Extension of the DEMATEL Method for Multi-Criteria Market Segment Evaluation

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Abstract. When evaluating different market segments Segment size and growth segment structure Charisma and company objectives and resources are the three Factors Company should consider. Demographics, psychology, behavior, and geography are considered to be the four main types of market segmentation. However there are many strategies that you can use. In four main categories there are many differences. Here are several methods that can be done. Like check out. The decision-making test and evaluation laboratory (DEMATEL) is considered to be an effective method for identifying the cause-effect chain components of a complex system. It deals with the evaluation of interrelated Relationships between factors and by visual layout model Identify the important ones. In this paper we used DEMATEL for ranking the DEMATEL method is the most ideal solution Short-distance Evaluation Parameters in Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors Use Attention deficit from the result it is seen that Competition is got the first rank whereas is the Financial and economic factors is having the Lowest rank.

1. Introduction

The market segment Companies are about their customers Lets learn. Customer requirements and good for them about options there is understanding, so they can campaign according to the customer segments where they have the opportunity to purchase the products. There are many ways to divide markets to find the right target audience. The five ways to divide markets include demographics, psychology, behavior, geography and definitive segmentation. Number of customers per category, their revenue and the product you provide and good for them about options Market potential of a segment by looking at you can rate. The decision-making test and evaluation laboratory (DEMATEL) is considered to be an effective method for identifying the cause-effect chain components of a complex system. It deals with the evaluation of interrelated relationships between factors and the identification of important ones through the visual structure model. Decision Testing analyze the influence of certain factors with recommended criteria. It is an approach to solving the industry's multi-scale decision making (MCDM) problems. The DEMATEL method is used to determine the status of each factor in the system and their influence on each other, thus determining the most influential factors of green discoveries. The DEMATEL technique of decision-making testing and evaluation was first used in 1976 by Fondela and Cabas. It was able Scientific, political and economic Many global complex issues within the sectors to solve by considering the judgments of experts. BMI used the DEMATEL method to implement the larger and more complex and the "Science and Human Affairs Program at the Battelle Memorial Institute in Geneva".

2. Market Segment Evaluation

The market segment assessment and selection (MSE / MSS) problem usually involves some possible alternatives, which should be evaluated according to some possible criteria. Therefore, the MSE / MSS problem can be seen as a multi-scale decision making (MCDM) problem. Transport location selection MCDM approaches can be very effective in many areas of engineering and management such as tourism [29]. Section evaluation and selection and section strategy description. In decision-making processes defining the problem structure, the need for a decision Ask questions carefully and find alternatives identify the first to support DMs Step by step. Problem-creating stages and There is no publication dealing with criteria development in the MSS / MSE process [30]. Market segment evaluation and choice consequences. Therefore, marketplace segmentation evaluation is utilized by many groups as a natural method to goal market choice. The marketplace segmentation procedure is taken into consideration to divide procedure companies examine aid of evaluating the recognized segments. This was delivered as an essential management selection as many additives of the marketing method observe the marketplace segmentation problem [28]. Market segmentation goals thru cluster analysis screen four clusters that display a more regular photo based on traits consisting of food involvement and food-fitness attention, in addition to fish consumption conduct, threat and benefit ideals [43]. Forecast market segment leader price Market segment size map, time indicator capturing intrinsic trends in the Marg trod environment and student effect Company and type of courier dummies. A number of additional covariates have captured key strategic decisions that are [45]. Market segment division techniques through the years. The in keeping with five competing strength elements. There is ambiguity in pair comparisons, and this ambiguity is

designed the use of ambiguous ideas. To illustrate, an instance is illustrated by means of a case observe of the Iranian coffee market. The consequences show that the probabilities of success of the divisions may additionally range and that choosing the high-quality ones will assist the agencies to be confident in developing their commercial enterprise. Furthermore, converting the concern of techniques over the years take a look at the distinction between strategic priorities within the brief and long-time [32]. The markets of the market segment structure are generally divided by the formation of consumer groups with similar needs and preferences. Ideally, the categories differ in their product requirements or purchase responses (Cotter & Armstrong). The market segment is used to better understand the intentions of the consumer and to facilitate the design of marketing plans. Socioeconomic (or demographic) and psychological variables are two common criteria for market segmentation. Socio-economic variables include factors such as age, education level, race and gender. They may be the most commonly used variables in the market segment [35]. Consumer WTP for this form of wine highlights the actual capability for enlargement of this marketplace section, which can make contributions to extra environmental sustainability for the entire area via adopting cleaner manufacturing strategies. Furthermore, the adoption of greater sustainable practices at some point of the production section, however additionally within the higher (supply) and decrease (distribution) phases, as established, helps to lessen the environmental impact caused by traditional grape cultivation. It refers back to the broader vision of sustainability that encompasses all players within the supply chain. Furthermore, many of the facts displayed at the label highlights the need to define customer interest, targeting wineries and effective inexperienced marketing techniques, which encompass clean facts at the label and may appeal to consumers with extra environmental and health recognition [36]. Market segments. A randomly selected hollow sample (20 percent of the original sample) was used to estimate the discriminatory performance of each market segment, with 83 percent correctly classified). We feel confident in the identified market segments [37]. Derive higher returns from sales in HICs, while retrieving investments in products manufactured exclusively even though LICs offer severe discounted prices. Due to production costs and the uniqueness new vaccines for GAVI continue to be offered at lower prices by the manufacturer [38]. Market segments that use 15-passenger vans, as well as some segments of the market, which include the K-12 school system, spoke back based on kingdom laws passed as soon as the tips were made. For instance, the kingdom of Tennessee surpassed a regulation in 2002 that required vehicles transporting students to public college to satisfy college bus production requirements; In addition, a few marketplace segments, such as church organizations, have refused to put in writing 15-passenger vehicles via insurance organizations, and lots of nation universities have replied by using disposing of 15-passenger vans from their fleet. Unfortunately, there are no methods for analyzing twist of fate facts based on organization kind or using revel in, besides for unintentional examples of 15-passenger injuries involving particular market segments [40]. Market segment with minimum overall design price. In the proposed version, customer satisfaction is expressed as a characteristic of satisfactory, considering the client conduct of the goal marketplace phase. Furthermore, the proposed version permits the NPD panel to set the minimal layout first-rate stage this is completed for every CR and / or every DR, making the design process more flexible. A numerical example was furnished to demonstrate the feasibility and applicability of the proposed method [42]. Demographics, psychology, behavior, and geography are considered to be The four main types of market segmentation are, but there are many that you can use There are strategies, of which there are four main ones There are many variations in the types. Here are more methods to choose from check out. Act or process of competition: Competition: etc. a: Attempt by two or more parties to protect third-party business by providing the most favorable terms to contractors competing for a contract to build a new school. Technical factors include production techniques Information and communication resources, manufacturing Logistics, Marketing and E-Commerce Technologies include How does a company with its products Acts, sells, communicates Collects insights about, and deals with customers, suppliers and competitors. Therefore, that is Socio Economic or political sectors. Economic factors affect the economy, including laws, policies, wages and government actions, and are directly related to business No, but investing in the future affects value.

3. DEMATEL

The DEMATEL method can Specific problem, pinup Bound problems, and structural modeling techniques that can contribute to identifying solutions that can work through a hierarchical structure, identifying the interdependence between the components of an organization for a reason, and influencing the fundamental Concept of situational relations and Due to the influence of the elements The chart uses a lot the directional graphs [4]. Built on the basic principle of DEMATEL, it executes Issues by visualization method Analyses and solves. Modeling this structure Approach adopts the form of a driven diagram, which is a causal effect for presenting values of influence between interrelated relationships and factors. By analyzing the visual relationship of conditions between systemic Factors, all components A causal group and a The effect is divided into groups. It also provides researchers with Structure between system components Better understanding of the relationship and complexity for troubleshooting computer problems can find ways [12]. The DEMATEL system is integrated Emergency management together Manage. In the manner proposed, it is not necessary to defuzzify obscure numbers before using the DEMATEL method. Therefore, this method is uncertain of evaluation Will truly reflect the character. Finally, to get the final results from different aspects Twice in each integrated PPA We use DEMATEL, which is ours [5]. Decision Testing and Assessment Laboratory (DEMATEL). The DEMATEL method is a powerful method gathering team knowledge to build a structured model and visualizing the causal relationship of subsystems. But crisp values the ambiguity of the real world is adequate reflection [1]. DEMATEL explores the interdependence between equity the amount of investment factors and factors and ANP to assess their dependencies Integrates. This section is, first of all, DEMATEL Establishes network relationships through, secondly, for each factor ANP to increase weight compared to Uses. Third, systematic data collection process is provided [25]. The DEMATEL method effectively calculates the consequences between criteria, which efficiently

separates the set of complicated elements right into a sender organization and a recipient institution and transforms it right technique to choosing a management gadget Between alternate configurations Explicit Priority Weights come from in addition, the ZOGP model allows companies to make full use of limited resources for planning to implement optimal management systems [23]. This influence and causal Group barriers pro or Source for affected group barriers Can be considered due. Therefore, in order to effectively implement electronic waste management, barriers belonging to a causal or an influential group should be considered on a priority basis. Therefore, decision makers need to determine obstacles The legal framework is strong Make sure there is controllable in order to minimize impact or influence barriers. Therefore, derived from ISM and DEMATEL methods the results are somewhat consistent. Integrated ISM DEMATEL Results for e-waste management constraints determines not only the structure but also the structure the interactions between these barriers [28]. DEMATEL studies, specific purpose for which DEMATEL is used. According to the unique application of the DEMATEL method, current classical DEMATEL research can be classified into three types: first type that only clarifies the relationships between factors or criteria; The second type is to identify the main factors in terms of causal relationships and the extent of the relationship between them; The third type determines criterion weights by analyzing the relationships and impact levels of the criteria [3]. Accordingly, the preliminary drawback (cluster one) became about topics including the comparative weights of selection makers in the DEMATEL approach who did now not well bear in mind linking to the team decision making. Obviously, in a group decision-making hassle, regular decision-makers can always trust their factor of view and count on it to be prevalent via other selection-makers. This way that very last evaluation guides must be close to their judgments, and if the very last assessment effects are near their critiques, the choice maker is willing to simply accept it; otherwise, they may deny it. It is believed that a significant purpose for the aforementioned discrepancies lies in methods based on unstructured comparisons such as DEMATEL [14]. DEMATEL is widely accepted for analyzing the overall types. Therefore, this article considers each source as a criterion in decision making. Based on DEMATEL, the significance and level of significance of each piece of evidence can to deal with a mixture of conflicting evidence, it is necessary to expand the DEMATEL method with the source theory for better conclusions. In this article, instead of the comparative criteria provided by the experts in DEMATEL [7], the corresponding propositions between the bodies of sources are changed. The DEMATEL technique used the as well as creating causal relationships between criteria for evaluating the Integrated Multiple Scale Decision Making (MCDM) Outreach Personnel Program. Integrates DEMATEL and a new cluster-weighted system In which DEMATEL system is a company The reason for the complexity between the criteria This is to measure the influence of criteria. Buyukozkan and Ozturkcan integrated ANP and DEMATEL an innovation in terms of technology Have developed an approach, which is for companies Helps determine important Six Sigma Projects and logistics specifically prioritize these projects Helps to identify in companies [2].

4. Analysis and Discussion

Table 1 show that DEMATEL Decision making trail and evaluation laboratory in Market segment evaluation with respect to Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors. and Figure 1 shows the DEMATEL decision-making and evaluation laboratory in the market segment evaluation of segmentation factors, competition, technical factors, socio-political factors, financial and economic factors. It considers market segmentation and comparison of demographic, psychographic, behavioral and geographic segments. The act or process of a competing contest such as two or more parties acting independently. Technological factors include production techniques, information and Communication resources, manufacturing, logistics marketing and e-commerce technologies including So, socio-political factors here as "factors with a significant social dimension" can be defined. Interest rates, tax rates, laws, Policies, Wages and Government Activities Economic factors affect the economy including.

TABLE 1. Market Segment Evaluation

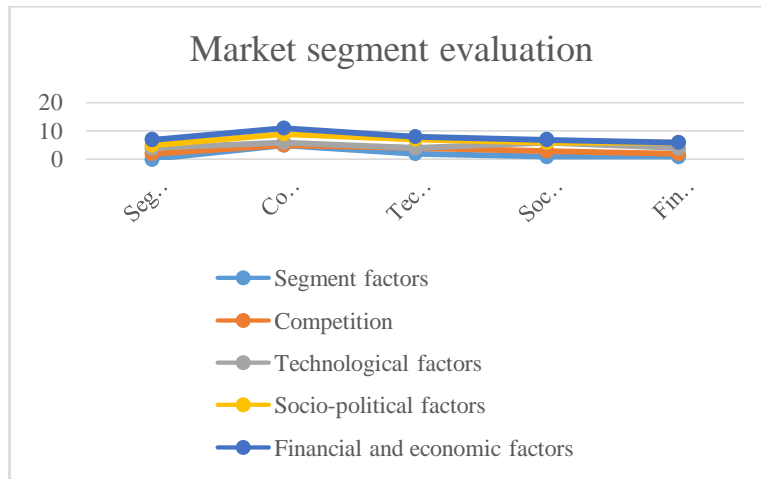|	Segment factors	Competition	Technological factors	Socio-political factors	Financial and economic factors	Sum
Segment factors	0	5	2	1	1	9
Competition	2	0	2	2	1	7
Technological factors	2	1	0	3	2	8
Socio-political factors	1	3	3	0	2	9
Financial and economic factors	2	2	1	1	0	6

FIGURE 1. Market Segment Evaluation

TABLE 2. Normalisation of direct relation matrix

	Segment factors	Competition	Technological factors	Socio-political factors	Financial and economic factors
Segment factors	0	0.555555556	0.22222222	0.111111111	0.111111111
Competition	0.222222222	0	0.22222222	0.222222222	0.111111111
Technological factors	0.222222222	0.111111111	0	0.333333333	0.222222222
Socio-political factors	0.111111111	0.333333333	0.33333333	0	0.222222222
Financial and economic factors	0.222222222	0.222222222	0.11111111	0.111111111	0

Table 2 shows that the Normalizing direct relation matrix in Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors with respect to Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors. The diagonal value of all the data set is zero.

TABLE 3. Calculate the total relation matrix

	Segment factors	Competition	Technological factors	Socio-political factors	Financial and economic factors
Segment factors	0	0.55556	0.22222	0.11111	0.111111
Competition	0.222222222	0	0.22222	0.22222	0.111111
Technological factors	0.222222222	0.11111	0	0.33333	0.222222
Socio-political factors	0.111111111	0.33333	0.33333	0	0.222222
Financial and economic factors	0.222222222	0.22222	0.11111	0.11111	0

Table 3Shows the Calculate the total relation matrix in Market Segment Evaluation. Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors.

TABLE 4. T= Y (I-Y)-1, I= Identity matrix

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

Table 4Shows theT= Y(I-Y)-1, I= Identity matrix in Market Segment Evaluation. Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors are the common Value.

TABLE 5. Y Value

0	0.555556	0.222222	0.111111	0.111111
0.222222	0	0.222222	0.222222	0.111111
0.222222	0.111111	0	0.333333	0.222222
0.111111	0.333333	0.333333	0	0.222222
0.222222	0.222222	0.111111	0.111111	0

Table 5Shows the Y Value in Market Segment Evaluation is Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors is the Calculate the total relation matrix Value and Y Value is the same value.

TABLE 6. I-Y Value

1	-0.55556	-0.22222	-0.11111	-0.11111
-0.22222	1	-0.22222	-0.22222	-0.11111
-0.22222	-0.11111	1	-0.33333	-0.22222
-0.11111	-0.33333	-0.33333	1	-0.22222
-0.22222	-0.22222	-0.11111	-0.11111	1

Table 6Shows the I-Y Value Market Segment Evaluation is Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors table 4 T= Y(I-Y)-1, I= Identity matrix and table 5 Y Value Subtraction Value.

TABLE 7. (I-Y)-1Value

2.193730187	2.078549	1.517436	1.334625	1.108489
1.172948221	2.411941	1.305565	1.20782	0.956851
1.277562522	1.674357	2.244981	1.388517	1.135435
1.290243043	1.903135	1.586122	2.228602	1.202536
1.033462487	1.395386	1.053012	0.96689	1.718739

Table 7 Shows the (I-Y)-1Value Market Segment Evaluation Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors Table 6 shown the Inverse Value.

TABLE 8. Total Relation matrix (T)

1.193730187	2.078549	1.517436	1.334625	1.108489
1.172948221	1.411941	1.305565	1.20782	0.956851
1.277562522	1.674357	1.244981	1.388517	1.135435
1.290243043	1.903135	1.586122	1.228602	1.202536
1.033462487	1.395386	1.053012	0.96689	0.718739

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. Market Segment Evaluation Ri, Ci

	Ri	Ci
Segment factors	7.232828	5.967946
Competition	6.055125	8.463367
Technological factors	6.720852	6.707115
Socio-political factors	7.210638	6.126453
Financial and economic factors	5.167489	5.12205

Table 9 shows the Market Segment Evaluation Ri, Ci Value in Segment factors is showing the Highest Value for Ri and Financial and economic factors is showing the lowest value. Competition is showing the Highest Value for Ci and Financial and economic factors are showing the lowest value.

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

	Ri+Ci	Ri-Ci	Rank	Identity
Segment factors	13.20077	1.264882	4	cause
Competition	14.51849	-2.40824	1	effect
Technological factors	13.42797	0.013737	2	cause
Socio-political factors	13.33709	1.084185	3	cause
Financial and economic factors	10.28954	0.045439	5	cause

Table 10 shows the Calculation of Ri+Ci and Ri-Ci to Get the Cause and Effect. Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors. Competitions showing the highest Value of Effect. Segment factors, Technological factors, Socio-political factors, Financial and economic factors is Showing the lowest Value of Cause.
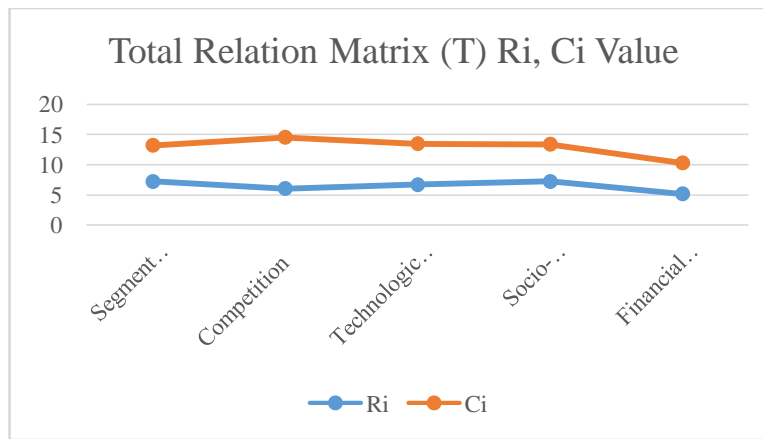

FIGURE 2. Total Relation Matrix (T) Ri, Ci Value.

Figure 2shows the Total Relation Matrix (T) Ri, Ci Value Market Segment Evaluation of Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors. Competition showing the highest value for Total Relation Matrix (T) Ri, Ci Value and Financial and economic factors is showing the lowest value.

TABLE 11. T Matrix Value

1.19373	**2.078549**	**1.517436**	**1.334625**	1.108489
1.172948	**1.411941**	**1.305565**	1.20782	0.956851
1.277563	**1.674357**	1.244981	**1.388517**	1.135435
1.290243	**1.903135**	**1.586122**	1.228602	1.202536
1.033462	**1.395386**	1.053012	0.96689	0.718739

Table 11shows the T Matrix Value calculate the average of the matrix and its threshold value (alpha) **Alpha 1.295477281** If the T Matrix value is greater than threshold value then bold it
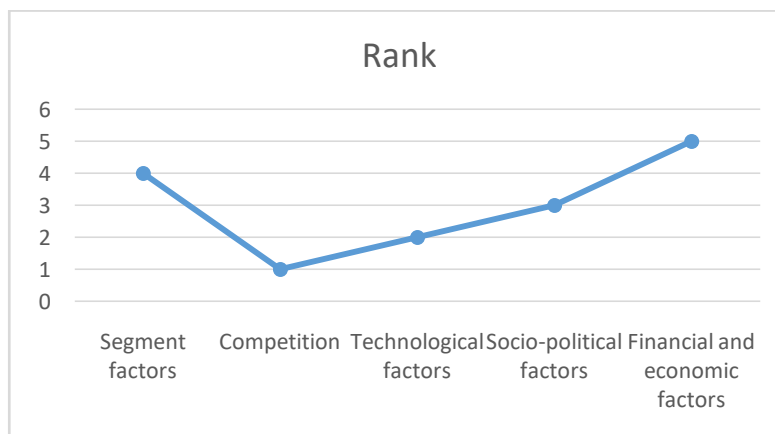

FIGURE 3. Shown the Rank

Figure 3shows the Rank using the DEMATEL for Market Segment Evaluation. Competition is got the first rank whereas is the Financial and economic factors is having the Lowest rank.

5. Conclusion

The market segment assessment and selection (MSE / MSS) problem usually involves some possible alternatives, which should be evaluated according to some possible criteria. Therefore, the MSE / MSS problem can be seen as a multi-scale decision making (MCDM) problem. Transport location selection MCDM approaches can be very effective in many areas of engineering and management such as tourism The DEMATEL method can use structural modeling techniques that can contribute to the identification of solutions to specific problem, binding problems, and functionalities within a hierarchical structure, identifying the interdependence between components of an organization for a reason, and affecting the underlying concept of contextual relationships. The chart makes more use of directional maps due to the influence of the elements [4]. It is based on the basic principle of DEMATEL, which executes and analyzes and solves problems through the visualization method. The modeling approach to this structure adopts the shape of a driven diagram, which is a causal effect of providing values of influence between interrelated relationships and factors. In this paper we used DEMATEL for ranking the DEMATEL method is the most ideal solution Short-distance Evaluation Parameters in Segment factors, Competition, Technological factors, Socio-political factors, Financial and economic factors Use Attention deficit from the result it is seen that Competition is got the first rank whereas is the Financial and economic factors is having the Lowest rank.

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