



An Empirical study of Brand Marketing Using TOPSIS MCDM Method

*¹C. Sukumaran, ²M. Ramachandran, ²Vimala Saravanan, ²Sathiyaraj Chinnasamy

¹Director of Physical Education, Government Law College, Tiruchirappalli, Tamil Nadu, India

²REST Labs, Kaveripattinam, Krishnagiri, Tamil Nadu, India.

*Corresponding author Email: sukuleo777@gmail.com

Abstract. Brand marketing is for brands to establish and nurture the relationship between consumers. A unique product or service instead of highlighting, brand marketing promotes the integrity of the brand, of the brand products as support points that support the promise and uses services. Ideal solution (TOPSIS) is a technique for prioritizing by similarity is a multi-criterion decision analysis method. TOPSIS is the alternative positive ideal solution of choice short geometric distance from (PIS), negative very long geometry from ideal solution (NIS) of the notion of having to have distance basically located. Assumption of TOPSIS what is more, the criteria are increasing uniformly are coming or going. In many scale problems parameters or criteria often because it has inappropriate dimensions normalizations are generally required. The result is that Product strategy has the first rank whereas the Channel strategy has the lowest rank. From the result it is seen that Product strategy has got the first rank whereas the Channel strategy is having the lowest rank.

1. Introduction

Brand marketing is your logo and put the business name in as many places as possible and sells not just expecting to create. In many cases, the importance of brand marketing goes unnoticed because it will take time. Multiple marketing departments are as complete as creating a brand rather than developing long-term goals that will affect the business as well focus on short-term goals. Brand marketing your products or services will highlight your overall brand advertising in terms of. Your identity, values and personality are your personalized brand useful to the audience. Brand marketing is about connecting with communication. Basically, for your product your brand is the bridge between your customers. Compensation methods such as TOPSIS for criteria one where trade transactions between are allowed bad results on one of the criteria is another can be denied by good results. This is more than irreplaceable methods that provide a very realistic modeling format, in which alternative solutions based on tough cut-offs include or exclude. In nuclear power plants an example of the application is given. It will compensate for the method of integration. This is for every criterion determining the weight and score normalization for each criterion for every substitute and better change calculates the geometric distance between is a method of comparing a set of alternatives by. This is the best score on every criterion.

2. Brand Marketing

Brand marketing is for a brand it is the process of establishing and developing a relationship between consumers. To highlight a unique product or service instead, brand marketing is about the integrity of the brand, encouraging, supportive of the brand's promise and using products and services as points. Brand marketing objective the value of a brand and its value creation company as a result. Brand channels for marketing strategy, digital, social and product marketing such as paid search advertising are the same channels that companies can use for operations. To create a media mix that reaches a wider audience using different channels together is a good strategy. For example, brand marketers' brand awareness and potential in multiple digital spaces, email and content to reach customers' brand advertising strategy through marketing efforts can be used. But for the right audience at these intervals when deciding on the right messages, first we need to consider the brand attributes. [1] Head of Brand Marketing Division, Variety of ITL Across brands and functional areas in marketing communications activities Ensures consistency. Corporate and of marketing communication activities Network of Integrated Subsidiaries and ITL for companies with experience and familiarity with Facilitated by outsourcing. With ITL Related, Rothmans, Benson & Hedges and JTI- Macdonald's are their primary brand Continuity and consistency for seals has proven inferior image sites with respect. This is evident from the emerging market share; the player's cigarette brand marketing case study illustrates an IMC. [2]. brand marketing service in context, the first three are current research theoretical relevance of paradigms, review the background, then sample preparation and conduct integrated two-level research for testing. To integrate key concepts of paradigms the service of three consumer-brand relationships in a marketing environment brand, current study two-level research hosted by. One that aims at the first step goal creating an ideological model, and then with a large-scale survey tested in the second phase. [3]. Brand Marketing In brand marketing Learn how to model MCDM To diagnose, the key they are the factors that can create brand value prove that they are usable. Brand marketing is about brand image, and a long time to express the opinion of the products will take hence, the brand of successful companies attributes to

establish and maintain brand image try it. Successful brand marketing: More loyalty from customers Receives, higher return on investment. [4]. Brand marketing as a global practice is growing, as brands are now household names globally. To expand the brand marketing horizon although the archetype paradigm contributed, it did a theoretical equation surrounding Raises important questions. [5]. Brand from brand marketing communications Direct and indirect ways up to reliability were conceived. Data collected from American energy drink consumers using the configuration equation model Analyzed. Multiple marketing Composition variables and context related Cowards are restricted. Objective Consumers will feel the opposite of reliability focusing on reliability completes the previous literature. One of the brand marketing communications an integrated perspective is provided; this marks a precursor to brand credibility. [6]. Integrated brand marketing, Responsive to marketing communications Measuring behavioral effects in terms of, Still for most companies Vision and dream of the future. As we will see later in the chapters, integrated brand marketing event Techniques, processes and work after evaluation there are techniques that can be done, But almost nothing works immediately. [7]

Brand Marketing Initiatives Channel towards Partners and End Consumers As paid, the marketing mix Retailers and consumers for results we sample the answers. For brand marketing activities for brand marketing activities in consumer and retail responses each of such differences marketing mix for the channel it is important to design efforts. In the second phase of the analysis, the consumer and Brand aimed at channels for the marketing process, the consumer advertising and business and loyalty of channels project, package size type and number of skis and sales and store marketing. [8] Current study of luxury research in brand marketing aspects Focuses and by the sizes used in the articles its basic principles, geographical purpose, Constructions and specifications Provides a comprehensive overview of. Lead the luxury research stream it also reviews universities. Then, a systematic impact on further research is presented in this manner. The method is luxury brand marketing Differs from other related literary reviews. [9] Key characteristics of luxury brand marketing are discussed and on social media site their effectiveness in engaging with consumers being explored. This in the luxury brand marketing appraisal Luxury brand attributes are particularly relevant However, very few studies on luxury brand marketing Focus on the characteristics of the strategies. [10] Brand marketing was marketing in the 1990s Became the "exciting word" and continues to this day. However, brand marketing is twentieth usually trademark advertising at the turn of the century as described. For a long time marketing historians, branded popularity of national marketing of products is this and as mentioned before, this article is brand in addition to the marketing practice, the brand marketing concept and brand marketing the beginnings of literature were created at that time. [11] Consider their final relationship with the faithful without, in terms of consumer preferences Deploying only brand marketing efforts May be wrong. Before variance analysis (ANOVA) testing Major brand marketing efforts, more and less loyal consumers Identified within categories the importance of brand marketing efforts Conducted for evaluation. Finally, multi-team Logistic setbacks, their primary phone brands Brand in predicting consumer loyalty to the impact of marketing efforts were conducted for evaluation. [12] Health to achieve greater access on social media Development companies marketing this brand they say you can learn from strategies Suggested. Other social media health promotion With users on recommendations for success Personal communication, asking questions Communication and dialogue through promotion, multimedia content uploading and celebrity engagement highlighting, alcohol brands strategies used include. [13]. Another in value-creating literature Weakness, especially in relation to marketing, SBV of service companies to customers Brand and market (especially contact) Company service brand marketing in assisting Failed to account for the contingent share of capacity (SBMC). Role of Service Branding (Brand Communications) Theirs related to value delivery Stability and service in exams Related to the value offered by the brand Consumers in addition to decision making, How to identify these. [14] 19th Century Brand Marketing Procedures Modern brand marketing was pioneers of strategies. A brand name is unique That should be memorable Modern brand marketing theory Suggests, so it is Consumer Knowledge a Experience And Emotion With The Brand consumer memory for both communication Can act as a "platform". Otherwise, a specific brand is along with the brand name to establish meaning Properties should be advertised. Enhancing the Consumer Experience: An Economic and Using a Marketing Perspective, Schmidt (1999) He declared that experiences are individual, individual events. Which Responding to some stimulus and observing an event or involving the whole organism as a result of participation. Employee Sales: Employee sales is production Includes sales, plus one or more Contact potential buyers. of consumers Price Perception: Price perception is both positive and negative for consumers A complex and broad stimulus with hints Studies suggest that Previous studies value perception, price Several constructs such as sentiment, sales opportunity and price maenad Identified, they play a negative role in price reflect. Public Relations and Promotional Materials: General Relations and promotional materials with any programs are related, and are of the company Promote the image or its individual products Designed to protect. Product Strategy: The product is the core of the brand. For consumers, brand experience and company interactions allow them to acquire product information, which in turn influences their purchase. The basis of successful marketing is that the product is a good service, be it system or design, all of them are in line with the needs of the customer and they meet the satisfaction. Communication Strategy: Considered by Keller (2001) as the most flexible marketing strategy, this "marketing communication" is the last element of brand building. Direct or indirect communication tools are used to persuade and remind the customer to scan the brand message. Brand marketing communication is referred to as the "voice" that creates conversations and good relationships between both the company and the consumer. Pricing Strategy: Pricing Strategy: Shipley and Jaffer (2001) on the objectives of the pricing process proposed that pricing is the starting point of pricing strategies. The objectives of a company's pricing process are a direct result of the overall strategy. A company's pricing is an important factor in revenue, and the brand is associated with strong awareness and uniqueness. Event Marketing and Sponsorship: Corporate art Sponsorship, Corporate and Brand Levels. Often creates a favorable image for the sponsor. Share

an image of a celebrity endorsing a product. In the same way, the meanings of events are transferred to the brand through sponsorship.

3. Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS)

TOPSIS is from a better point simultaneously reducing the distance and Increasing the distance from a nadir point Defined in terms of Solutions from a set of alternatives many criteria for identification Method. Significance of TOPSIS Criteria Comparative weights can be combined. This paper Different weighing schemes and TOPSIS using different distance measurements Review of many applications of Makes, and previously used For a set of multiple criteria data Of different weights used Comparing the results. Smart and centric Comparison also against waiting plans is done. TOPSIS was not found to be very accurate, but was very close in accuracy. [15] TOPSIS stands for Best Solution For priority by unity Refers to the technique. At the beginning of TOPSIS Hwang and Yoon, Lai et al., And Yoon and by Hwang. Limited subjective input from decision makers TOPSIS is attractive because it is needed. The only subjective input weights required. Thus, TOPSIS is the best alternative distance Reduces, at the same time the distance to the nerve Increases. TOPSIS for many applications Used, however it is many others as widespread as attribute methods not used. In flexible production Variation of TOPSIS for selecting clippers used. TOPSIS is an advanced product Used for financial investment in organizations. In other manufacturing applications, manufacturing In the case of selecting a process, the robot will select processes it is used in application. To gain weight for TOPSIS Neural network approaches used, added more ambiguous package extensions implemented. Company performance in a particular industry and TOPSIS is also used to compare financial ratio performance. [16] The TOPSIS method is essentially the value of R Improving weight to make it sensitive asserts. Besides, in the formula of R value there has been progress, i.e. the 'Miqiezhì' method. Evaluation Due to the complexity of the problems, R is also an alternative to the value Intrinsic between A better and simpler method to understand the assessment and required relationship. In this report, a novel modified TOPSIS method, D+ substitutes in the D--plane and the distance between reference points R to calculate and evaluate alternative quality Described as a value-building process. [17] TOPSIS has been in decision-making ever since has been an important branch. To clarify the features of TOPSIS and AHP Characteristics are compared in Table 1. The main weaknesses of TOPSIS include lifting weights, without providing a balanced test for judgments can be seen to exist. However, AHP Employment is driven by human capacity for information processing is considerably restricted, thus seven plus or Subtraction two is the ceiling in comparison. In this perspective, the TOPSIS pair Mitigates the need for comparisons and the capacity limit is significant in the process Does not dominate the scale. [18] TOPSIS approach to evaluation Finance for the end correlation of rates and for each financial ratio and institutions indicates the difference in performance between Confirmations. Proportional, Objective Weights of Financial Ratios are used.

The concept of TOPSIS is the most preferred alternative is far from the positive ideal solution Distance is only short distance a must, but far from negative ideal solution Distance should also be long distance. Positive and idealized negative as ideal solutions and anti ideal solutions respectively this point is also pointed out by Geleni. [19] TOPSIS cannot directly handle this type of data, for ranking algorithm named A-TOPSIS We adopt a TOPSIS-based approach we create. In this case, alternative means we create. In this case, alternative means and there are benchmarks. Depending on the criteria the evaluation of alternatives is average values and constant the result is expressed by matrix in terms of deviations. The methodology for evolutionary mechanisms is used. of the algorithms under evaluation Feasibility of A-TOPSIS to find ranking The simulation results show that [20] To explain the methodology for evolutionary mechanisms A case study, in the following section, is, at first, ambiguous Initialization of data We are about definitions Let's discuss, then the A brief introduction to the original TOPSIS method. In Section 3, We MCDM problems with fuzzy data we introduce, then, to deal with ambiguous data Extending TOPSIS, we present the algorithm. In Section 4, our Methodology with an example of the proposed algorithm we explain. The final part ends. Multi- To solve non-objective linear programming problems Expand the TOPSIS approach. Hwang y Yoon (1981) Recommended vector normalization was used; this is particularly relevant for TOPSIS (Chen, 2019c). Attribute weights determined by EM TOPSIS is E-TOPSIS se llama TOPSIS y no ponder ado TOPSIS no ponder ado stands for TOPSIS (abbreviated as U-TOPSIS). The called EW's E-TOPSIS in TOPSIS is U- The results can be analyzed by comparison with TOPSIS. [22] This review is actually TOPSIS' ranking index Se planted la cession de la equated. Parasol to answer this, the first objective of this study is a detailed analysis was conducted. This review is actually topsides' ringing interest: Admass, la comparision deals dos divisions the importance was also implicit. [23] Current product versus best in-class companies Performance levels to measure performance Establishing and setting goals for competitive benchmarking Comment was used. Kuang and Tam used the TOPSIS method to find a suitable design solution A number of selected cases were evaluated And overall for many answers TOPSIS method to derive performance index Adopted, thus optimal factor combinations are determined. Yang and Chou also developed the TOPSIS method Optimization using multiple response simulations Solved the problem with discrete factors. However, of generated design alternatives, the TOPSIS method is not likely to be applied in assessment. [24] Complexity used in classical TOPSIS to avoid the normalization formula, different scale to make the criteria comparable a linear scale transformation is used here. A methodology for extending TOPSIS to fuzzy context the approach is proposed in this section. A multitude of persons in an ambiguous environment Criteria is a tool for solving decision-making problems TOPSIS to develop methodology. Data and team for decision making Ambiguity in the decision making process considering, linguistic variables of all criteria Weights and depending on each criterion Estimates of each alternative are used for assessment.

4. Analysis and Discussion

This Table 1. TOPSIS of Brand Marketing Alternative: Enhance the consumer experience, Personnel sale, Consumer's price perception, Public relations and propaganda material. Evaluation Preference: Product strategy, Communication strategy, Price strategy, Event marketing and sponsorship. Enhance the consumer experience it is seen that Communication strategy is showing the highest value for Channel strategy is showing the lowest value. Personnel sale it is seen that Communication strategy is showing the highest value for Product strategy is showing the lowest value. Consumer's price perception shows that Channel strategy is showing the highest value for Product strategy is showing the lowest value. Public relations and propaganda material it is seen that Event marketing and sponsorship is showing the highest value for Product strategy is showing the lowest value.

TABLE 1. TOPSIS of Brand Marketing

	Enhance the consumer experience	Personnel sale	Consumer's price perception	Public relations and propaganda material
Product strategy	81.08	79.53	23.15	22.05
Communication strategy	96.12	94.97	33.69	27.30
Channel strategy	64.08	92.58	35.18	23.10
Price strategy	73.17	88.28	24.60	26.59
Event marketing and sponsorship	83.33	86.41	27.96	28.89

Table 1 shows the informational set for the Enhance the consumer experience, Personnel sale, Consumer's price perception, Public relations and propaganda material of the Product strategy, Communication strategy, Price strategy, Event marketing and sponsorship.

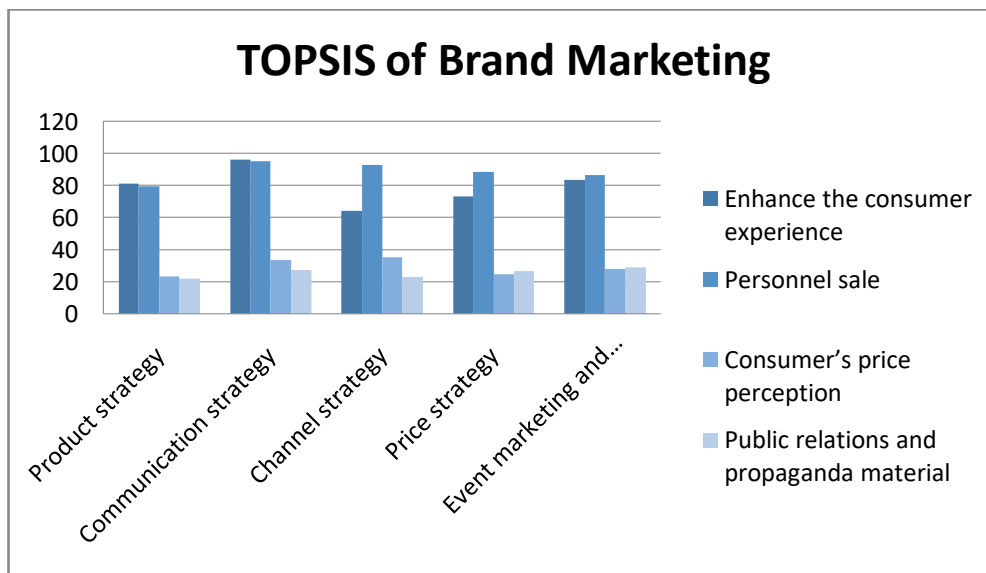


FIGURE 1. TOPSIS of Brand Marketing

Figure 1 TOPSIS of Brand Marketing shows the graphical representation Enhance the consumer experience it is seen that is showing the value Product strategy 81.08, Communication strategy 96.12, Channel strategy 64.08, Price strategy 73.17, Event marketing and sponsorship 83.33. Personnel sale it is seen showing the value Product strategy 79.53, Communication strategy 94.97, Channel strategy 92.58, Price strategy 88.28, Event marketing and sponsorship 86.41. Consumer's price perception it is seen that is showing the value Product strategy 23.15, Communication strategy 33.69, Channel strategy 35.18, Price strategy 24.60, Event marketing and sponsorship 27.96. Public relations and propaganda material it is seen that is showing the value Product strategy 22.05, Communication strategy 27.30, Channel strategy 23.10, Price strategy 26.59, Event marketing and sponsorship 28.89.

TABLE 2. Squire Rote of matrix

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	6573.9664	6325.0209	535.9225	486.2025
Communication strategy	9239.0544	9019.3009	1135.0161	745.2900
Channel strategy	4106.2464	8571.0564	1237.6324	533.6100
Price strategy	5353.8489	7793.3584	605.1600	707.0281
Event marketing and sponsorship	6943.8889	7466.6881	781.7616	834.6321

Table 2 shows the Squire Rote of matrix value.

TABLE 3. Normalized Data

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	0.4517	0.4431	0.3532	0.3834
Communication strategy	0.5355	0.5291	0.5140	0.4747
Channel strategy	0.3570	0.5158	0.5368	0.4017
Price strategy	0.4077	0.4918	0.3753	0.4624
Event marketing and sponsorship	0.4643	0.4814	0.4266	0.5024

Table 3 Normalized Data shows the information set for the Enhance the consumer experience, Personnel sale, Consumer’s price perception, Public relations and propaganda material. The Normalized data is calculated from the data set value is divided by the sum of the square root of the column value.

TABLE 4. Weight

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	0.25	0.25	0.25	0.25
Communication strategy	0.25	0.25	0.25	0.25
Channel strategy	0.25	0.25	0.25	0.25
Price strategy	0.25	0.25	0.25	0.25
Event marketing and sponsorship	0.25	0.25	0.25	0.25

Table 4 Weight shows the informational set for the weight all same value 0.25.

TABLE 5. Weighted normalized decision matrix

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	0.1129	0.1108	0.0883	0.0959
Communication strategy	0.1339	0.1323	0.1285	0.1187
Channel strategy	0.0893	0.1289	0.1342	0.1004
Price strategy	0.1019	0.1230	0.0938	0.1156
Event marketing and sponsorship	0.1161	0.1204	0.1067	0.1256

Table 5 Weighted normalized decision matrixes show the informational set for the Normalized Data multiplication Weight we used the formula.

TABLE 6. Positive Matrix

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	0.1339	0.1323	0.0883	0.0959
Communication strategy	0.1339	0.1323	0.0883	0.0959
Channel strategy	0.1339	0.1323	0.0883	0.0959
Price strategy	0.1339	0.1323	0.0883	0.0959
Event marketing and sponsorship	0.1339	0.1323	0.0883	0.0959

Table 6 Positive Matrix shows the informational set for the value Enhance the consumer experience 0.1339, Personnel sale 0.1323, Consumer’s price perception 0.0883, Public relations and propaganda material 0.0959.

TABLE 7. Negative matrix

	Enhance the consumer experience	Personnel sale	Consumer’s price perception	Public relations and propaganda material
Product strategy	0.0893	0.1108	0.1342	0.1256
Communication strategy	0.0893	0.1108	0.1342	0.1256
Channel strategy	0.0893	0.1108	0.1342	0.1256
Price strategy	0.0893	0.1108	0.1342	0.1256
Event marketing and sponsorship	0.0893	0.1108	0.1342	0.1256

Table 7 Negative matrix shows the informational set for the value Enhance the consumer experience 0.0893, Personnel sale 0.1108, Consumer’s price perception 0.1342, Public relations and propaganda material 0.1256.

TABLE 8. Si Positive & Si Negative & Ci

	Si Positive	Si Negative	Ci
Product strategy	0.0300	0.0596	0.6650
Communication strategy	0.0462	0.0503	0.5213
Channel strategy	0.0643	0.0310	0.3258
Price strategy	0.0391	0.0451	0.5358
Event marketing and sponsorship	0.0410	0.0396	0.4914

Table 8 Si Positive & Si Negative & Ci shows the informational set for the value this table.

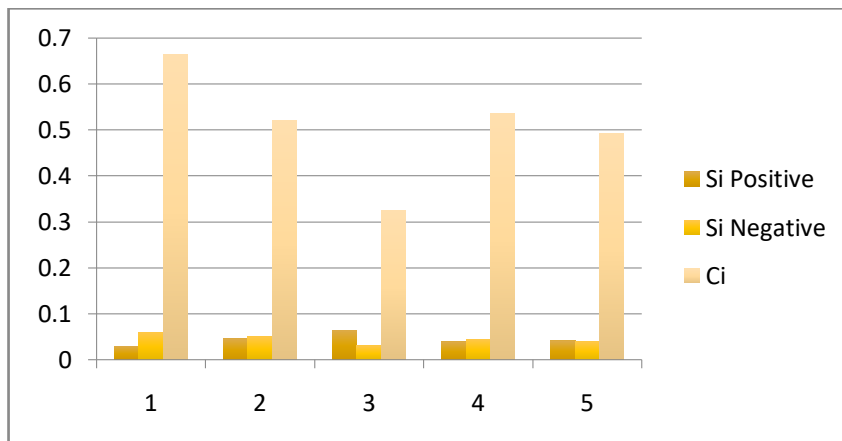


FIGURE 2. Si Positive & Si Negative & Ci

Figure 2 Si Positive & Si Negative & Ci shows the graphical representation.

TABLE 9. Rank

	Rank
Product strategy	1
Communication strategy	3
Channel strategy	5
Price strategy	2
Event marketing and sponsorship	4

Table 9 Rank shows the informational set for the Product strategy 1 is in 1st rank, Communication strategy 3 is in 3rd rank, Channel strategy 5 is in 5th rank, Price strategy 2 is in 2nd rank, marketing and sponsorship 4 is in 4th rank.

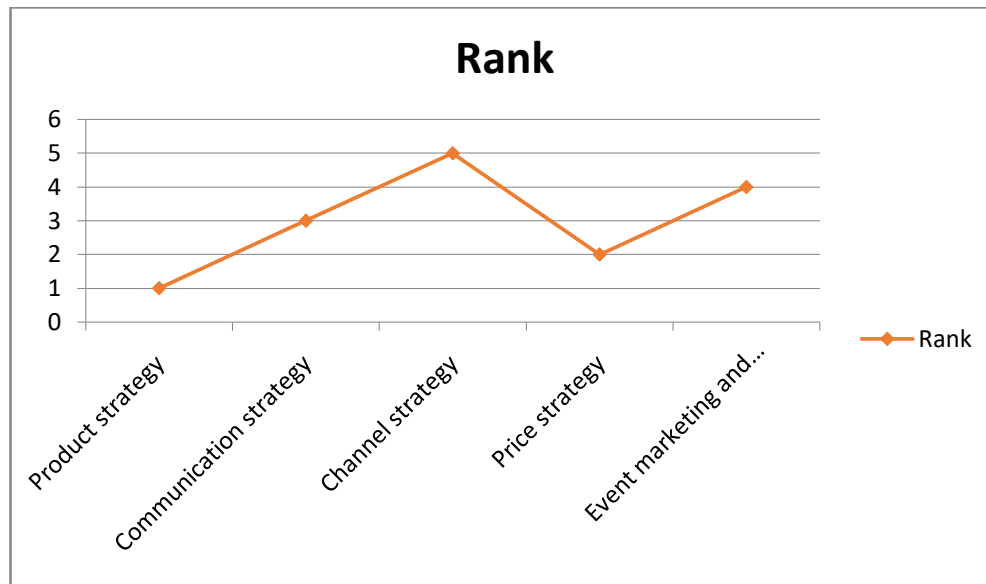


FIGURE 3. Rank

Figure 3 Rank shows the graphical representation Product strategy 1 is in first rank, Communication strategy 3 is in Third rank, Channel strategy 5 is in Fifth rank, Price strategy 2 is in Second rank, marketing and sponsorship 4 is in Fourth rank.

5. Conclusion

Brand marketing is for a brand. Establishing and nurturing relationships with consumers is the process. A unique product or service Instead of highlighting, brand marketing Promotes the integrity of the brand, the brand Products as evidence points to support the promise and Using the Services. TOPSIS is a great simultaneously reducing the Distance from point and incremental distance from a nadir point solutions from a fundamentally defined set of alternatives a multi-criteria method of identification. TOPSIS gives relative weights of criterion importance can connect. As a result, product strategy first Got quality, as well as channel strategy it has the lowest ranking.

References

- [1]. Dewhirst, Timothy, and Brad Davis. "Brand strategy and integrated marketing communication (IMC): A case study of Player's cigarette brand marketing." *Journal of Advertising* 34, no. 4 (2005): 81-92.
- [2]. Tsai, Shu-Pei. "Strategic relationship management and service brand marketing." *European Journal of Marketing* 45, no. 7/8 (2011): 1194-1213.
- [3]. Wang, Yung-Lan, and Gwo-Hshiung Tzeng. "Brand marketing for creating brand value based on a MCDM model combining DEMATEL with ANP and VIKOR methods." *Expert systems with applications* 39, no. 5 (2012): 5600-5615.
- [4]. 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.
- [5]. Tsai, Shu-pei. "Investigating archetype-icon transformation in brand marketing." *Marketing Intelligence & Planning* (2006).
- [6]. 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.
- [7]. 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.
- [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]. Dwivedi, Abhishek, and Robert McDonald. "Building brand authenticity in fast-moving consumer goods via consumer perceptions of brand marketing communications." *European Journal of Marketing* (2018).
- [10]. Kitchen, Philip J. "Integrated brand marketing and measuring returns." In *Integrated brand marketing and measuring returns*, pp. 1-8. Palgrave Macmillan, London, 2010.

- [11]. 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."
- [12]. Venkatesan, Rajkumar, Paul Farris, Leandro A. Guissoni, and Marcos Fava Neves. "Consumer brand marketing through full-and self-service channels in an emerging economy." *Journal of Retailing* 91, no. 4 (2015): 644-659.
- [13]. Aliyev, Farhad, Taylan Urkmez, and Ralf Wagner. "A comprehensive look at luxury brand marketing research from 2000 to 2016: a bibliometric study and content analysis." *Management Review Quarterly* 69, no. 3 (2019): 233-264.
- [14]. C. Venkateswaran; Vishal Fegade; M. Ramachandran; Vimala Saravanan; Vennila Tamilarasan, "Review on Various Application Bio Fuels", *Materials and its Characterization*, 1(1), (2022): 17-27.
- [15]. 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.
- [16]. Dhaoui, Chedia. "An empirical study of luxury brand marketing effectiveness and its impact on consumer engagement on Facebook." *Journal of Global Fashion Marketing* 5, no. 3 (2014): 209-222.
- [17]. Fegade, Vishal, Krishnakumar Gupta, M. Ramachandran, S. Madhu, C. Sathiyaraj, R. Kurinji Malar, 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.
- [18]. Petty, Ross D. "The codevelopment of trademark law and the concept of brand marketing in the United States before 1946." *Journal of Macromarketing* 31, no. 1 (2011): 85-99.
- [19]. 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."
- [20]. Odoom, Raphael. "Brand marketing programs and consumer loyalty—evidence from mobile phone users in an emerging market." *Journal of Product & Brand Management* (2016).
- [21]. C. Venkateswaran; D R Pallavi; M. Ramachandran; Vimala Saravanan; Vidhya Prasanth, "A Review on Promethee and Analytic Hierarchy Process with Its Application", *Data Analytics and Artificial Intelligence*, 2(1), (2022): 34-39
- [22]. 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).
- [23]. Lim, Megan SC, James D. Hare, Elise R. Carrotte, and Paul M. Dietze. "An investigation of strategies used in alcohol brand marketing and alcohol-related health promotion on Facebook." *Digital health* 2 (2016): 2055207616647305.
- [24]. Chaudhary, Alka, Dwarakesh Bodala, Nidhi Sindhvani, 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.
- [25]. 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.
- [26]. Sok, Phyra, and Aron O'Cass. "Understanding service firms brand value creation: a multilevel perspective including the overarching role of service brand marketing capability." *Journal of Services Marketing* 25, no. 7 (2011): 528-539.
- [27]. Jain, Rajeshwari, Riddhi Dave, and Roopa Rao. "An Empirical Analysis of the Financial Behavior and Attitude of Residents of Ahmedabad City."
- [28]. Petty, Ross D. "Pain-killer: a 19th century global patent medicine and the beginnings of modern brand marketing." *Journal of macromarketing* 39, no. 3 (2019): 287-303.
- [29]. N. Hemamalini, M. Ramachandran, Vimala Saravanan, "A Study on Shakespeare and his Literature Work", *Contemporaneity of Language and Literature in the Robotized Millennium*, 4(1), (2022): 37-43.
- [30]. Olson, David L. "Comparison of weights in TOPSIS models." *Mathematical and Computer Modelling* 40, no. 7-8 (2004): 721-727.
- [31]. 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).
- [32]. Ren, Lifeng, Yanqiong Zhang, Yiren Wang, and Zhenqiu Sun. "Comparative analysis of a novel M-TOPSIS method and TOPSIS." *Applied Mathematics Research eXpress* 2007 (2007).
- [33]. 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.
- [34]. 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.
- [35]. Shih, Hsu-Shih, Huan-Jyh Shyur, and E. Stanley Lee. "An extension of TOPSIS for group decision making." *Mathematical and computer modelling* 45, no. 7-8 (2007): 801-813.

- [36]. 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).
- [37]. K Ram Chandra, Eknath Tatte, M. Ramachandran, Vimala Saravanan, "Understanding Blended Learning Advantages and Limitations", *Contemporaneity of Language and Literature in the Robotized Millennium*, 4(1), (2022): 10-18.
- [38]. Vahdani, Behnam, M. Salimi, and S. Meysam Mousavi. "A compromise decision-making model based on VIKOR for multi-objective large-scale nonlinear programming problems with a block angular structure under uncertainty." *Scientia Iranica* 22, no. 6 (2015): 22571-2584.
- [39]. 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.
- [40]. Krohling, Renato A., and André GC Pacheco. "A-TOPSIS–an approach based on TOPSIS for ranking evolutionary algorithms." *Procedia Computer Science* 55 (2015): 308-317.
- [41]. 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.
- [42]. Eknath Tatte, M Ramachandran, Vimala Saravanan, "Mobile Learning- A New Methodology in Education System", *Contemporaneity of Language and Literature in the Robotized Millennium*, 4(1), (2022): 1-9.
- [43]. Jahanshahloo, Gholam Reza, F. Hosseinzadeh Lotfi, and Mohammad Izadikhah. "Extension of the TOPSIS method for decision-making problems with fuzzy data." *Applied mathematics and computation* 181, no. 2 (2006): 1544-1551.
- [44]. 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.
- [45]. 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.
- [46]. Chen, Pengyu. "Effects of the entropy weight on TOPSIS." *Expert Systems with Applications* 168 (2021): 114186.
- [47]. Kuo, Ting. "A modified TOPSIS with a different ranking index." *European journal of operational research* 260, no. 1 (2017): 152-160.
- [48]. 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.
- [49]. C. Venkateswaran, M. Ramachandran, Vimala saravanan, T. Vennila, "A Study on Artificial Intelligence with Machine Learning and Deep Learning Techniques", *Data Analytics and Artificial Intelligence*, 1(1), (2021): 32-37.
- [50]. Lin, Ming-Chyuan, Chen-Cheng Wang, Ming-Shi Chen, and C. Alec Chang. "Using AHP and TOPSIS approaches in customer-driven product design process." *Computers in industry* 59, no. 1 (2008): 17-31.
- [51]. 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).
- [52]. Chen, Chen-Tung. "Extensions of the TOPSIS for group decision-making under fuzzy environment." *Fuzzy sets and systems* 114, no. 1 (2000): 1-9.