Ranking of Product in E-store using WASPAS method

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Abstract. Polar analysis in this paper and Concept mining is polarizing with computer technology and the process of automatically mining the concept. Product in some aspects or in all aspects and The rating receives a detailed evaluation of the product. Methods have been introduced in my opinion through Natural language processing techniques. Users by searching in Oncology Extract the desired product-features, The polarity of the polarity is constant polarity and Can be divided into dynamic polarization, Polarity is calculated by searching the dictionary And the polarity is strong The features will be mapped using syntax parsing Is online shopping. More manufacturers Selling products on the Internet Many users Express their opinions Please share Using the Internet is gaining more importance. However, Not all product reviews are readable by consumers. Method used in WASPAS. WASPAS calculates an optimal enrollment parameter, It will be given in detail later. The weighed total product estimate is used to improve the accuracy of the weighed quantity and the weighted product samples. The result it is seen that interval-valued intuitionist fuzzy numbers get the first rank whereas online reviews have the lowest rank

1. Introduction

E-commerce is growing rapidly in India Is the site, where almost every second Thousands of products are purchased. Indian e-Commerce is growing at a rate of 51 per year, which The best in the world, and $ 3.535 in 2019 Will rise from trillion to $ 6,542 trillion in 2023 That is predicted. Amazon, Flipkart, Myntra and Snap The deal once made trillions in profits.One year and most of them happy There are seasons. On every website, Millions of products are offered, and more Customers get cheaper prices, extra discounts And products offered with the highest quality Can't search. Filters are also massive and powerful Product low-high due to information Fail to sort out the ratio. Therefore,Filtering supernumerary and expensive products And some quality offered on websites It is essential to deliver the products to the customers. Not just many products, reviews have accumulated in addition to each product.Today, the common client depends heavily on user reviews and opinions expressed on product before making a choice to shop for. it's getting to be either positive or negative towards the merchandise. Therefore, reading all those reviews and so deciding to shop for a product is incredibly tedious and time overwhelming. This time will be saved by developing a system that automatically offers a best product of selection and save lot of your time.

2. Product Ranking

Physical products and online Billions of dollars including both services Earns revenue. Product images and related Descriptions the buyer of knowledge about an object the two main sources of information used are. However, both of these information's are always productive does not provide the actual image. The pictures are deceptive Maybe, more explanations or more May be secretive. Also this among colleagues for discrepancies in the comparative ranking of products Lead to. Therefore, effective and widespread the information used is "User Reviews". Many sellers like Amazon increase their revenue Full around user reviews by increasing Have also developed ecosystems. However, Related from numerous reviews and Extracting useful information is straight forward No, and it's very hard work . In this article, experience shopping online We have a product ranking system that makes it easy We propose, reviews for emotions Analyzing, evaluating their usefulness, Different product features and features Extraction and weighing, similar and comparable Ranking in Products and finally one for each product Creating a ranking. With similar approaches relatively effective and reliable online Our proposed in providing shopping experience Experimental test results show the effectiveness At higher levels for users We are between help and benefit Although not different, in the eyes of end users How useful is the review from We call it the helpfulness analysis that helps to measure We propose. As the last step of our mission, each product has its own in identical products in the category Focuses ranking. This is the product Analyze reviews, break them down, Of products based on different features Creates a ranking list. In this on regard, some Works is an important product for users make a manual list of features. First, the specified work mainly to compare products and sort those focuses on comparative sentences. Of comparative sentences in real world databases the number is very small (of comparative terms) the review is basically average) which is this Greatly reduces the effectiveness of the approach. For this conversely, analyze any sentence available there by making sand especially for further analysis focuses on non-neutral sentences. Review of existing chemical Risk rating tools make different approaches Are used. Reviewed by Ward et al Chemical risk assessment. (2005) of the Rating Tool In terms of strengths and weaknesses of each risk.On the contrary, appointed by the Department Priority methods for

screening chemicals U.K. Health Review, Physical and Chemical Properties Sand Health Effect Sequist of Men Chemicals (IEH2004) Based on. However, the processing of samples has not been added recently. Product Previous tasks in the rankings focus on weighing several properties. All It is almost impossible to get a fair weight distribution that will satisfy the users as well.For example, the characteristic weight distribution of the eBay system is private and from buyers Is hidden, thus may be biased towards sellers, thus misleading buyers Lead to decision making. To solve these problems we have developed the Rainbow Rating System, This includes sales price, order quantity, delivery time, seller confidence and product quality Sort sellers by attributes. Analysis of customer feedback Based on the feature developed to recommend appropriate products based on the report This section is about the proposed algorithm called Product Rating and Recommendation Algorithm (FBPRRA) Describes in detail. Using Sense Analysis, product rankings are calculated.For those over 60, it is useful to recommend a phone with high battery power. Sites Increase the volume of customer reviews, as well as product features and these features on websites Deploy alternative products considering the set of related customer feedback The need for a method that can be used is essential. Product with online customer reviews (OCRs) Many attempts have been made to target the rankings, which have their own shortcomings Have. Focus only on specific aspects of online shopping sites or duration These limitations occur at various levels, including the separation of Frequency based features. Other limitations Not focused on low backlash, but Important features (in identifying Features), hesitations or consumer buying In the results (sense of each review In identifying orientations) Uncertainty Focusing on neutral expressions including does not pay off. To determine the weight of features Based on basic approaches (determining the weight of features), and star rating Valuable in evaluation and OCRs, ignoring information or making decisions and much more Regardless of the strength of the useful Makes sense Analysis (SA) and so on Integration of criterion results. Consumers therefore and thus Consumers are quick to make their positive products Can find. Until now, most product Rating systems Product sales and ranking The results are for the general public, not the individual consumer.Besides, TitanLiu process data for product and product rankings,In product reviews, the proposed techniques However, the syntax within is only polarizing Used as a factor of influence. In this paper,Feedback to find products that are favorable to users Ranking system using mining techniques Provided. Concept mining has been a hot research topic in recent years. Polarity Some documents conexplorecept mining methods to detect or improve accuracy. "Many users are the same the concept mine is very relevant to the applications that discuss the topic, and a topic When a large number of phrases and reviews are used to critique, a pro-direction It is necessary to determine the exact ratio accurately. The purpose of this research is to assist logistics managers in their product delivery strategies, cross Docking is the study of the approach to product ranking and the development of tools. From the user By product data input, products for cross-docking based on their suitability The ranking application will generate scores. Ranking results, to define product delivery strategy And can be used by a company to determine the cross-cutting / warehouse capacity of a facility. Product ranking It involves requirements processing in advance. Second, the cross one for the talk is product information and different Calculated based on the weights of the factors. With product ranking results, cross docking and between warehouse Trade can be valued. Strategic level cross as facility capacity and layout design Evaluation results can also be used to make talk ware housing decisions. In this section, one as shown We structure the product ranking system We propose that it users have their own needs Have different needs. So, our Product tailored to the needs of different users of the system has designed rankings. First, through the Internet, Computer from Amazon product review pages Downloading data. Then, downloaded required product reviews from data and Select the information and divide it into sentences. Next, the comments in each sentence Polarity refers to this. Finally, product information and syntax polarization in an XML file will be integrated. Then, users can specify product features in the query and product rankings can get results. Syntax in product rankings We introduce parsing and improve product ranking accuracy. Polarization refers to the direction and strength of an object. Support is a positive score indicates the ratio of persons giving. We choose 5 products. Mentioned research To address the gaps, Clarification and Groove for each customer An impact measurement sourcing We have proposed a method of delivery. In this section, first, the impact measurement of each used of calculation, based on which, this impact measurement product We will describe how it affects the rankings. Database and implementation methods are also described in this section. Document Recovery and (Content Based) Rating algorithms for product recommendations to be generally rated works. There are a range of features available up to information that measures relevance. The relative ranking By manually designing functions Accurate results cannot be achieved. Therefore, Design and improve ranking systems When, learning to sort from examples Has become the dominant mindset. A third party comparing more than one product In reviews and online comparison polls openly published by websites Comparative information comes from implicitly embedded comparison sentences.

3. WASPAS

Weighted total product rating (Vaspas) method is Turkis, Introduced by Svatskas., The WASPAS method utilizes the advantages of the Weight Summation Model (WSM) and the Weight Product Model (WPM). Combining WSM and WPM, Increases the ranking accuracy of WASPAS alternatives. At that point, WASPAS calculates an optimal enrollment parameter, It will be given in detail later. The weighted sum is the sum of the product appraised weight and Used to improve the accuracy of weighing product samples. An extended version of the Weighted For soft computing Total product rating (WASPAS method) proposed. In this paper, (a) a flexible production system, When selecting (b) an engine In a flexible production cell,(c) an automatic guide vehicle; And (d) an automated study Its compatibility is verified using five real-time production-related issues. System, and (c) an industrial robot. For these five problems, The WASPAS method provides the

most acceptable results. Optimal λ values are determined for each problem considered and the effects of varying λ values in the ranking of candidate alternatives in the WASPAS system are also analyzed.

TABLE 1. Shows the Product Ranking for using WASPAS Method

	online reviews	online rating	no of purchases	Product ranking	no of returns
product 1	39.11000	50.53000	56.78000	28.15000	10.05000
product 2	42.12000	48.97000	76.89000	23.69000	27.30000
product 3	35.08000	42.58000	56.89000	16.18000	22.10000
product 4	41.17000	38.28000	45.98000	13.60000	17.59000
product 5	52.33000	86.41000	67.98000	27.96000	18.89000

Table 1. Shown in Data set in the Product Ranking alternative products, product attributes, alternative products, attributes weights. Shows that highest value is consider Best value and lowest value consider worst value. Using method in WASPAS. Shows that highest value is consider Best value and lowest value consider worst value.
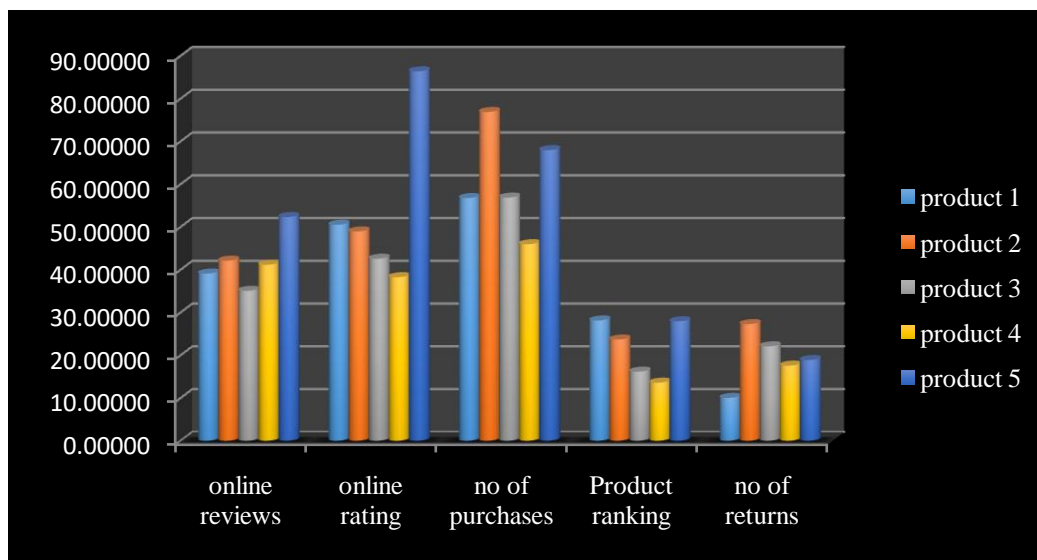

FIGURE 1. Shows the Product Ranking for using WASPAS Method

FIGURE 1. Shown in shows that highest value is considered Best value and lowest value consider worst value. This figure shows in data set attribute weights, data set alternative products, data set product attributes, data set alternative product.

TABLE 2. Shows the product of performance value

	online reviews	online rating	no of purchases	Product ranking	no of returns
product 1	0.74737	0.58477	0.65710	0.48313	1.00000
product 2	0.80489	0.56672	0.88983	0.57408	0.36813
product 3	0.67036	0.49277	0.65837	0.84054	0.45475
product 4	0.78674	0.44300	0.53211	1.00000	0.57135
product 5	1.00000	1.00000	0.78671	0.48641	0.53203

Table 2. Shown in Performance value shows that highest value is consider Best value and lowest value consider worst value. Using method in WASPAS.
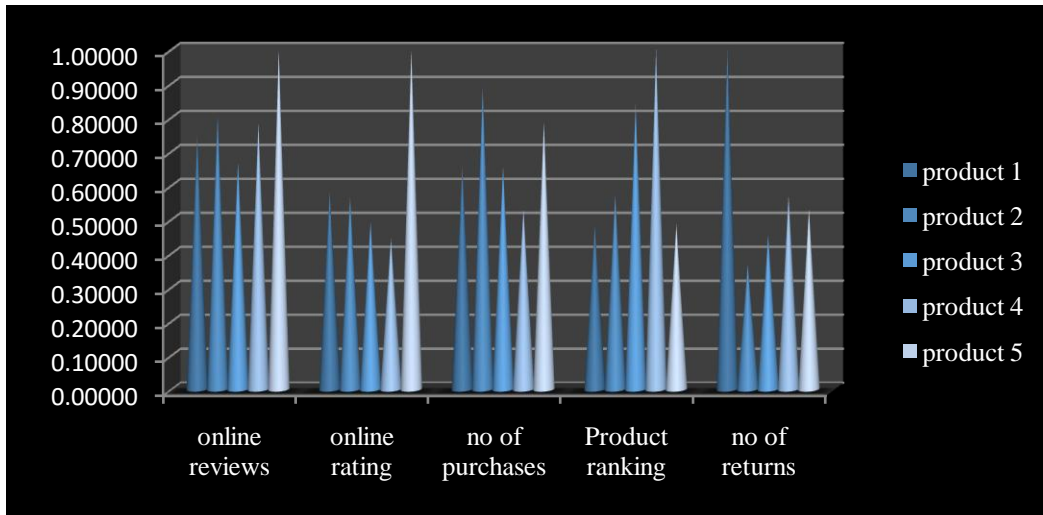
FIGURE 2. Shows the product of performance value

FIGURE 2. Shown in graphical representation violet color line is highest value and blue color line is representation by a. Shows that highest value is consider Best value and lowest value consider worst value.

TABLE 3. Product Ranking Value

	online reviews	online rating	no of purchases	Product ranking	no of returns
product 1	0.25	0.25	0.25	0.25	0.25
product 2	0.25	0.25	0.25	0.25	0.25
product 3	0.25	0.25	0.25	0.25	0.25
product 4	0.25	0.25	0.25	0.25	0.25
product 5	0.25	0.25	0.25	0.25	0.25

TABLE 4. shown in weight of the Product Ranking. Using method in WASPAS.

	online reviews	online rating	no of purchases	Product ranking	no of returns
product 1	0.18684	0.14619	0.16427	0.12078	0.25000
product 2	0.20122	0.14168	0.22246	0.14352	0.09203
product 3	0.16759	0.12319	0.16459	0.21014	0.11369
product 4	0.19668	0.11075	0.13303	0.25000	0.14284
product 5	0.25000	0.25000	0.19668	0.12160	0.13301

TABLE 4. Shown in Product Ranking in weighted normalized decision matrix. Preference score and this is measured by a WSM Weighted sum model. Using method in WASPAS.

TABLE 5.Preference score for WSM

	Preference Score
product 1	0.868092
product 2	0.800913
product 3	0.779199
product 4	0.833301
product 5	0.951288
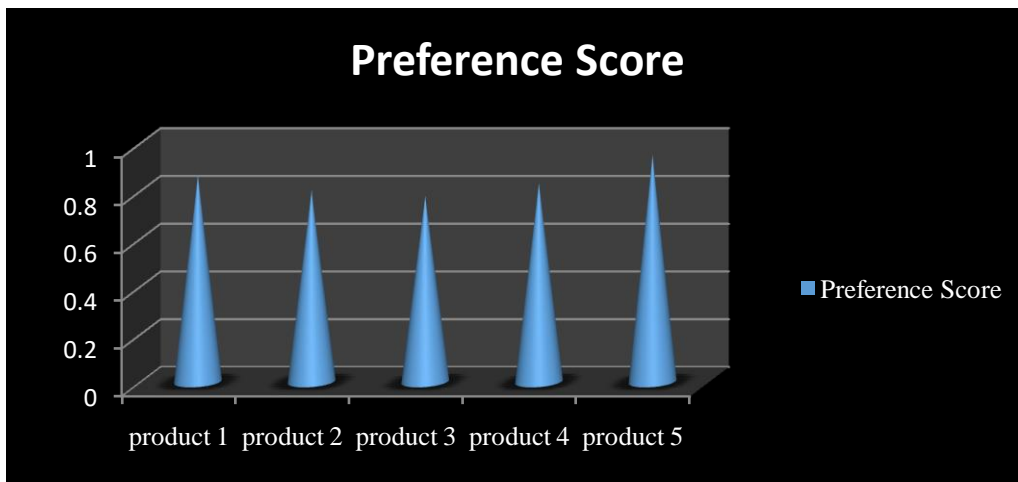
FIGURE 3. Preference score for WSM

TABLE 6. Preferences score for WPM.

	Preference Score
product 1	0.677869
product 2	0.557212
product 3	0.596103
product 4	0.668012
product 5	0.713237

FIGURE 4. Preference score for WPM

FIGURE 4.shown in graphical representation by a Figure shown in Preference score for WPM. weighted normalized and preference score methods. Color blue is represented at the value using method in WASPAS.

TABLE 7. Product Ranking using WASPAS Coefficient

	WASPAS Coefficient	RANK
product 1	0.69084	2
product 2	0.56783	5
product 3	0.60535	4
product 4	0.68414	3
product 5	0.73392	1

Table 5.shown in WASPAS Coefficient and Rank of the Product Ranking using method in WASPAS.
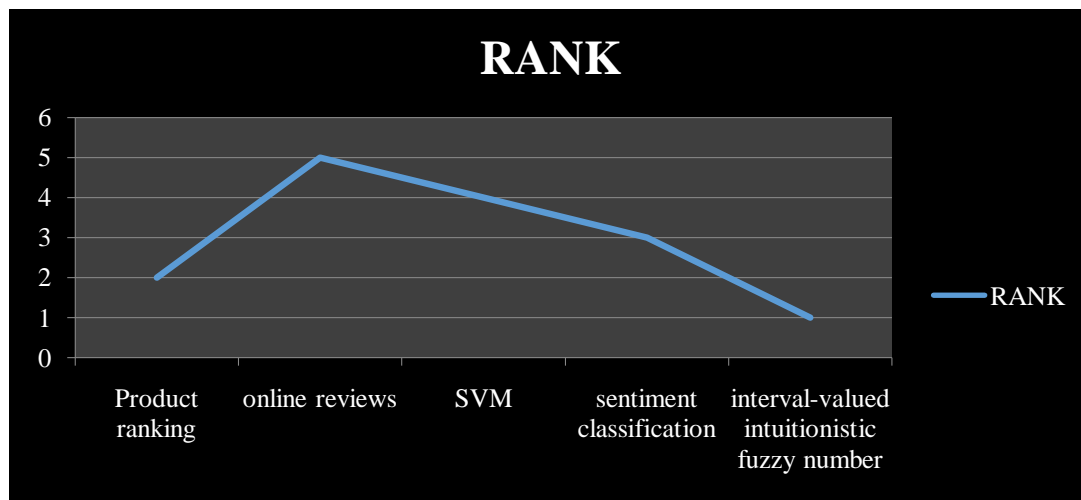
FIGURE 5. Product Ranking

Figure 5 Shows Ranking of Product rank. Product 1 is got the first rank whereas is the Product 2 is having the Lowest rank.

4. Conclusion

Our approach is how to make the most effective web-based shopping sites Also shows that functional. Whether executing an object is big or bad Verification is determined by customer surveys from business websites. 88% and 90% All with a high rating ratio of accuracy Unhelpful polls can naturally be separated from buyers' audits.It is really important for a company to know the customer ratings about its products.The position of the items, the item score and the maximum correlation between the two items All suggest an item list with its general score. In this paper, we About grouping and improving features such as those used in positioning calculations We thought. Which require the highlights of a particular product and expand consumer loyalty A company needs to know that highlights need to be improved. Will be commented Key Features Selected, Features Reviews are extracted on the basis of identity.

References

[1]. Feng, Qinyuan, Kai Hwang, and Yafei Dai. "Rainbow product ranking for upgrading e-commerce." *IEEE Internet Computing* 13, no. 5 (2009): 72-80.

[2]. Fu, Xiangling, Tianxiong Ouyang, Zaoli Yang, and Shaohui Liu. "A product ranking method combining the features–opinion pairs mining and interval-valued Pythagorean fuzzy sets." *Applied Soft Computing* 97 (2020): 106803.

[3]. Dahooie, JalilHeidary, RominaRaafat, Ali Reza Qorbani, and TugrulDaim. "An intuitionistic fuzzy data-driven product ranking model using sentiment analysis and multi-criteria decision-making." *Technological Forecasting and Social Change* 173 (2021): 121158.

[4]. Tian, Peiliang, Yuanchao Liu, Ming Liu, and Shanzong Zhu. "Research of product ranking technology based on opinion mining." In *2009 Second International Conference on Intelligent Computation Technology and Automation*, vol. 4, pp. 239-243. IEEE, 2009.

[5]. Patel, Neha Chirag, and Supriya Rahul Bhutiani. "A Semiotic Approach Through Print Advertisements: The Changing Indian Urban Male." In Global Observations of the Influence of Culture on Consumer Buying Behavior, pp. 146-170. IGI Global, 2018.

[6]. Verbeke, Wim, Iris Vermeir, and Karen Brunsø. "Consumer evaluation of fish quality as basis for fish market segmentation." *Food quality and preference* 18, no. 4 (2007): 651-661.

[7]. Chaudhary, Alka, Dwarakesh Bodala, Nidhi Sindhwani, and Anil Kumar. "Analysis of Customer Loyalty Using Artificial Neural Networks." In 2022 International Mobile and Embedded Technology Conference (MECON), pp. 181-183. IEEE, 2022.

[8]. M.P.Jenarthanan; N G Ramkhi; M. Ramachandran; Vimala Saravanan, "Mechanical, Morphological and Water absorption properties of Polypropylene based Composites", Materials and its Characterization, 1(1), (2022): 48-52.

[9]. MohammadiNasrabadi, Ali, Mohammad Hossein Hosseinpour, and SadoullahEbrahimnejad. "Strategy-aligned fuzzy approach for market segment evaluation and selection: a modular decision support system by dynamic network process (DNP)." *Journal of Industrial Engineering International* 9, no. 1 (2013): 1-17.

[10]. Chandra Prakash, RC. Narayanan, N. Ganesh, M. Ramachandran, S. Chinnasami, R. Rajeshwari. "A study on image processing with data analysis. "In AIP Conference Proceedings, vol. 2393, no. 1, p. 020225. AIP Publishing LLC, 2022.

[11]. Ragab, Mahmoud, Ehab Bahaudien Ashary, Wajdi H. Aljedaibi, Ibrahim R. Alzahrani, Anil Kumar, Deepak Gupta, and Romany F. Mansour. "A novel metaheuristics with adaptive neuro-fuzzy inference system for decision making on autonomous unmanned aerial vehicle systems." ISA transactions (2022).

[12]. Baker, Gregory A., and Thomas A. Burnham. "Consumer response to genetically modified foods: market segment analysis and implications for producers and policy makers." *Journal of Agricultural and Resource Economics* (2001): 387-403.

[13]. Dave, Riddhi, Roopa Rao, and Rajeshwari Jain. "A Study On The Awareness Of Basic And Advanced Financial Terms And Financial Discipline Amongst The Populace In The City Of Ahmedabad."

[14]. P.K. Chidambaram; M. Ramachandran; Vimala Saravanan; Chinnasami Sivaji; S. Sowmiya, "A Study on Input and Response Process Parameter for Drilling Operation", Design, Modelling and Fabrication of Advanced Robots, 1(1), (2022): 37-42.

[15]. Galati, Antonino, Giorgio Schifani, Maria Crescimanno, and GiuseppinaMigliore. ""Natural wine" consumers and interest in label information: An analysis of willingness to pay in a new Italian wine market segment." *Journal of Cleaner Production* 227 (2019): 405-413.

[16]. Fegade, Vishal, M. Ramachandran, S. Madhu, C. Vimala, R. Kurinji Malar, and R. Rajeshwari. "A review on basalt fibre reinforced polymeric composite materials." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020172. AIP Publishing LLC, 2022.

[17]. Noltenius, Melany, Danielle Meyers, Theodore J. Newsom, and Frederick Wegmann. "Fifteen-Passenger Van Safety—A Review of Selected Market Segment Responses to Vehicle Rollover Issues." *Journal of Transportation Safety & Security* 3, no. 2 (2011): 141-156.

[18]. Shatjit yadav, M. Ramachandran, Vimala Saravanan, S. Sowmiya, Soniya Sriram, "Exploring Recent Trends in Solar Energy Application", Renewable and Nonrenewable Energy, 1(1), (2022): 30-38.

[19]. Jain, Rajeshwari. "An analysis of income and investment pattern of working women in the city of Ahmedabad." International Journal of Research in Management & Technology 4, no. 6 (2014): 139-146.

[20]. Raut, Roshani, Sandeep Kautish, Zdzislaw Polkowski, Anil Kumar, and Chuan-Ming Liu, eds. Green Internet of Things and Machine Learning: Towards a Smart Sustainable World. John Wiley & Sons, 2022.

[21]. Gupta, Krishnakumar, Vishal Fegade, Jeevan Kittur, M. Ramachandran, S. Madhu, S. Chinnasami, and M. Amudha. "A review on effect of cooling rate in fiber reinforced polymeric composites." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020106. AIP Publishing LLC, 2022.

[22]. Chen, Liang-Hsuan, and Cheng-Nien Chen. "A QFD-based mathematical model for new product development considering the target market segment." *Journal of Applied Mathematics* 2014 (2014).

[23]. Brauers, Willem Karel M., RomualdasGinevičius, and ValentinasPodvezko. "Regional development in Lithuania considering multiple objectives by the MOORA method." *Technological and economic development of economy* 16, no. 4 (2010): 613-640.

[24]. DR Pallavi; M. Ramachandran; Vimala Saravanan; S. Sowmiya; Anusuya Periyasamy, "A Study on Impact of Covid-19 Pandemic across the World", Pharmaceutical Sciences and Resarch, 1(1), (2022): 7-11.

[25]. Chakraborty, Shankar. "Applications of the MOORA method for decision making in manufacturing environment." *The International Journal of Advanced Manufacturing Technology* 54, no. 9 (2011): 1155-1166.

[26]. Paliwal, Priyanka, Julian L. Webber, Abolfazl Mehbodniya, Mohd Anul Haq, Anil Kumar, and Prem Kumar Chaurasiya. "Multi-agent-based approach for generation expansion planning in isolated micro-grid with renewable energy sources and battery storage." The Journal of Supercomputing (2022): 1-27.

[27]. Valem, Lucas Pascotti, and Daniel Carlos GuimaraesPedronette. "Unsupervised similarity learning through cartesian product of ranking references for image retrieval tasks." In *2016 29th SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI)*, pp. 249-256. Ieee, 2016.

[28]. Rodrigue, Natalie, Michel Guillet, Jacinthe Fortin, and Jean-François Martin. "Comparing information obtained from ranking

[29]. Akkaya, Gökay, BetülTuranoğlu, and Sinan Öztaş. "An integrated fuzzy AHP and fuzzy MOORA approach to the problem of industrial engineering sector choosing." *Expert Systems with Applications* 42, no. 24 (2015): 9565-9573.

[30]. Siregar, Victor MarudutMulia, Mega RomaulyTampubolon, EkaPratiwiSeptaniaParapat, Eve Ida Malau, and Debora Silvia Hutagalung. "Decision support system for selection technique using MOORA method." In *IOP Conference Series: Materials Science and Engineering*, vol. 1088, no. 1, p. 012022. IOP Publishing, 2021.

[31]. Pon Bharathi; M. Ramachandran; Vimala Saravanan; Soniya Sriram; S. Sowmiya, "Investigating the Identification of Breast Cancer and Its Risk", Pharmaceutical Sciences and Research, 1(1), (2022): 20-25.

[32]. Jain, Rajeshwari, and Neha Patel. "An Empirical Study On Dynamics Of Decision Making Parameters Of Working Women While Buying Apparel In The City Of Ahmedabad."

[33]. Kumar Pandey, Rakesh, Anil Kumar, Ajay Mandal, and Behzad Vaferi. "Genetic algorithm optimization of deep structured classifier-predictor models for pressure transient analysis." Journal of Energy Resources Technology 145, no. 2 (2022): 023003.

[34]. Fegade, Vishal, Krishnakumar Gupta, M. Ramachandran, S. Madhu, C. Sathiyaraj, R. Kurinji< alar, and M. Amudha. "A study on various fire retardant additives used for fire reinforced polymeric composites." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020107. AIP Publishing LLC, 2022.

[35]. Mehbodniya, Abolfazl, Mohd Anul Haq, Anil Kumar, Mohd Erfy Ismail, Priyanka Dahiya, and Sathishkumar Karupusamy. "Data reinforcement control technique-based monitoring and controlling of environmental factors for IoT applications." Arabian Journal of Geosciences 15, no. 7 (2022): 1-8.

[36]. Kong, Rui, Yonggang Wang, Wei Xin, Tao Yang, Jianbin Hu, and Zhong Chen. "Customer reviews for individual product feature-based ranking." In *2011 first international conference on instrumentation, measurement, computer, communication and control*, pp. 449-453. IEEE, 2011.

[37]. Freno, Antonino, Martin Saveski, RodolpheJenatton, and CédricArchambeau. "One-pass ranking models for low-latency product recommendations." In *Proceedings of the 21th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining*, pp. 1789-1798. 2015.

[38]. Yang, Xian, Guangfei Yang, and Jiangning Wu. "Integrating rich and heterogeneous information to design a ranking system for multiple products." *Decision Support Systems* 84 (2016): 117-133.

[39]. and descriptive tests of four sweet corn products." *Food quality and preference* 11, no. 1-2 (2000): 47-54.

[40]. R. Dhaneesh; Iswarya V.S; D.R. Pallavi; Ramachandran; Vimala Saravanan, "The Impact of Self-help Groups on the Women Empowerment in Tamil Nadu", Trends in Banking, Accounting and Business, 1(1), (2022): 1-5.

[41]. Dabbagh, Rahim, and Samuel Yousefi. "A hybrid decision-making approach based on FCM and MOORA for occupational health and safety risk analysis." *Journal of safety research* 71 (2019): 111-123.

[42]. Sutarno, S., M. Mesran, S. Supriyanto, Y. Yuliana, and A. Dewi. "Implementation of Multi-Objective Optimazation on the Base of Ratio Analysis (MOORA) in Improving Support for Decision on Sales Location Determination." In *Journal of Physics: Conference Series*, vol. 1424, no. 1, p. 012019. IOP Publishing, 2019.

[43]. Bhushan, Ujjwal, Srabanti Maji, and Anil Kumar. "A Review on Detection and Analysis of Psychological Disorders Using Machine Learning." In 2022 2nd International Conference on Innovative Practices in Technology and Management (ICIPTM), vol. 2, pp. 107-111. IEEE, 2022.

[44]. Attri, Rajesh, and Sandeep Grover. "Decision making over the production system life cycle: MOORA method." *International Journal of System Assurance Engineering and Management* 5, no. 3 (2014): 320-328.

[45]. A. Pon Bharathi; M. Ramachandran; Sathiyaraj Chinnasamy; Malarvizhi Mani, "Analysis of Operating System Using TOPSIS MCDM Method", Electrical and Automation Engineering, 1(1), (2022):114-122

[46]. Gobi, N., and A. Rathinavelu. "Analyzing cloud based reviews for product ranking using feature based clustering algorithm." *Cluster Computing* 22, no. 3 (2019): 6977-6984.

[47]. Karthik, R. V., SannasiGanapathy, and ArputharajKannan. "A recommendation system for online purchase using feature and product ranking." In *2018 Eleventh International Conference on Contemporary Computing (IC3)*, pp. 1-6. IEEE, 2018.

[48]. Sekar, K. R., Mohd AnulHaq, Anil Kumar, R. Shalini, and S. Poojalaxmi. "An improved ranking methodology for malignant carcinoma in multicriterian decision making using hesitant VIKOR fuzzy." Theoretical Computer Science (2022).

[49]. Dey, Balaram, BipradasBairagi, Bijan Sarkar, and SubirSanyal. "A MOORA based fuzzy multi-criteria decision making approach for supply chain strategy selection." *International Journal of Industrial Engineering Computations* 3, no. 4 (2012): 649-662.

[50]. Deepa, N., Asmat Parveen, Anjum Khurshid, M. Ramachandran, C. Sathiyaraj, and C. Vimala. "A study on issues and preventive measures taken to control Covid-19." In AIP Conference Proceedings, vol. 2393, no. 1, p. 020226. AIP Publishing LLC, 2022.

[51]. Bhamre, Namrata R., and Nitin N. Patil. "Aspect rating analysis based product ranking." In *2016 International Conference on Global Trends in Signal Processing, Information Computing and Communication (ICGTSPICC)*, pp. 197-202. IEEE, 2016.

[52]. Mate, Chetan. "Product aspect ranking using sentiment analysis: a survey." *International Research Journal of Engineering and Technology* 3, no. 1 (2015): 126-27.

[53]. Besseris, George J. "Product Screening to Multicustomer Preferences: MultiresponseUnreplicated Nested Super-ranking." *Journal of Quality and Reliability Engineering* 2008 (2008).

[54]. Li, Si, Zhaoyan Ming, Yan Leng, and Jun Guo. "Product ranking using hierarchical aspect structures." *Journal of Intelligent Information Systems* 48, no. 2 (2017): 453-474.

[55]. Jain, Rajeshwari, Riddhi Dave, and Roopa Rao. "An Empirical Analysis of the Financial Behavior and Attitude of Residents of Ahmedabad City."

[56]. Ghoushchi, SaeidJafarzadeh, Samuel Yousefi, and Mohammad Khazaeili. "An extended FMEA approach based on the Z-MOORA and fuzzy BWM for prioritization of failures." *Applied Soft Computing* 81 (2019): 105505.

[57]. Chinnasami Sivaji, M. Ramachandran, Vidhya Prasanth, "Prediction of Hybrid Wind Farms using Fuzzy TOPSIS Analysis", REST Journal on Emerging trends in Modelling and Manufacturing, 8(2), (2022):68-75.

[58]. Sarkar, Asis, S. C. Panja, Dibyendu Das, and Bijon Sarkar. "Developing an efficient decision support system for non-traditional machine selection: an application of MOORA and MOOSRA." *Production & Manufacturing Research* 3, no. 1 (2015): 324-342.

[59]. Kapil, Hem, and C. Siva Ram Murthy. "Rainbow product ranking based relay placement and adaptive retransmission scheme for a reliable 802.15. 4e LLDN." In *2015 IEEE International Conference on Industrial Technology (ICIT)*, pp. 1914-1919. IEEE, 2015.

[60]. Li, Zhengping, Malcolm Yoke Hean Low, Yuan Guan Lim, and Bin Ma. "Optimal decision-making on product ranking for crossdocking/warehousing operations." In *2008 6th IEEE International Conference on Industrial Informatics*, pp. 871-876. IEEE, 2008.

[61]. Gao, Byron J., and Frank Medjo. "Statistical Correction of Average Customer Ratings for Product Ranking." In *2019 IEEE International Conference on Big Data (Big Data)*, pp. 6052-6054. IEEE, 2019.

[62]. Revathy, G., K. Bhavana Raj, Anil Kumar, Spurthi Adibatti, Priyanka Dahiya, and T. M. Latha. "Investigation of E-voting system using face recognition using convolutional neural network (CNN)." Theoretical Computer Science (2022).

[63]. Zhang, Rong, Ming Gao, Xiaofeng He, and Aoying Zhou. "Learning user credibility for product ranking." *Knowledge and Information Systems* 46, no. 3 (2016): 679-705.

[64]. Zhang, Mingyue, XunhuaGuo, and Guoqing Chen. "Prediction uncertainty in collaborative filtering: Enhancing personalized online product ranking." *Decision Support Systems* 83 (2016): 10-21.

[65]. Tanwar, Sarvesh, and Anil Kumar. "Secure key issuing scheme in ID-based cryptography with revocable ID." Information Security Journal: A Global Perspective (2022): 1-10.

[66]. Brauers, Willem Karel M. "Multi-objective seaport planning by MOORA decision making." *Annals of Operations Research* 206, no. 1 (2013): 39-58.

[67]. Sathiyaraj Chinnasamy, M. Ramachandran, Sowmiya Soundharaj, "Mechanical and Thermal Properties of poly butylene succinate (PBS) Nano Composites", REST Journal on Emerging trends in Modelling and Manufacturing, 8(2), (2022):58-67.

[68]. Jain, Rajeshwari. "Impluse Buying Behavior amongst Working Women–With Respect to the City Of Ahmedabad." International Journal of Innovative Science, Engineering & Technology 3, no. 1 (2016).

[69]. Sahu, Anoop Kumar, Nitin Kumar Sahu, and Atul Kumar Sahu. "Application of modified MULTI-MOORA for CNC machine tool evaluation in IVGTFNS environment: an empirical study." *International Journal of Computer Aided Engineering and Technology* 8, no. 3 (2016): 234-259.