DOI: https://doi.org/10.46632/jmc/1/1/3

Journal on Materials and its Characterization
Vol: 1(1), September 2022
REST Publisher; ISSN: 2583-6412
Website: http://restpublisher.com/journals/jmc/

The Development of Terminal Alkynes in Water Using DEMATEL Method

*[1]**M. Mamatha,** [2]**Sathiyaraj Chinnasamy,** [2]**Ashwini Murugan**
[1]Chaitanya Bharthi Institute of Technology, Telangana, India.
[2]REST Labs, Kaveripattinam, Krishnagiri, Tamil Nadu, India.
*Corresponding author Email: mamatha.mallepally@gmail.com

Abstract. In organic chemistry, an alkyne is an unsaturated; Hydrocarbon is at least one carbon-three carbon has a bond. All three alkynes are unsaturated have a bond containing hydrocarbons, Alkynes have the general formula CnH2n-2 and three the bond is called 'acetylenic bond'. is called The functional group in the alkyne is a Carbon-carbon is three binding. Aromatics are π bonds odd number of electron in the system Planar with pairs, fully coupled and are cyclic structures. In which test to conclude from analysis and Evaluation Laboratory (DEMATEL) of complex system components a cause-and-effect chain is considered correct One of the best to identify. It values relationships Interdependence between factors and identification through visual structural modeling Important to see. Alternative: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14). Evaluation Preference: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14). The result it is seen that Hexene (C6H12) is got the first rank where as is the Pentene (C5H10) is having the lowest rank. The value of the dataset for Alkynes in Test and evaluate decision making the lab shows that it results in Hexene (C6H12) and top ranking.

Keywords: organic chemistry, alkyne, MCDM Method.

1. Introduction

In organic chemistry, an alkyne is an unsaturated one is a hydrocarbon that has at least one carbon- There is a triple bond involving carbon. Alkynes have a triple bond are unsaturated hydrocarbons containing alkynes The general formula is CnH2n-2 and three The bond is called 'acetylenic bond' is called Alkynes are present carbon-carbon triple bonds Organic molecules made up of functional groups and those with The empirical formula of CnH2n−2 is written. They are unsaturated hydrocarbons. Alkenes are –ENE Alkynes have the suffix –yne Use the result; There is only one alkyne in the molecule this suffix is used when the functional group in an alkyne is one carbon-carbon three is binding. Aromatics are π bonds odd number of electron in the system Planar with pairs, fully coupled and are cyclic structures. Alkynes are traditionally called acetylenes are called, Although the name acetylene refers specifically to C 2H 2 , which is the IUPAC nomenclature Used formally called ethane. Decision Making Test and Evaluation Laboratory (DEMATEL) the cause-and-effect chain elements of a complex system are considered a useful method for identification. This is assessing relationships between factors and Identify what is important through a visual structural model to see Results Testing and Evaluation Laboratory (DEMATEL) method complex and interrelated problem groups Analyzed and proposed to solve. Its ability to verify interdependencies between variables and tries to improve them by providing a specific diagram. The To assess the causal relationships of construction accidents DEMATEL method is used. This combination is human to the imprecise and subjective nature of judgments is used. Fuzzy set theory is real Interval sets rather than numbers uses. Linguistic terms converted into fuzzy numbers.

2. Alkynes

PtCl4 exhibits great Catalytic activity higher electrophilicity than PtCl2 and activity due to high solubility. Functional Ft molecules, phenols, protected amines; the reaction can be extended to halides and esters. In the aromatic ring Electron-releasing groups are usually this Ft Increases the reactivity of molecules; Aroma ring At least one electron to the required reaction Donor Committee [1]. The review provides carried out under palladium catalysis Using processes to prepare compounds Using alkynes as starting materials An overview of leading to various chemicals Different reactions are included in such review Fully of all possibilities Trying to hide to accept detail as an enormous task will be [2] The from terminal alkynes to the classical textbook method Presynthesis of metal acetylides is required. Alkyl Grignard reactions, Alkyl lithium as reactions and metal settings, air and are often more sensitive to water, and tolerated under several functional groups Cannot. These conditions and thus "security" needed. Acids to eventually quench the reaction should be included. [3] From terminal alkynes to the classical textbook method Presynthesis of metal acetylides is required. Alkyl Grignard reactions, Alkyl lithium reactions and metal amides Therefore, such reactions are often air and water the sensitivity is high, and multi-functional under groups cannot be tolerated. These conditions and thus requires "protection". To mitigate the reaction Acids should be added. [4] Nickel catalysts are anti-acidic C-H of terminal alkynes that is useful for the functioning of bonds

reported. On the other hand, bonded to arenes Acidity of fluorine ortho hydrogens known to increase. With nickel (0) species we functionalize the C-H bonds of fluorines we have consider, followed by alkines Possible insertion. [5] Special properties of allizer for alkyne fictionalization Silver reveals because its d10 is electronic with the carbon-carbon P-bond of structural alkynes, Supports contacts such as alkinophilicity; therefore, the carbon-carbon triple bond is silver one most powerful activators Considered. [6] Here of using allyl cyanides Alkins carcosanesis we report. Current Allylcyanation reaction is a terminal double bond or a single linear C3 containing a carbonyl group Allows installation on time. [8] The development of Homologous and for half-reduction of alkynes Heterogeneous catalysts, Substrate scope, selectivity and in terms of simplicity of the application a procedure for Lindler catalysis No replacement will be offered. Consequently, and with it despite the associated problems, Lindler the catalyst is most alkynes is the reverse of the preference for semi-reduction. [9] Electrophonic ring closure occurs when alkynes are functionalized, A in the δ position from the carbon triple bond having a nucleophilic group, is electrophilic Submitted to cyclization, the ICL was electrophilic uses [10]. The first catalyst [11] Reaction conditions are bulky groups and Meta and electron withdrawal in para states and Donor groups are. However, ortho-substitution the use of alkynes made is not reactive, presumably for serious reasons. Significantly, In each case only the Z isomer is given, Also no E isomer was observed [12]. A new basis leading to high synthetic efficiency of current interest in developing reactions In the light, carboxylic acid chlorides in water forming direct coupling with terminal alkynes Very desirable. However, carboxylic acid Halides are very water sensitive Common sense [13]. Metal-catalyzed carbocyclization of alkynes functionalized of particular note are external nucleophiles, because it is an addition to carbocyclic products Introduces the function. Such layer the reactions are Complex molecular structures can be evaluated since significant economic and environment There are advantages one shift. [14] This includes the group of terminal alkynes because the proton is a better migrant, but this isomerization also has priority for conjugated internal alkynes. [15]. A [16] Among the potential methods to access arylenes, of metal-catalyzed stereo- and alkynes Regioselective hydrolylation reactions are substantial have attracted attention because the changes are numerous and allow access to redox-economical arylenes. from readily available arenes and alkynes [17] the current The method is not without limitations. Diphenyl acetylene and internal alkynes such as 4-octane would be expected We do not form oxidizing compounds We felt In case of diphenyl acetylene, 20% Pencil's desired nitro mixture Without a trace isolated. [18]. with alkynes to form carbonyl compounds Adding water is an artificial method. Change is a as dihydro, oxo-bioaddition classified, but usually of the triple bond Can be broken down into hydro-hydroxylation, it continuously tautomerization of the intermediate alkenol. [19] Alkynes are useful in organic synthesis Construction blocks Blocks, they can be easily described. Among them most important applications are for cis alkenes their controlled reduction is reliable and is a common synthetic method. With a high degree of control over chemical efficiency and geometry. [20] That can contract with a strong base to produce a nucleophile. [21] The Replacement metals, especially metal complexes and lanthanide salts, protic acids and the mechanism is catalyst with iodonium cases of alkynes, arenes or heteroarenes catalyzed by the corresponding reactions. Reactions focus on review. [23]. Hydroarylation methods Three are Key used for heterocyclic synthesis Can be classified as categories. The type of verb and Depending on the precursors involved: (1) palladium- Hec of catalytic reduction of alkynes to alkynes reactions for halides, (2) DM-catalyzed conjugate arylation reactions. Alkynes are arylboronic acids and (3) DM-catalyzed aromatic C–H with alkynes Alkenylations [25].

3. DEMATEL

Attempts to present an index of factors influencing Management Performance of Expressway Construction Project and the symbolic method by the Dematel Research Method Upgrading. Expressway Construction Project Major Factors Affecting Managerial Performance to find out. [1] A method used Many industries and companies called DEMATEL is called economic and social value chain Identify important factors for moving This method was originally developed by Vehicle Factors affecting industries like It is used for identification [2]. Combine DEMATEL with Descriptive Structural Modeling (ISM). Logical relationships in failure subsystems intuitively represent a multilevel hierarchy System, one failure results in another failure Determines and deep failure subsystem identifies. [3] To improve the TYPE OF RESEARCH WHEN USING THE DEMATEL METHOD Another is expressed in two aspects A significant area is: collection of assessment information and Determination of limits. In this study, the magnitude of the impact HFLTS is used to collect; K-mediods clustering A subjective determination of the algorithmic threshold is substituted for this Instead of this, the standard setting structure, and the influence relationship is extended to more than two categories. [4] Demonstrate relationships between factors and the type and basis of relationships of their effects on each other's criteria Prioritize intensity. In addition, hybrid The most advantage of Fuzzy DEMATEL is that Considering the degree of ambiguity, It is also about dealing with ambiguity flexibly. [5] However, the DEMATEL instrument interscales Expresses relationship and type of relationships and Based on a critique of their implications gives priority. ISM is their bias and driving force Creates relationships through, but not throught significance [6]. DEMATEL Method and Bayesian Network Bayesian To configure a combination of network structures Lays a solid foundation. This is the method A traditional Bayesian network architecture various properties and Improves scientific character. [7] Practical for visualizing A system of complex causal relationships and a system Clarify the essentials. It is Digraf and One based on matrix theory Systematic, and many other factors are cause and effect Has the ability to divide into groups. to the system Analysis of direct and indirect relationships between By doing components, DEMATEL can obtain a better way to solve interrelated problems.[8]. Modified-DEMATEL method and fuzzy set theory MCDM used as tools. End makers use their past experiences and they tend to make judgments based on knowledge, and their assessments are often equally linguistic expressed in words. [9]. Actual data sourced from Indian GST DEMATEL in

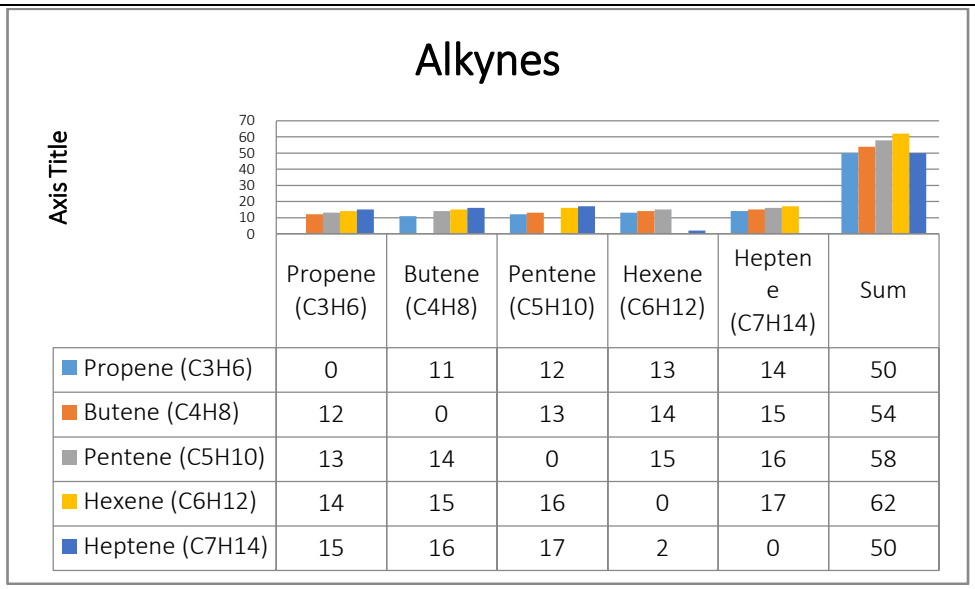
designing the hybrid method for the set Focus on approach and project outcome A software system for estimating factors is provided. [10] Barriers to effective implementation of Green Lean already exist were identified from the literature in which were, the same DM model of situational relationships between constraints in time were investigated with the help of method. Green in production Barriers to adopting lean practices are literature were identified through the study. [11] A demodel-fuzzy TOPSIS by Nilashi et al The attitude. Will affect medical tourism in Malaysia The authors discussed the factors, To examine the influencing relationships between factors Dematerial method is used and factors Fuzzy topsies to determine importance ranking used [12] One of the solution methods used in the work is DEMATEL Is. The primary advantage of this method, compromised An implicit cause-and-effect model is the Add relationship. DEMATEL is its components a system or between several available alternatives A useful tool for exploring structure and relationships is proper. [13]. Establishing a rating structure model, combined factor For analysis and determination of the weight of the criterion DEMATEL method is also introduced. In real valuation problems, complex valuation It is difficult to calculate the exact value of the method. However, Makes a complex assessment environment much easier Can be divided into criteria or sub-systems [14]. According to surveys and oral expert interviews, company quality and two key of financial skills and debt Criteria are identified. Method and Using DEMATEL to analyze causal relationships, Severity of sub-indexes of each scale and Performance is determined, and supplier Estimation is inherently imprecise. by MATLAB software. [15]. A hybrid method with two phases, Expert Judges, a standard interpretation method and one including dematel Size grid awareness and general applicability Used to express character. Of the smart city and evaluate its dimensions by DEMATEL.[16] Interdependence of the five key criteria Dematel is used to identify. External Organizational Environment and sustainability are the cause but the plan And the results of project management results In the final stage of Fuzzy DEMATEL, the key parameter relationship is Of influence between graphs and scales Depicts the flow. it. [17]. To establish internal biases and their intensity, fuzzy DEMATEL method Proposed. In the network structure Brainstorm external biases or nominal group technique, through Delphi technique and other suitable methods Decision makers can decide. so on. [18]. DEMATEL-Entropy-TODIM to rank alternative sites the method is also used. Dematel times, entropi Weight method and TODIM method are different MCDM although widely used for problems, for us As far as known, all these three decision methods are LSWF are integrated and used for research. [19]. Because A clear scale to evaluate CoQ models and No accounting standard, the COQ model of the cost structure Conclusion Quality managers or quality data collectors is left to judgement. Therefore, the group DEMATEL and integrated MCDM combining ANP methods We proposed the model to measure expert opinions It is also to solve the problem of choosing the optimal CoQ model. [20] Causality between the components of a system and Dematel technique in analyzing the effect relationships will be useful. Methodology examines contextual interactions between factors under investigation to further address complex issues in the system under investigation [22]. Internal dependencies refer For interactions of components in the system, external dependencies Are derived from the external environment. Interconnect For dependencies, between components in a system Consider the relationships within and their impact on each other With, we use the DEMATEL method. [23]. Technological Innovation in Indian Real Estate Industry And to measure human resource invention skills An attempt to fill the literature gap using [24].

4. Analysis and Discussion

TABLE 1. Alkynes

	Propene (C3H6)	Butene (C4H8)	Pentene (C5H10)	Hexene (C6H12)	Heptene (C7H14)	Sum
Propene (C3H6)	0	11	12	13	14	50
Butene (C4H8)	12	0	13	14	15	54
Pentene (C5H10)	13	14	0	15	16	58
Hexene (C6H12)	14	15	16	0	17	62
Heptene (C7H14)	15	16	17	2	0	50

Table 1. Alkynes show the Propene (C3H6) it is seen that Heptene (C7H14) the highest value for Butene (C4H8) is showing the lowest value. Butene (C4H8) it is seen that Heptene (C7H14) is showing the highest value for Propene (C3H6) is showing the lowest value. Pentene (C5H10) it is seen that Heptene (C7H14) is showing the highest value for Propene (C3H6) is showing the lowest value. Hexene (C6H12) it is seen that the Pentene (C5H10) is showing the highest value for Heptene (C7H14) is showing the lowest value. Heptene (C7H14) it is seen that the Hexene (C6H12) is showing the highest value for Propene (C3H6) is showing the lowest value. Table 1 shows that DEMATEL Decision making trail and evaluation laboratory in Alternative: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14). Evaluation Preference: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14).



	Propene (C3H6)	Butene (C4H8)	Pentene (C5H10)	Hexene (C6H12)	Heptene (C7H14)	Sum
Propene (C3H6)	0	11	12	13	14	50
Butene (C4H8)	12	0	13	14	15	54
Pentene (C5H10)	13	14	0	15	16	58
Hexene (C6H12)	14	15	16	0	17	62
Heptene (C7H14)	15	16	17	2	0	50

Alternative: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14). Evaluation Preference: Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14).

TABLE 2. Normalisation of direct relation matrix

Normalisation of direct relation matrix					
	Propene (C3H6)	Butene (C4H8)	Pentene (C5H10)	Hexene (C6H12)	Heptene (C7H14)
Propene (C3H6)	0	1	1.090909091	1.18181818	1.272727273
Butene (C4H8)	1.090909091	0	1.181818182	1.27272727	1.363636364
Pentene (C5H10)	1.181818182	1.272727273	0	1.36363636	1.454545455
Hexene (C6H12)	1.272727273	1.363636364	1.454545455	0	1.545454545
Heptene (C7H14)	1.363636364	1.454545455	1.545454545	0.18181818	0

Table 2 shows that the Normalizing of direct relation matrix in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14). The diagonal value of all the data set is zero.

TABLE 3. Calculate the total relation matrix

Calculate the total relation matrix					
	Propene (C3H6)	Butene (C4H8)	Pentene (C5H10)	Hexene (C6H12)	Heptene (C7H14)
Propene (C3H6)	0	1	1.090909091	1.181818182	1.27272727
Butene (C4H8)	1.090909091	0	1.181818182	1.272727273	1.36363636
Pentene (C5H10)	1.181818182	1.272727273	0	1.363636364	1.45454545
Hexene (C6H12)	1.272727273	1.363636364	1.454545455	0	1.54545455
Heptene (C7H14)	1.363636364	1.454545455	1.545454545	0.181818182	0

Table 3Shows the Calculate the total relation matrix in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14).

TABLE 4. I

I				
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 4Shows the T= Y(I-Y)-1, I= Identity matrix in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14) is the common Value.

TABLE 5. Y

Y				
0	1	1.09090909	1.18181818	1.272727
1.090909091	0	1.18181818	1.27272727	1.363636
1.181818182	1.272727273	0	1.36363636	1.454545
1.272727273	1.363636364	1.45454545	0	1.545455
1.363636364	1.454545455	1.54545455	0.18181818	0

Table 5 Shows the Y Value in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14) is the Calculate the total relation matrix Value and Y Value is the same value.

TABLE 6. I-Y

I-Y				
1	-1	-1.09091	-1.18182	-1.27273
-1.09090909	1	-1.18182	-1.27273	-1.36364
-1.18181818	-1.27273	1	-1.36364	-1.45455
-1.27272727	-1.36364	-1.45455	1	-1.54545
-1.36363636	-1.45455	-1.54545	-0.18182	1

Table 6 Shows the I-Y Value Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14) table 4 T= Y(I-Y)-1, I= Identity matrix and table 5 Y Value Subtraction Value.

TABLE 7. (I-Y)-1

(I-Y)-1				
0.336534	-0.17264	-0.160813495	-0.0678	-0.14578
-0.16756	0.301006	-0.166692138	-0.07018	-0.15371
-0.17116	-0.16219	0.268134657	-0.07228	-0.16069
-0.17436	-0.16651	-0.160167452	0.333265	-0.16689
-0.08103	-0.07852	-0.076483852	-0.24564	0.298936

Table 7 shows the (I-Y)-1 Value Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14) Table 6 shown the Minverse Value.

TABLE 8. Total Relation matrix (T)

Total Relation matrix (T)				
-0.66347	-0.17264	-0.160813495	-0.0678	-0.14578
-0.16756	-0.69899	-0.166692138	-0.07018	-0.15371
-0.17116	-0.16219	-0.731865343	-0.07228	-0.16069
-0.17436	-0.16651	-0.160167452	-0.66673	-0.16689
-0.08103	-0.07852	-0.076483852	-0.24564	-0.70106

Table 8 shows that 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
-1.2105	-1.25757
-1.25714	-1.27884
-1.29818	-1.29602
-1.33466	-1.12262
-1.18273	-1.32814

Table 9 shows the Ri, Ci Value in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14).

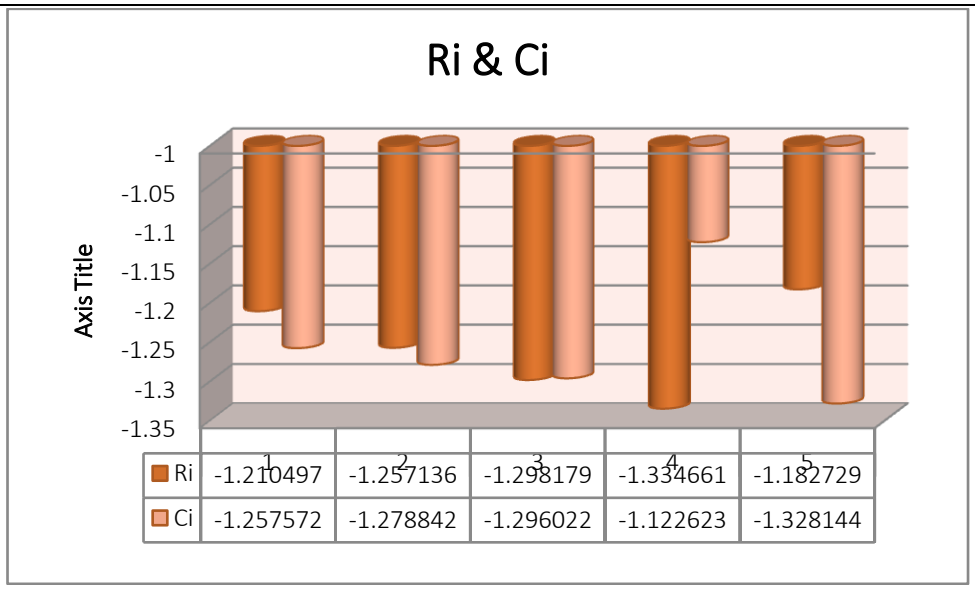


FIGURE 2. Ri & Ci

Figure 2 shows the Ri, Ci Value in Propene (C3H6), Butene (C4H8), Pentene (C5H10), Hexene (C6H12), Heptene (C7H14).

TABLE 10. Ri+Ci & Ri-Ci & Rank &Identity

Ri+Ci	Ri-Ci	Rank	Identity
-2.46807	0.047075	2	cause
-2.53598	0.021706	4	cause
-2.5942	-0.00216	5	effect
-2.45728	-0.21204	1	effect
-2.51087	0.145416	3	effect

Table 10 shows the Calculation of Ri+Ci and Ri-Ci to Get the Cause and Effect. the final result of this paper the Propene (C3H6), is in 2nd rank cause, Butene (C4H8) is in 4th rank cause, Pentene (C5H10) is in 5th rank effect, Hexene (C6H12) is in 1st rank effect and Heptene (C7H14) is in 3rd rank effect. The final result is done by using the DEMATEL method.

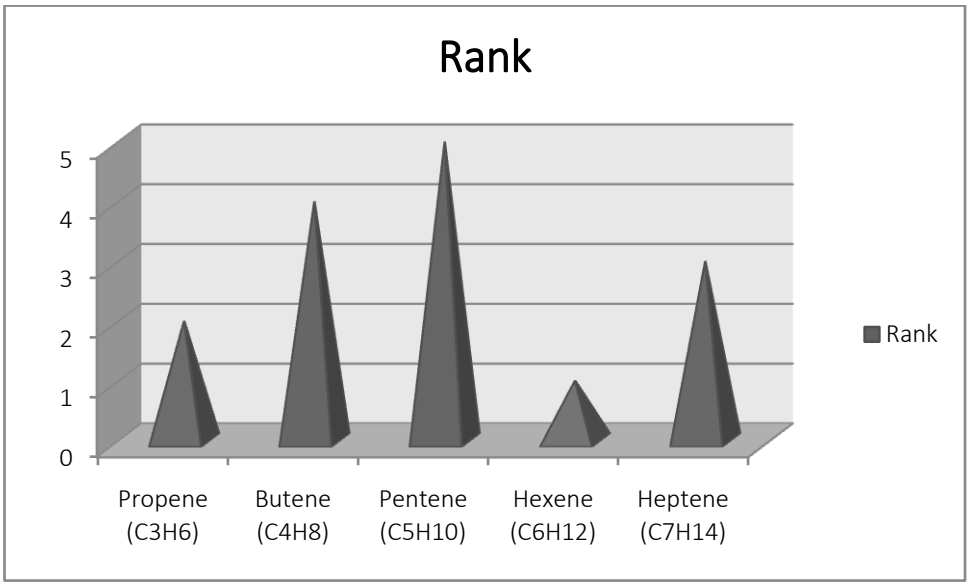


FIGURE 3. Rank

Figure 3. shows the graphical representation the final result of this paper the Propene (C3H6), is in 2nd rank, Butene (C4H8) is in 4th rank, Pentene (C5H10) is in 5th rank, Hexene (C6H12) is in 1st rank and Heptene (C7H14) is in 3rd rank.

TABLE 11. T matrix

T matrix				
-0.66347	-0.17264	-0.16081	-0.0678	-0.14578
-0.16756	-0.69899	-0.16669	-0.07018	-0.15371
-0.17116	-0.16219	-0.73187	-0.07228	-0.16069
-0.17436	-0.16651	-0.16017	-0.66673	-0.16689
-0.08103	-0.07852	-0.07648	-0.24564	-0.70106

Table 11 shows the T Matrix Value calculate the average of the matrix and its threshold value (alpha)= Alpha - 0.251328180192954 If the T matrix value is greater than threshold value then bold it.

5. Conclusion

From the result it is seen that Hexene (C6H12) is got the first rank where as is the Pentene (C5H10) is having the lowest rank. DEMATEL-Entropy-TODIM to rank alternative sites the method is also used. Dematel times, entropi Weight method and TODIM method are different MCDM although widely used for problems, for us As far as known, all these three decision methods are LSWF are integrated and used for research. Demonstrate relationships between factors and the type and basis of relationships of their effects on each other's criteria Prioritize intensity. In addition, hybrid the most advantage of Fuzzy DEMATEL is that considering the degree of ambiguity, It is also about dealing with ambiguity flexibly. However, the DEMATEL instrument interscales Expresses relationship and type of relationships and Based on a critique of their implications gives priority. ISM is their bias and driving force Creates relationships through, but not through significance The first catalyst Reaction conditions are bulky groups and meta and electron withdrawal in para states and Donor groups are. However, ortho-substitution The use of alkynes made is not reactive, Presumably for serious reasons. Significantly, In each case only the Z isomer is given, Also no E isomer was observed. A new basis leading to high synthetic efficiency of current interest in developing reactions In the light, carboxylic acid chlorides in water forming direct coupling with terminal alkynes Very desirable. However, carboxylic acid Halides are very water sensitive Common sense

Reference

[1]. Boyarskiy, Vadim P., Dmitry S. Ryabukhin, Nadezhda A. Bokach, and Aleksander V. Vasilyev. "Alkenylation of arenes and heteroarenes with alkynes." Chemical Reviews 116, no. 10 (2016): 5894-5986.

[2]. Chinchilla, Rafael, and Carmen Najera. "Chemicals from alkynes with palladium catalysts." Chemical reviews 114, no. 3 (2014): 1783-1826.

[3]. Li, Chao-Jun. "The development of catalytic nucleophilic additions of terminal alkynes in water." Accounts of chemical research 43, no. 4 (2010): 581-590.

[4]. Singh, Sartajvir, Vishakha Sood, and Bhisham Sharma. "Systematic survey of compression algorithms in medical imaging." In Advances in Computational Techniques for Biomedical Image Analysis, pp. 205-230. Academic Press, 2020.

[5]. Trost, Barry M., Mark T. Sorum, Chuen Chan, and Gerd Rühter. "Palladium-catalyzed additions of terminal alkynes to acceptor alkynes." Journal of the American Chemical Society 119, no. 4 (1997): 698-708.

[6]. Kanyiva, Kyalo Stephen, Natsuko Kashihara, Yoshiaki Nakao, Tamejiro Hiyama, Masato Ohashi, and Sensuke Ogoshi. "Hydrofluoroarylation of alkynes with fluoroarenes." Dalton Transactions 39, no. 43 (2010): 10483-10494.

[7]. Fang, Guichun, and Xihe Bi. "Silver-catalysed reactions of alkynes: recent advances." Chemical Society Reviews 44, no. 22 (2015): 8124-8173.

[8]. Soni, Rajkumar, Prasun Chakrabarti, Zbigniew Leonowicz, Michał Jasiński, Krzysztof Wieczorek, and Vadim Bolshev. "Estimation of life cycle of distribution transformer in context to furan content formation, pollution index, and dielectric strength." IEEE Access 9 (2021): 37456-37465.

[9]. Nakao, Yoshiaki, Tomoya Yukawa, Yasuhiro Hirata, Shinichi Oda, Jun Satoh, and Tamejiro Hiyama. "Allylcyanation of alkynes: regio-and stereoselective access to functionalized di-or trisubstituted acrylonitriles." Journal of the American Chemical Society 128, no. 22 (2006): 7116-7117.

[10]. 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.

[11]. Whittaker, Aaron M., and Gojko Lalic. "Monophasic catalytic system for the selective semireduction of alkynes." Organic letters 15, no. 5 (2013): 1112-1115.

[12]. Godoi, Benhur, Ricardo F. Schumacher, and Gilson Zeni. "Synthesis of heterocycles via electrophilic cyclization of alkynes containing heteroatom." Chemical Reviews 111, no. 4 (2011): 2937-2980.

[13]. Paliwal, Shweta, Amit Kumar Mishra, Ram Krishn Mishra, Nishad Nawaz, and M. Senthilkumar. "XGBRS Framework Integrated with Word2Vec Sentiment Analysis for Augmented Drug Recommendation." Comput. Mater. Contin 72 (2022): 5345-5362.

[14]. Uehling, Mycah R., Richard P. Rucker, and Gojko Lalic. "Catalytic anti-Markovnikov hydrobromination of alkynes." Journal of the American Chemical Society 136, no. 24 (2014): 8799-8803.
[15]. Khan, Zuhaib Ashfaq, Hafiz Husnain Raza Sherazi, Mubashir Ali, Muhammad Ali Imran, Ikram Ur Rehman, and Prasun Chakrabarti. "Designing a wind energy harvester for connected vehicles in green cities." Energies 14, no. 17 (2021): 5408.
[16]. Nahra, Fady, Scott R. Patrick, Davide Bello, Marcel Brill, Alan Obled, David B. Cordes, Alexandra MZ Slawin, David O'Hagan, and Steven P. Nolan. "Hydrofluorination of alkynes catalysed by gold bifluorides." ChemCatChem 7, no. 2 (2015): 240-244.
[17]. Manjunath, C. R., Ketan Rathor, Nandini Kulkarni, Prashant Pandurang Patil, Manoj S. Patil, and Jasdeep Singh. "Cloud Based DDOS Attack Detection Using Machine Learning Architectures: Understanding the Potential for Scientific Applications." International Journal of Intelligent Systems and Applications in Engineering 10, no. 2s (2022): 268-271.
[18]. Sharma, Monika, Bhisham Sharma, and Trilok C. Aseri. "A Technical Study of Transport Layer Protocols in Wireless Sensor Network." International Journal of Computer Applications 90, no. 13 (2014).
[19]. Nautiyal, Aditi, and Amit Kumar Mishra. "Machine learning approach for intelligent prediction of petroleum upstream stuck pipe challenge in oil and gas industry." Environment, Development and Sustainability (2022): 1-27.
[20]. Chen, Liang, and Chao-Jun Li. "A remarkably efficient coupling of acid chlorides with alkynes in water." Organic Letters 6, no. 18 (2004): 3151-3153.
[21]. Bhatnagar, Prasoon, Deepak Vyas, S. K. Sinha, and Tulika Chakrabarti. "Stability indicating HPLC method for simultaneous estimation of entacapone, levodopa and carbidopa in pharmaceutical formulation." J Chromatogr Sep Tech 6, no. 304 (2015): 2.
[22]. Sohel, Shariar Md Abu, and Rai-Shung Liu. "Carbocyclisation of alkynes with external nucleophiles catalysed by gold, platinum and other electrophilic metals." Chemical Society Reviews 38, no. 8 (2009): 2269-2281.
[23]. Krishna Kumar, T. P., M. Ramachandran, and Sathiyaraj Chinnasamy. "Exploring Various Applications of Block Chain Technology." Recent trends in Management and Commerce 1, no. 1 (2020): 92-96.
[24]. Fan, Cheng, Warren E. Piers, Masood Parvez, and Robert McDonald. "Divergent reactivity of perfluoropentaphenylborole with alkynes." Organometallics 29, no. 21 (2010): 5132-5139.
[25]. Soriano, Elena, and José Marco-Contelles. "Mechanisms of the transition metal-mediated hydroarylation of alkynes and allenes." Organometallics 25, no. 19 (2006): 4542-4553.
[26]. Kumar, Prashant, Ananda Shankar Hati, Sanjeevikumar Padmanaban, Zbigniew Leonowicz, and Prasun Chakrabarti. "Amalgamation of transfer learning and deep convolutional neural network for multiple fault detection in SCIM." In 2020 IEEE International Conference on Environment and Electrical Engineering and 2020 IEEE Industrial and Commercial Power Systems Europe (EEEIC/I&CPS Europe), pp. 1-6. IEEE, 2020.
[27]. Nakao, Yoshiaki. "Hydroarylation of alkynes catalyzed by nickel." The Chemical Record 11, no. 5 (2011): 242-251.
[28]. 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.
[29]. Aseri, Bhisham Sharma1and Dr Trilok C. "A Comprehensive Review of Reliable Transport Layer Protocols and Research Issues for Wireless Sensor Networks." IJCSES 7, no. 2 (2013): 77-98.
[30]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Automatic crop disease recognition by improved abnormality segmentation along with heuristic-based concatenated deep learning model." Intelligent Decision Technologies Preprint (2022): 1-23.
[31]. Dutta, Uttam, Soham Maity, Rajesh Kancherla, and Debabrata Maiti. "Aerobic Oxynitration of Alkynes with t BuONO and TEMPO." Organic letters 16, no. 24 (2014): 6302-6305.
[32]. Krishna Kumar, T. P., M. Ramachandran, and Vimala Saravanan. "A Risk Assessment of Emergency management using (WASPAS) MCDM Method." Recent trends in Management and Commerce 2, no. 3 (2022): 36-43.
[33]. Hintermann, Lukas, and Aurelie Labonne. "Catalytic hydration of alkynes and its application in synthesis." Synthesis 2007, no. 08 (2007): 1121-1150.
[34]. Kumar, Ashish, Somenath Roy Chowdhury, Kumar Kalyan Jatte, Tulika Chakrabarti, Hemanta K. Majumder, Tarun Jha, and Sibabrata Mukhopadhyay. "Anthocephaline, a new indole alkaloid and cadambine, a potent inhibitor of DNA topoisomerase IB of Leishmania donovani (LdTOP1LS), isolated from Anthocephalus cadamba." Natural Product Communications 10, no. 2 (2015): 1934578X1501000221.
[35]. Trost, Barry M., Zachary T. Ball, and Thomas Jöge. "A chemoselective reduction of alkynes to (E)-alkenes." Journal of the American Chemical Society 124, no. 27 (2002): 7922-7923.
[36]. Al-Wesabi, Fahd N., Areej A. Malibari, Anwer Mustafa Hilal, Nadhem NEMRI, Anil Kumar, and Deepak Gupta. "Intelligent ensemble of voting based solid fuel classification model for energy harvesting from agricultural residues." Sustainable Energy Technologies and Assessments 52 (2022): 102040.
[37]. Rajmohan, T., K. Palanikumar, and M. Kathirvel. "Optimization of machining parameters in drilling hybrid aluminium metal matrix composites." Transactions of Nonferrous Metals Society of China 22, no. 6 (2012): 1286-1297.

[38]. 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.

[39]. Nevado, Cristina, and Antonio M. Echavarren. "Transition metal-catalyzed hydroarylation of alkynes." Synthesis 2005, no. 02 (2005): 167-182.

[40]. Ranjit, P. S., and Mukesh Saxena NK. "Studies on Combustion and Emission Characteristics of an IDI CI Engine by Using 40% SVO Diesel Blend Under Different Preheating Conditions." Global Journal of Research Analysis (GJRA) 1, no. 21 (2014): 43-46.

[41]. Yamamoto, Yoshihiko. "Synthesis of heterocycles via transition-metal-catalyzed hydroarylation of alkynes." Chemical Society Reviews 43, no. 5 (2014): 1575-1600.

[42]. Mishra, Amit Kumar, and Shweta Paliwal. "Mitigating cyber threats through integration of feature selection and stacking ensemble learning: the LGBM and random forest intrusion detection perspective." Cluster Computing (2022): 1-12.

[43]. Yan, Liang, Zhen Chen, Xiongbiao Xie, and Xiaowen Zeng. "Analysis of influencing factors on the management performance of expressway construction project based on DEMATEL method." In 2009 First International Conference on Information Science and Engineering, pp. 4198-4201. IEEE, 2009.

[44]. 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.

[45]. Rattanavijit, Supattra, Tuanjai Somboonwiwat, and Charoenchai Khompatraporn. "Analysis of Causal Competitive Factors of Thai Iron and Steel Supply Chain by DEMATEL Method." In Industrial Engineering, Management Science and Applications 2015, pp. 541-550. Springer, Berlin, Heidelberg, 2015.

[46]. Bangroo, Rashika, Utsav Gupta, Roshan Sah, and Anil Kumar. "Cryptocurrency Price Prediction using Machine Learning Algorithm." In 2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO), pp. 1-4. IEEE, 2022.

[47]. Shen, Gui-xiang, Shu-guang Sun, Ying-zhi Zhang, Zhi-qiong Wang, Bing-kun Chen, and Chuang Ma. "System failure analysis based on DEMATEL-ISM and FMECA." Journal of Central South University 21, no. 12 (2014): 4518-4525.

[48]. Zhou, Jianli, Yunna Wu, Fangtong Liu, Yao Tao, and Jianwei Gao. "Prospects and obstacles analysis of applying blockchain technology to power trading using a deeply improved model based on the DEMATEL approach." Sustainable Cities and Society 70 (2021): 102910.

[49]. Soares, Giselle A., Tanima Bhattacharya, Tulika Chakrabarti, Priti Tagde, and Simona Cavalu. "Exploring pharmacological mechanisms of essential oils on the central nervous system." Plants 11, no. 1 (2022): 21.

[50]. Lin, Ru-Jen. "Using fuzzy DEMATEL to evaluate the green supply chain management practices." Journal of cleaner production 40 (2013): 32-39.

[51]. Farooqui, Nafees Akhter, Amit Kumar Mishra, and Ritika Mehra. "Concatenated deep features with modified LSTM for enhanced crop disease classification." International Journal of Intelligent Robotics and Applications (2022): 1-25.

[52]. Gardas, Bhaskar B., Rakesh D. Raut, and Balkrishna Narkhede. "Evaluating critical causal factors for post-harvest losses (PHL) in the fruit and vegetables supply chain in India using the DEMATEL approach." Journal of cleaner production 199 (2018): 47-61.

[53]. 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.

[54]. Yang, Chen, Shulin Lan, and Ming-Lang Tseng. "Coordinated development path of metropolitan logistics and economy in Belt and Road using DEMATEL–Bayesian analysis." International Journal of Logistics Research and Applications 22, no. 1 (2019): 1-24.

[55]. Rathor, Ketan, Anshul Mandawat, Kartik A. Pandya, Bhanu Teja, Falak Khan, and Zoheib Tufail Khan. "Management of Shipment Content using Novel Practices of Supply Chain Management and Big Data Analytics." In 2022 International Conference on Augmented Intelligence and Sustainable Systems (ICAISS), pp. 884-887. IEEE, 2022.

[56]. Ranjit, P. S., and Venkateswarlu Chintala. "Direct utilization of preheated deep fried oil in an indirect injection compression ignition engine with waste heat recovery framework." Energy 242 (2022): 122910.

[57]. Sharma, Bhisham, Deepika Koundal, and Rabie A. Ramadan. "Guest editorial:: Introduction to the special section: Advanced Software and Data Analytics for Secure UAV Networks (VSI-suav)." (2022).

[58]. Si, Sheng-Li, Xiao-Yue You, Hu-Chen Liu, and Jia Huang. "Identifying key performance indicators for holistic hospital management with a modified DEMATEL approach." International journal of environmental research and public health 14, no. 8 (2017): 934.

[59]. Goyal, Sarthak, Alka Chaudhary, and Anil Kumar. "Cloud Operating Systems: Analysis and Problems." In 2022 10th International Conference on Reliability, Infocom Technologies and Optimization (Trends and Future Directions)(ICRITO), pp. 1-5. IEEE, 2022.

[60]. Kfita, Abdelaziz El, and Omar Drissi-Kaitouni. "A fuzzy revised-DEMATEL method to evaluate vehicles fleet maintenance management in uncertainty." International Journal of Logistics Systems and Management 28, no. 1 (2017): 59-83.

[61]. Kumawat, Gaurav, Santosh Kumar Vishwakarma, Prasun Chakrabarti, Pankaj Chittora, Tulika Chakrabarti, and Jerry Chun-Wei Lin. "Prognosis of Cervical Cancer Disease by Applying Machine Learning Techniques." Journal of Circuits, Systems and Computers 32, no. 01 (2023): 2350019.

[62]. Sangaiah, Arun Kumar, Prabakar Rontala Subramaniam, and Xinliang Zheng. "A combined fuzzy DEMATEL and fuzzy TOPSIS approach for evaluating GSD project outcome factors." Neural Computing and Applications 26, no. 5 (2015): 1025-1040.

[63]. 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.

[64]. Singh, Charanjit, Davinder Singh, and J. S. Khamba. "Analyzing barriers of Green Lean practices in manufacturing industries by DEMATEL approach." Journal of Manufacturing Technology Management (2020).

[65]. Nilashi, Mehrbakhsh, Sarminah Samad, Azizah Abdul Manaf, Hossein Ahmadi, Tarik A. Rashid, Asmaa Munshi, Wafa Almukadi, Othman Ibrahim, and Omed Hassan Ahmed. "Factors influencing medical tourism adoption in Malaysia: A DEMATEL-Fuzzy TOPSIS approach." Computers & Industrial Engineering 137 (2019): 106005.

[66]. Mahesh, G. Sreeramulu, V. G. T. Rakesh, S. B. Mohan, and P. S. Ranjit. "Energy management with blockchain technology in DC microgrids." Materials Today: Proceedings 47 (2021): 2232-2236.

[67]. Keskin, Gülşen Aydın. "Using integrated fuzzy DEMATEL and fuzzy C: means algorithm for supplier evaluation and selection." International Journal of Production Research 53, no. 12 (2015): 3586-3602.

[68]. Mansour, Romany F., Eatedal Alabdulkreem, Heba F. Eid, K. Sathishkumar, Mohd Abdul Rahim Khan, and Anil Kumar. "Fuzzy logic based on-line fault detection and classification method of substation equipment based on convolutional probabilistic neural network with discrete wavelet transform and fuzzy interference." Optik 270 (2022): 169956.

[69]. Tzeng, Gwo-Hshiung, Cheng-Hsin Chiang, and Chung-Wei Li. "Evaluating intertwined effects in e-learning programs: A novel hybrid MCDM model based on factor analysis and DEMATEL." Expert systems with Applications 32, no. 4 (2007): 1028-1044.

[70]. Kumar, Ashish, Somenath Roy Chowdhury, Tulika Chakrabarti, Hemanta K. Majumdar, Tarun Jha, and Sibabrata Mukhopadhyay. "A new ellagic acid glycoside and DNA topoisomerase IB inhibitory activity of saponins from Putranjiva roxburghii." Natural Product Communications 9, no. 5 (2014): 1934578X1400900523.

[71]. Sharma, Bhisham, Deepika Koundal, and Raman Singh. "Guest editorial:: Introduction to the Special Section on Load Balancing of Sensory Data for IoT Deep Learning Applications with Edge/Fog Computing (VSI-lbdl)." (2021).

[72]. Ashtarinezhad, Elahe, Amir Homayoon Sarfaraz, and Mehrzad Navabakhsh. "Supplier evaluation and categorize with combine Fuzzy Dematel and Fuzzy Inference System." Data in brief 18 (2018): 1149-1156.

[73]. Hati, Ananda Shankar, Prasun Chakrabarti, Jemal H. Abawajy, and Ng Wee Keong. "Development of energy efficient drive for ventilation system using recurrent neural network." Neural Computing and Applications 33, no. 14 (2021): 8659-8668.

[74]. Koca, Gozde, Ozum Egilmez, and Onur Akcakaya. "Evaluation of the smart city: Applying the dematel technique." Telematics and Informatics 62 (2021): 101625.

[75]. Mavi, Reza Kiani, and Craig Standing. "Critical success factors of sustainable project management in construction: A fuzzy DEMATEL-ANP approach." Journal of cleaner production 194 (2018): 751-765.

[76]. Kapoor, Nishant Raj, Ashok Kumar, Anuj Kumar, Anil Kumar, and Krishna Kumar. "Transmission Probability of SARS-CoV-2 in Office Environment Using Artificial Neural Network." Ieee Access 10 (2022): 121204-121229.

[77]. Sukumaran, C., D. Selvam, M. Sankar, V. Parthiban, and C. Sugumar. "Application of Artificial Intelligence and Machine Learning to Predict Basketball Match Outcomes: A Systematic Review." Computer Integrated Manufacturing Systems 28, no. 11 (2022): 998-1009.

[78]. Razavi Toosi, S. L., and J. M. V. Samani. "Prioritizing watersheds using a novel hybrid decision model based on fuzzy DEMATEL, fuzzy ANP and fuzzy VIKOR." Water Resources Management 31, no. 9 (2017): 2853-2867.

[79]. Ranjit, P. S., and M. Saxena. "Prospects of hydrogen utilization in compression ignition engines-A review." International Journal of Scientific Research (IJSR) 2, no. 2 (2013): 137-140.

[80]. Wu, Yunna, Mingjuan Liao, Mengyao Hu, Jiawei Lin, Jianli Zhou, Buyuan Zhang, and Chuanbo Xu. "A decision framework of low-speed wind farm projects in hilly areas based on DEMATEL-entropy-TODIM method from the sustainability perspective: a case in China." Energy 213 (2020): 119014.

[81]. Tsai, Wen-Hsien, and Wei Hsu. "A novel hybrid model based on DEMATEL and ANP for selecting cost of quality model development." Total quality management 21, no. 4 (2010): 439-456.

[82]. Mukherjee, Tulika, Tapas Sarkar, Piyali Paul, Ajit K. Chakraborty, Parasuraman Jaisankar, and Siba Brata Mukhopadhyay. "Putralone, a novel 10α-hydroxy-25-nor D: A friedo-oleanane triterpenoid from Putranjiva roxburghii." Natural Product Communications 7, no. 4 (2012): 1934578X1200700424.

[83]. Dogra, Roopali, Shalli Rani, Bhisham Sharma, Sandeep Verma, Divya Anand, and Pushpita Chatterjee. "A novel dynamic clustering approach for energy hole mitigation in Internet of Things-based wireless sensor network." International Journal of Communication Systems 34, no. 9 (2021): e4806.

[84]. Dalvi-Esfahani, Mohammad, Ali Niknafs, Daria J. Kuss, Mehrbakhsh Nilashi, and Saeed Afrough. "Social media addiction: Applying the DEMATEL approach." Telematics and Informatics 43 (2019): 101250.

[85]. Fulmare, Nilima Salankar, Prasun Chakrabarti, and Divakar Yadav. "Understanding and estimation of emotional expression using acoustic analysis of natural speech." International Journal on Natural Language Computing (IJNLC) 2, no. 4 (2013): 37-46.

[86]. Mao, Shengzhong, Yuzhen Han, Yong Deng, and Danilo Pelusi. "A hybrid DEMATEL-FRACTAL method of handling dependent evidences." Engineering Applications of Artificial Intelligence 91 (2020): 103543.

[87]. Ranjit, P. S., and M. Saxena. "State-of-the-art of storage and handling issues related to high pressure gaseous hydrogen to make use in internal combustion engines." International Journal of Scientific & Engineering Research (IJSER) 3, no. 9 (2012): 1-17.

[88]. Karupusamy, Sathishkumar, Mohammed Ahmed Mustafa, Bos Mathew Jos, Priyanka Dahiya, Ramakant Bhardwaj, Pratik Kanani, and Anil Kumar. "Torque control-based induction motor speed control using Anticipating Power Impulse Technique." The International Journal of Advanced Manufacturing Technology (2023): 1-9.

[89]. 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.

[90]. Kumar, Anil, Mohamad Amin Kaviani, Ashkan Hafezalkotob, and Edmundas Kazimieras Zavadskas. "Evaluating innovation capabilities of real estate firms: a combined fuzzy Delphi and DEMATEL approach." International Journal of Strategic Property Management 21, no. 4 (2017): 401-416.

