staff with effective communication abilities, service staff with quick problem-solving abilities, detailed explanations of the condition of the patient by the doctor, and shared impact on medicine. professionals on the payroll. Thus, teaching patients to trust medical professionals can be a benefit of training in problem-solving and communication skills. Patient satisfaction rises when reputable healthcare providers treat them professionally [12]. Multiple sorts of effects signify that any two components in a complex system can have more than one type of impact; in this case, the impacts between the factors can take many distinct forms when seen from various angles. The level of interdependence between elements must be given a precise value in the DEMATEL methodologies now in use. In basic systems, it makes sense to do this; but, in complex systems, the interactions between the elements could alter. In a supply chain system, for instance, upstream firms impact downstream firms from a perspective of product supply, while latter firms impact headwaters firms from a perspective of cost settlement. From the standpoint of collective competence, there are common influences between the two. Additionally, the three perspectives may each have a varying level of impact across upstream and downstream organisations. Sadly, the DEMATEL approaches now in use do not distinguish between or consider many different types of consequences [13]. EMATEL is frequently used to classify elements into causal and beneficial categories and analyse the overall correlations between factors. As a result, each source is considered in this article while making decisions. We can determine the weight and relevance of each piece of evidence using DEMATEL. The DEMATEL approach should be extended in order to handle the combination of contradictory evidence [14]. ANP to investigate how supplier selection is implemented in a computerised company. ANP involves connections among criteria as opposed to AHP. However, there aren't many techniques or research that can show how different variables relate to SCM performance. In order to choose the best supplier for businesses, this study was the first to employ the Fuzzy Decision-Maker Trial and Evaluate Laboratory (DEMATEL) method. The DEMATEL technique has the advantage of being able to show how these factors affect other aspects in supplier selection and how they interact. The DEMATEL technique is used in this study to estimate the linkages and strength of supplier selection factors, as well as the direct as well as indirect effect between criteria. The DEMATEL technique requires very little data [15]. Some of the most frequently cited publications in the discipline of risk management and safety can be found by looking at the "average references per year" for each publication. By the end of 2019, an article's "average connections per year" will be determined by its Internet of Sciences citation index. The DEMATEL approach is often used with other making decisions or mathematical tools in the most prominent studies in this field. A thorough analysis of the DEMATEL methodology and its applications reveals that the original DEMATEL form still needs to be improved from a few angles, particularly to identify its flaws. The purpose inspired the authors to improve the DEMATEL approach and address some of its unrecognised flaws [16]. The DEMATEL approach provides a collection of pair-wise comparison matrices throughout computing processes, which is quite like the process of analytical hierarchy (AHP). The DEMATEL approach evaluates the immediate effect between both variables, ranging from no influence to strong influence, whereas the aim of pairwise comparisons in AHP is to determine the relative relevance among any two factors from similarly important to highly significant. One method for integrating individual judgements when a team of experts participate in the AHP process of choice is to employ geometric algorithms. The DEMATEL technique, in contrast, combines the opinions of a set of people using mathematical algorithms. The consistency ratio is also used by AHP to evaluate the consistency of comparisons made by decision-makers (Winston, 2004). However, the DEMATEL method lacks consistency rate estimation to check that comparisons are consistent. Indeed, there is a need to have a mechanism that can eliminate inconsistent comparisons during computational procedures. This article is adapted from [17]. Using this method, team knowledge can be gathered to build a structural model, and then visualize the causal relationship between factors through a cause-effect relationship diagram. DEMATEL's results provide information on the impact each factor has on the entire emergency system. We may determine which aspects are of the most fundamental relevance to the entire system and which ones are not by investigating and debating the structural model. So these most significant causative components are undoubtedly crucial success factors for the system. The only issue is that measuring direct sensitivity across each pair of parts is necessary in order to utilise the DEMATEL technique to discover CSFs. These grade points are always determined by expert survey, although human judgement in decision-making is frequently ambiguous and challenging to quantify with exact numbers [18]. The outreach workers' programme entails identifying jobless people and giving them job information, connecting them with social resources to boost employment chances, and hosting workshops or forums for employers for job seekers. To carry out the tasks, these community workers are enlisted, trained, and supervised. Poor performers are swapped by new ones if their performance goals are not met. Key parameters must be determined in order to assess outreach workers' performance appropriately. In order to make the total judgement more objective, it is also important to select carefully how much importance to give to each category. Establishing causal links between criteria can also aid outreach workers in doing better. The evaluation criteria for outreach workers' performance are outlined in this study. Following that, the Decision Tests and Evaluation Laboratories (DEMATEL) approach is used to both calculate the weightings of the criteria and describe how those criteria relate to one another in context. A example of the DEMATEL approach being used to evaluate the requirements for outreach staff in an employment agency outreach programme [19]. The initial purpose of the DEMATEL approach was to examine structural links in a complicated system. Numerous academic disciplines, including industrial strategy analysis, ability evaluation, solution analysis, selection, and others, generate and adapt mathematical concepts. categorised the skills required to better optimise the competency creation of global managers using DEMATEL and fuzzy theory. Tzeng, Chiang, or Li (2007) developed a selection model to assess the interweaving effects in e-learning initiatives by combining DEMATEL, an analytical hierarchy process (AHP), and fuzzy integral. Leo et al. (2007) created an efficient system for safety management for aeroplanes using fuzzy logic and DEMATEL. DEMATEL and grey correlation analysis were utilised by Huang, Shyu, and Tzeng (2007) to reconstruct innovation strategy portfolios and define Taiwanese government policy [20].

Evaluation parameters

pH Value: An essential measure that identifies the alkaline or acidic status of the water is the pH reading for effluents from the textile industry. An acidic or a neutral wastewater discharged as a result of textile manufacturing operations can be hazardous to both land and aquatic life. To avoid upsetting the pH equilibrium that exists in receiving waters and to maintain compliance with environmental standards, pH values in wastewater must be monitored and controlled.

Temperature: A key factor in evaluating the environmental impact of textile industry wastewater is its temperature. By lowering oxygen levels, boosting microbial activity, and changing the metabolic rates of aquatic animals, elevated temperatures can harm aquatic ecosystems. To reduce these negative impacts and avoid thermal pollution of receiving waters, it is crucial to monitor and regulate the temperature of the effluent.

(TSS): The number of suspended solids in wastewater is measured by TSS. TSS can come from a variety of sources in the textile industry, including dyes, fibres, and other industrial by-products. High TSS concentrations in wastewater can cause water turbidity, decreased light permeability, and decreased oxygen levels, all of which are harmful to aquatic life. To avoid sedimentation, blockage of rivers, and damage of aquatic ecosystems, TSS removal must be effective.

(TDS): The amount of dissolved chemical and organic particles in wastewater is measured as TDS. Salts, dyes, and other solvents employed during the manufacturing process are only a few of the substances that might cause TDS in the textile industry. Water quality can be harmed by excessive dissolved solids levels in wastewater, which can also interfere the aquatic life processes and make water resources less usable. TDS levels must be monitored and kept under control in order to protect water sources and ensure the sustainability of aquatic ecosystems.

(EC): The amounts of dissolved ions and other chemicals in the water has an impact on the electrical conductivity, which is a measure of the capacity of water to carry an electric current. Electrical conductivity in textile effluent can reveal the existence of salts, substances, and other dissolved materials. Monitoring EC levels gives insight into the general quality of the water and aids in the discovery of probable contaminant sources. For aquatic ecosystems to remain healthy and intact, electrical conductivity must be controlled and reduced.

3. RESULT AND DISCUSSION

TABLE 1. Pollutants of wastewater textile industries

	pH Value	Temperature	TSS	TDS	EC	Sum
pH Value	0	2	4	2	3	11
Temperature	4	0	2	1	2	9
TSS	2	1	0	3	1	7
TDS	1	3	2	0	2	8
EC	2	4	1	3	0	10

Table 1 shows that DEMATEL Decision making trail and evaluation parameters in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC.

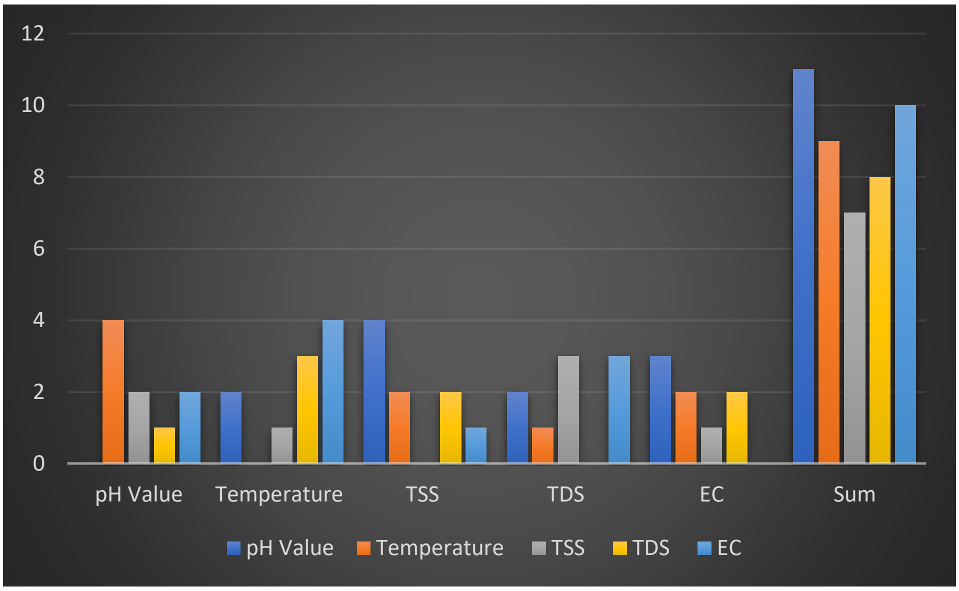

FIGURE 1. Pollutants of wastewater textile industries

Figure 1 shows that DEMATEL Decision making trail and evaluation parameters in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC.

TABLE 2. Normalisation of direct relation matrix

Normalisation of direct relation matrix					
	pH Value	Temperature	TSS	TDS	EC
pH Value	0	0.181818	0.363636	0.181818	0.272727
Temperature	0.363636	0	0.181818	0.090909	0.181818
TSS	0.181818	0.090909	0	0.272727	0.090909
TDS	0.090909	0.272727	0.181818	0	0.181818
EC	0.181818	0.363636	0.090909	0.272727	0

Table 2 shows that the Normalising of direct relation matrix in pH Value, Temperature, TSS, TDS, EC with respect to pH Value, Temperature, TSS, TDS, EC.

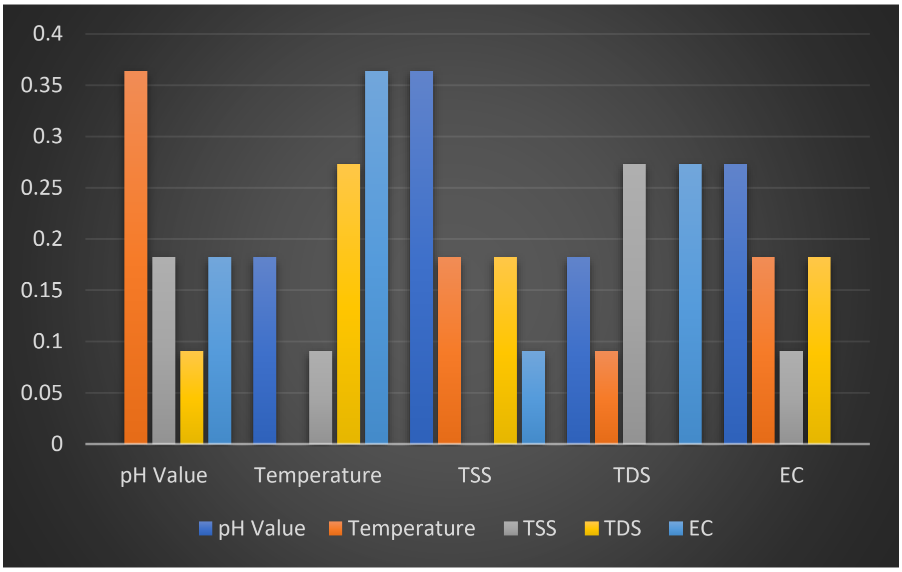

FIGURE 2. Normalisation of direct relation matrix

Figure 2 Shows that chart for Normalising of direct relation matrix pH Value, Temperature, TSS, TDS, EC has Different value.

TABLE 3. Calculate the Total Relation Matrix

Calculate the total relation matrix					
pH Value	0	0.181818	0.363636	0.181818	0.272727
Temperature	0.363636	0	0.181818	0.090909	0.181818
TSS	0.181818	0.090909	0	0.272727	0.090909
TDS	0.090909	0.272727	0.181818	0	0.181818
EC	0.181818	0.363636	0.090909	0.272727	0

Table 3 shows the calculate the total relation matrix in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC and calculated.

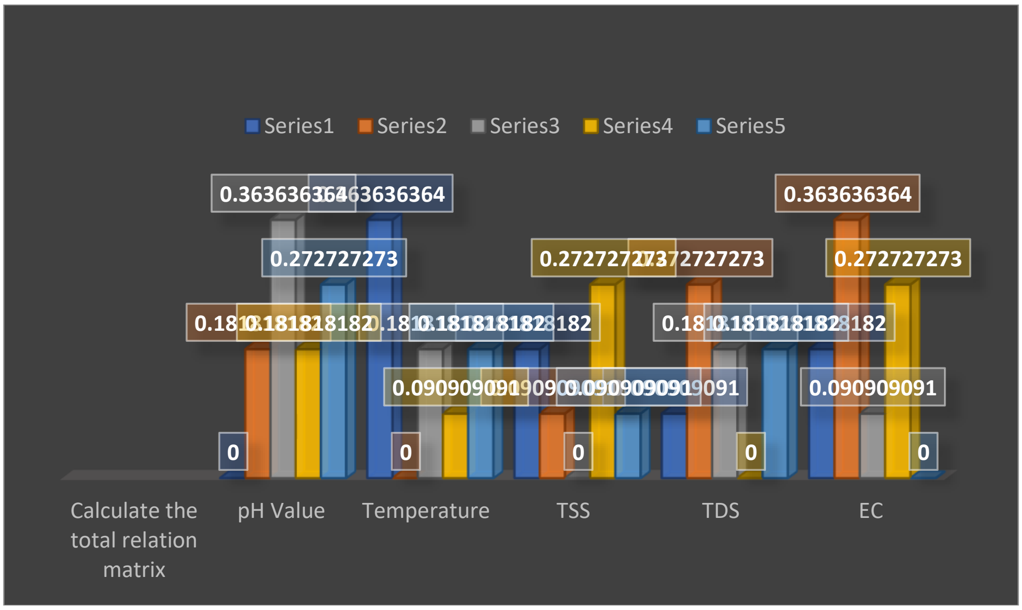

FIGURE 3. Calculate the Total Relation Matrix

Figure 3 shows the calculate the total relation matrix in pollutants of wastewater textile industries with respect to pH Value, Temperatures, TDS, EC)are calculated.

TABLE 4. I identity matrix

1	0	0	0	0
0	1	0	0	0
0	0	1	0	0
0	0	0	1	0
0	0	0	0	1

Table 4 shows the I= Identity matrix in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC.

TABLE 5. Y value

Y				
0	0.181818	0.363636	0.181818	0.272727
0.363636	0	0.181818	0.090909	0.181818
0.181818	0.090909	0	0.272727	0.090909
0.090909	0.272727	0.181818	0	0.181818
0.181818	0.363636	0.090909	0.272727	0

Table 5 shows the Y value in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC.

TABLE 6. I-Y Value

1-Y				
1	-0.18182	-0.36364	-0.18182	-0.27273
-0.36364	1	-0.18182	-0.09091	-0.18182
-0.18182	-0.09091	1	-0.27273	-0.09091
-0.09091	-0.27273	-0.18182	1	-0.18182
-0.18182	-0.36364	-0.09091	-0.27273	1

Table 6 shows the I-Y Value in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC.

TABLE 7. (I-Y)-1 Value

(1-Y)-1				
1.890832	1.100689	1.168345	1.038156	1.010775
1.081081	1.837838	0.963964	0.864865	0.873874
0.749868	0.735559	1.612259	0.81558	0.633104
0.788553	0.952305	0.832538	1.666137	0.766826
1.020138	1.195019	0.936584	1.031797	1.768239

Table 7 shows the (I-Y)-1 Value in pollutants of wastewater textile industries with respect to pH Value, Temperature, TSS, TDS, EC. Table 6 shown the Minverse Value.

TABLE 8. Total Relation matrix (T)

	Total Relation matrix (T)					Ri
pH Value	0.890832	1.100689	1.168345	1.038156	1.010775	**5.208797**
Temperature	1.081081	0.837838	0.963964	0.864865	0.873874	**4.621622**
TSS	0.749868	0.735559	0.612259	0.81558	0.633104	**3.54637**
TDS	0.788553	0.952305	0.832538	0.666137	0.766826	**4.006359**
EC	1.020138	1.195019	0.936584	1.031797	0.768239	**4.951775**
ci	**4.530472**	**4.82141**	**4.51369**	**4.416534**	**4.052818**	

Table 8 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.

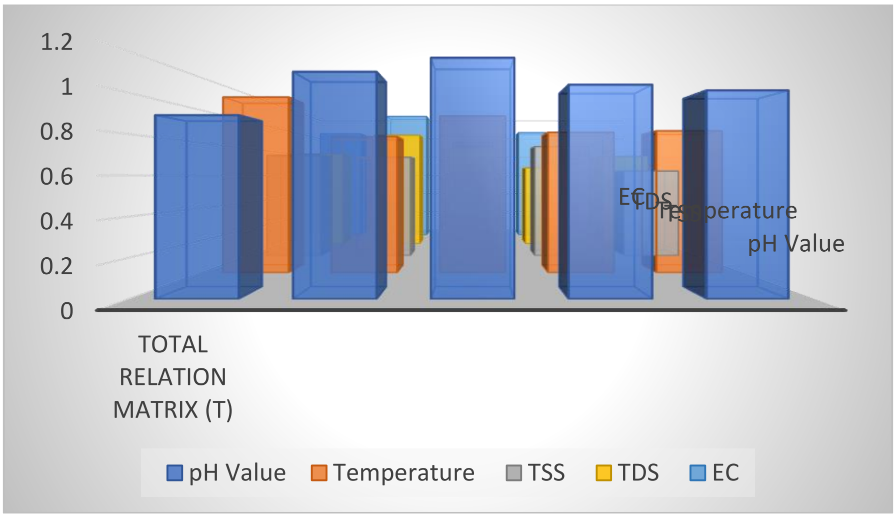

FIGURE 4. Total Relation matrix (T)

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. pollutants of wastewater textile industries Ri, Ci Value

	Ri	Ci
pH Value	5.208797	4.530472
Temperature	4.621622	4.82141
TSS	3.54637	4.51369
TDS	4.006359	4.416534
EC	4.951775	4.052818

Table 9 pollutants of wastewater textile industries Ri, Ci Value pH Value is showing the Highest Value for Ri and TSS is showing the lowest value. Temperature is showing the Highest Value for Ci and EC is showing the lowest value.

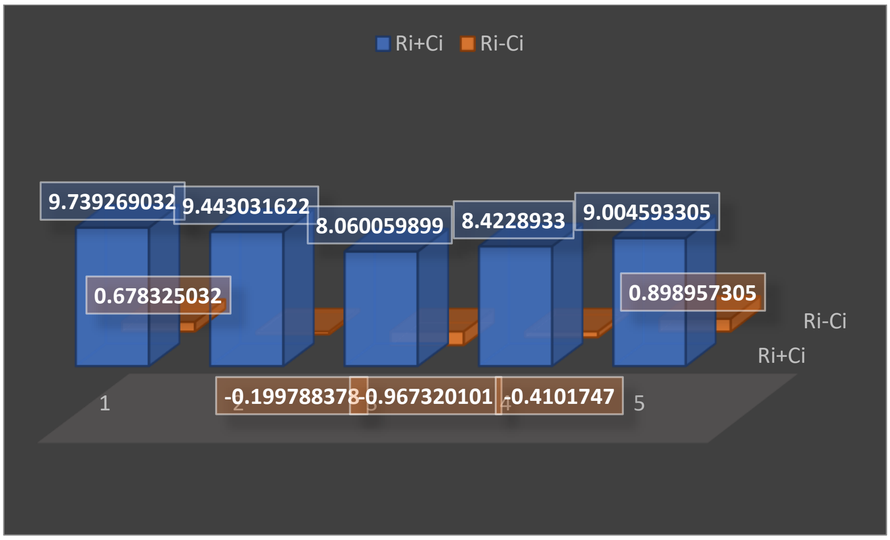

FIGURE 5. Total Relation Matrix (T) Ri, Ci Value

Figure 5 shows the Total Relation Matrix (T) Ri, Ci Value in pollutants of wastewater textile industries is pH Value, Temperature, TSS, TDS, EC. pH Value is showing the Highest Value for Ri and TSS is showing the lowest value. Temperature is showing the Highest Value for Ci and EC is showing the lowest value.

TABLE 10. Calculation of Ri+Ci and Ri-Ci to Get The Cause And Effect

Ri+Ci	Ri-Ci	Rank	Identity
9.739269	**0.678325**	**1**	cause
9.443032	**-0.19979**	**2**	effect
8.06006	**-0.96732**	**5**	effect
8.422893	**-0.41017**	**4**	effect
9.004593	**0.898957**	**3**	cause

Table 10 shows the Calculation of Ri+Ci and Ri-Ci to Get the Cause and Effect. pollutants of wastewater textile industries is pH Value, Temperature, TSS, TDS, EC. EC showing the highest cause and temperature showing the lowest effect.

Table 11. T Matrix Value

T matrix				
0.890832	**1.100689**	**1.168345**	**1.038156**	**1.010775**
1.081081	0.837838	**0.963964**	0.864865	0.873874
0.749868	0.735559	0.612259	0.81558	0.633104
0.788553	**0.952305**	0.832538	0.666137	0.766826
1.020138	**1.195019**	**0.936584**	**1.031797**	0.768239

Table 11 shows the T Matrix Value Calculate the Average of the Matrix and Its Threshold Value (Alpha) **Alpha 0.906094.** If the T matrix value is greater than threshold value, then bolds it.

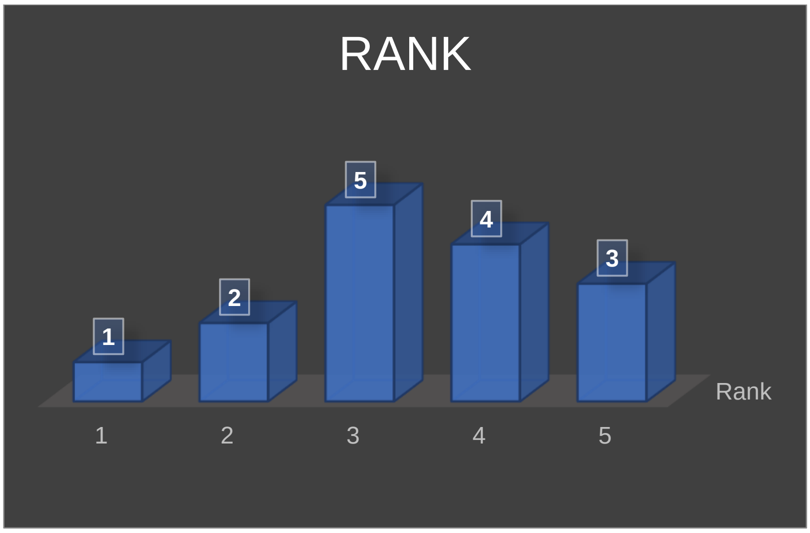

FIGURE 6. Rank

Figure 6. shows the rank. pH Value in 1st rank, Temperature in 2nd rank, TSS in 5th rank, TDS in 4th rank, EC in 3rd rank.

4. CONCLUSION

The textile industry produces a great deal of chemicals that are bad for the environment and people's health. The main contaminants in textile wastewater include heavy metals and organic compounds. These contaminants have the potential to build up in aquatic ecosystems and stay in the environment, endangering both aquatic life and people who come into touch with water that is contaminated. Effective wastewater treatment techniques must be put in place in order to reduce the detrimental effects of drainage from textile businesses. Filtration systems, biological treatment, progressive oxidation, and other appropriate treatment techniques can assist remove or minimise pollutants and make water safe for reuse or discharge. Additionally, textile producers want to switch to greener production techniques, like enhancing dyeing procedures, using fewer chemicals, and putting in water recycling systems. This proactive strategy will encourage sustainable textile production by lowering the generation of wastewater and related contaminants. To ensure proper handling and care of textile sector effluents, government laws and industry standards are crucial. Collaboration between stakeholders, such as textile producers, governing bodies, and environmental organisations, is necessary to establish and put into effect strong regulations for treatment of wastewater and pollution management. We can help conserve water resources, safeguard the environment, and advance sustainable practises in the textile sector by tackling the problem of contaminants in sewage from textile companies. When examining complicated systems and comprehending the cause-and-effect connections between diverse components, the Making Choices Test and Rating Laboratory (DEMATEL) technique is a useful resource. It offers an organised method for making decisions and aids in locating the crucial components that have a big impact on a system. Using the DEMATEL technique, decision-makers can gain understanding of the relationships and affects between various aspects, which will help them allocate resources and prioritise tasks more efficiently. Decision-makers can pinpoint crucial elements that demand immediate focus or intervention by visualising the relationships & strength of these links. In many disciplines, including engineering, management, health, and environmental studies, the DEMATEL approach is frequently employed. It is a useful strategy for comprehending and resolving complex issues and difficult decision-making problems due to its adaptability and versatility. By employing the DEMATEL method, businesses and decision-makers may better comprehend complex systems, pinpoint important variables, enhance workflows, allocate resources efficiently, and create winning plans of action. It gives decision-makers the power to take well-informed decisions that are supported by in-depth analyses of network dynamics and interdependence. In summary, the DEMATEL methodology offers an effective tool for problem solving and decision-making that enables a deeper comprehension of complex systems and supports efficient decision-making procedures. Its use could lead to advancements across a range of areas, increase effectiveness, and promote overall organisational success.

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