



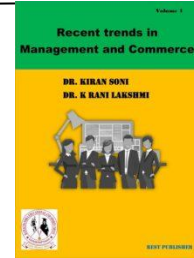
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# Market Segment Evaluation and Selection Based on the Application of the DEMATEL Method

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**Abstract.** The analysis and choice of market segmentation is one of the most crucial marketing considerations for all businesses. For many businesses, choosing a target market is one of the most crucial marketing choices. The market mix, purchasing, and distribution strategies, as well as other commercial concerns, are also impacted by this decision. Based on the findings of the market segmentation re-view, a solid target market is chosen, taking into account a variety of elements such segment size, the presence of competitors, risk, and profitability. This article examines the characteristics of industrial markets in relation to a few important segmentation models. To better understand varied market scenarios, we design a scale with simple market transactions at one end and extensive relationship management at the other. Consumer preferences for product safety and other features are used to create market niches for new products. Conjoint analysis and DEMATEL methods were used to establish market categories and ascertain consumer preferences. An analytical hierarchical process DEMATEL approach to market segmentation evaluation and selection is presented in this study. The DEMATEL technique is recommended to rank market sectors from best to worst, and it is used to establish the weight of each criterion. Five important areas share segmentation change factors: a segmentation factor, competitive, Technological, sociopolitical, and financial and economic variables are used as evaluation criteria. Graphs are used to display the results. In conclusion, we can infer information about a company's relative capacity for innovation within a certain market sector. In the final ranking, Technological factors is in first place while Competition is in last place. The findings demonstrate that the success potential of segments might vary, and that selecting the best can support businesses' commitment to growing their operations. Future research and the selection of market segments can both benefit from using this study as a model.

**Keywords:** market segmentation, market segment evaluation, market segment selection, DEMATEL method

## Introduction

When assessing different market segments, a company should take into account three factors: corporate objectives and resources, Size, growth, and appeal of the segment's structural composition. The company should first gather and analyse information on existing segment sales, segment growth rates, and segment anticipated profitability. The topic of "right size and growth" is connected. The largest, fastest-growing segments may not always be the most desired to an organisation. Smaller businesses may discover that they lack the capabilities and resources necessary to cater to more extensive markets, or that these markets are extremely competitive. Segment Structural Attractiveness: The business needs to investigate a number of important structural factors that have a long-term impact on the segment's allure. A segment's appeal is reduced by the following three elements: (1) The market is already crowded with strong and fierce competitors. (2) Buyers in the market have more negotiating power than sellers. (3) The market has strong suppliers. Resources and Organizational Goals: The organisation should take into account its own goals and resources in connection to the segment. If certain lucrative industries don't align with the company's long-term objectives, they could be quickly ignored. Disney, for instance, refrained from entering the gaming industry. The practise of conducting in-depth study on a certain market is known as market analysis. To determine whether a new product would succeed, businesses frequently use market analysis, has a chance of succeeding or whether it needs to be changed before going on sale to customers. By giving information about how a market is performing and which companies are succeeding in it, A company can assess whether it is lucrative to enter a new market with the use of market analysis. Researching the market, looking at competition and demographic data, and contrasting a company's financial information with that of other companies in the market are all steps in the process of conducting a market analysis. Companies might benefit from market analysis since it can help them make better business and marketing decisions in the future. For instance, market analysis can assist a business decide what needs to be done to ensure that the launch of a new product into a present market results in a successful product that consumers find appealing. For businesses wanting to expand into new markets, marketing analysis is crucial since it can show executives how well their company is doing based on data from rivals. The division of large markets into groups with comparable wants and preferences is known as market segmentation. Businesses must "(1) identify segments of industry need, (2) target specific segments of demand, and (3) construct specific "marketing mixes" for each target market group" if they want to gain a competitive advantage and produce superior results. The idea behind segmentation in finance is that demand heterogeneity makes it possible to divide demand into segments with different demand functions. Market segmen-

tation is now a crucial component of marketing in developed nations and in the operation of every company. Any customer subgroup can be chosen as a target market that can be served by a specific marketing mix thanks to market segmentation, which is defined as the division of a market into separate subgroups of customers. In other words, market segmentation facilitates the discovery of analogous niche markets, aiding marketers in identifying marketing possibilities and more effectively guiding the creation of goods and services. Smith was the first to bring up market segmentation in academic marketing literature (1956), but it is still a key area of study and practise for marketers today. In the twenty-first century, mass marketing either won't exist or will be extinct. Compared to mass marketing, market segmentation has various benefits. First of all, by better satisfying client wants, it consistently enables any company to identify a favourable opportunity to grow its own market. Second, it boosts the company's profitability or efficiency to the point where the financial gains for customers outweigh the expense of the separation procedure. Third, a better understanding of the market for a product's actual position in the market, Marketing segment analysis is critical for a number of reasons, including selecting the right target markets, identifying market opportunities, and establishing a competitive edge through product differentiation. Because it comes before all other elements of a marketing plan, market segmentation evaluation is an important management decision. Every business must initially assess and select a target market or markets. Additionally, market segmentation analysis aids in market targeting and is therefore crucial to increase the likelihood of success in a cutthroat market. Even though most of the marketing literature has provided a variety of market segmentation methodologies, a scan of academic research reveals that prior studies have largely ignored segmentation evaluation and selection. The majority of the current research offer just one model or method for evaluating a segment's attractiveness while also suggesting some basic criteria for doing so. Due to the numerous alternatives, competing goals, and various considerations, selecting a suitable market segment based on segmentation evaluation is one of the most challenging and time-consuming tasks for many businesses. Decisions regarding market segmentation evaluation and selection are made more difficult by the need to take into account a number of factors. In light of this, selecting and analysing market segments can be thought of as a decision-making problem with a number of different criteria (MCDM). As a result, the main goal of this work is to suggest a procedure for selecting and evaluating market segments.

### **Material and Methods**

It is decided to use a real-world example scenario in a chair manufacturing company to demonstrate how the suggested approach might be used. One of the well-known names in India's chair manufacturing business and the chosen company is Royal Company. A significant manufacturer, Royal Company is a market leader in India's chair manufacturing sector. It is decided to use a real-world example scenario in a chair manufacturing company to demonstrate how the suggested approach might be used. Royal is one of the well-known brands in the Indian chair manufacturing sector and the selected company. It is decided to use a real-world example scenario in a chair manufacturing company to demonstrate how the suggested approach might be used. Royal is one of the well-known brands in the Indian chair manufacturing sector and the selected company. In India's chair manufacturing industry, Royal Company, a leading manufacturer, is the market leader. Royal now offers more than 50 styles of executive, administrative, and medical chairs based on user requirements and ergonomic standards. The demand for several office chair models has been steadily increasing in recent years. As a result, it was corporate policy to carry out marketing research to enhance its design procedure based on significant client preferences for office chairs. Three segments—designated SEG1, SEG 2, and SEG 3—were recently identified by this market research endeavor. Additionally, the business must assess and choose the acquired market segments in order to carry out subsequent marketing initiatives. As a result, the project team was expanded to include two industrial engineers who work for the company, an R&D manager, a marketing manager, a sales manager, and others. At this point, the business should assess the segments and decide on just one. It was really challenging to evaluate all of the criteria because there were so many of them. As a result, the project team decided to select specific evaluation standards. Additionally, they had to take into account the state of their business, future plans, rivals, etc. Use a 1–5 numerical scale to condense the list of criteria and choose the most logical ones. Then, based on the geometric mean of each criterion across all questionnaires, the ranking of each criterion was determined. Finally, five criteria were selected for analysis based on these rankings. The five criteria include competitive, socio-political, financial and economic, technology, and segmentation issues. Additionally, the planning committee chose each criterion based on the market situation in India. The business is a significant producer and an established pioneer in India's chair manufacturing sector. Currently, Royal Company provides more than 50 kinds of executive, administrative, and medical chairs based on user needs and ergonomic guidelines. The demand for several office chair models has been steadily increasing in recent years. The business's strategy was to carry out marketing research in order to enhance its design procedure based on the most important client preferences for office chairs. Three segments—designated SEG1, SEG 2, and SEG 3—were recently identified by this market research endeavour. In order to carry out other marketing initiatives, the corporation must also assess and choose the market sectors it buys. An R&D manager, a marketing manager, a sales manager, and two industrial engineers who work for the company were therefore included on the project team. At this point, the business should assess the segments and decide on just one. There were a lot of criteria, and each examination was really challenging. The complexity of economic decisions has expanded significantly over the past few decades, emphasising the significance of creating and utilising sophisticated and effective quantitative analysis approaches to support and facilitate economic decision making (Zavadskas, Turskis 2011). Operations research's advanced discipline of multi-criteria decision making (MCDM) offers decision makers and analysts a wide range of approaches that are highly applicable and pertinent to the complexity of economic decision-making challenges. In this article, we suggested an integrated DEMATEL methodological approach for selecting and evaluating market segments. Evaluation standards for choosing and evaluating market segments The relevant decision makers (DMs) are contacted in accordance with these criteria in order to get the information required for the comparisons. Following the construction of the assessment criteria hierarchy, the

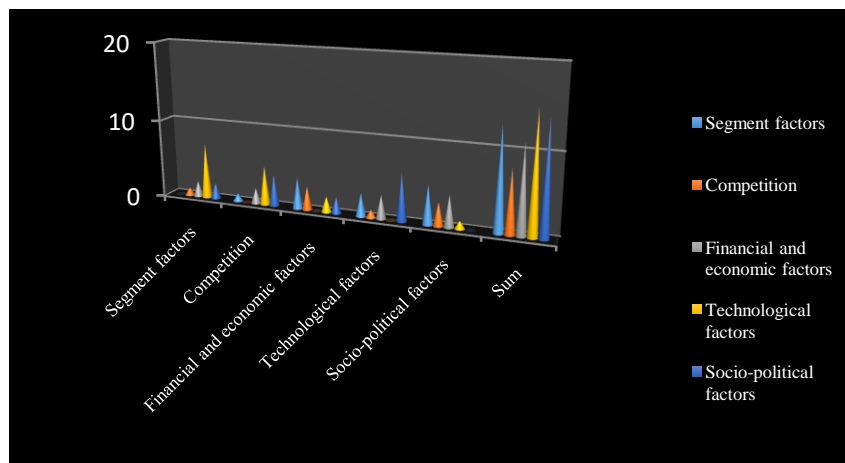
criteria weights are determined using the DEMATEL approach. The DEMATEL technique is then utilised to determine the final ranking results. The following subsections provide in-depth explanations of the important steps. The DEMATEL method is a particular problem, pin-up binding work through problems and structural modelling techniques contribute to identifying solutions that a hierarchical system can work on, relationships between dependencies and the fundamental idea of situational relationships that identify system components for a reason can influence the impact of factors. Management and emergency response are connected with the DEMATEL system. It is not necessary to decompose the fuzzy numbers in the suggested way before using the DEMATEL algorithm [12]. It usevisualisation method analysis to analyse and resolve issues and is based on the fundamental DEMATEL principle. In this organised approach, modelling takes the shape of a motivating diagram, which shows the causal relationship and its importance in illustrating how various components interact. All elements are a causal group and are split into effect groups by looking at the visual relationship of conditions between systematic factors. It offers structure between computer components, a clearer knowledge of the relationship, and the ability to come up with sophisticated solutions to computer issues [13]. The DEMATEL method changes the appropriate method for selecting a management device among many configurations, effectively calculates inter-criteria impacts, divides a set of complex components into a sender organisation and a receiver organisation. The zogp model enables firms to plan the adoption of ideal management systems while making the most of their limited resources [14]. To reduce the impact or affect the constraints, decision-makers must ascertain the limitations of the legal framework and guarantee that it is controlled. As a result, there is considerable consistency between the outcomes of the DEMATEL and ism techniques. The structure of these constraints' interconnections is determined by integrated ism DEMATEL results for e-waste management constraints [15].

**Analysis and Discussion**

**TABLE 1**market segmentation evaluation data set

|                                       | Segment factors | Competition | Financial and economic factors | Technological factors | Socio-political factors | Sum |
|---------------------------------------|-----------------|-------------|--------------------------------|-----------------------|-------------------------|-----|
| <b>Segment factors</b>                | 0               | 1           | 4                              | 3                     | 5                       | 13  |
| <b>Competition</b>                    | 1               | 0           | 3                              | 1                     | 3                       | 8   |
| <b>Financial and economic factors</b> | 2               | 2           | 0                              | 3                     | 4                       | 11  |
| <b>Technological factors</b>          | 7               | 5           | 2                              | 0                     | 1                       | 15  |
| <b>Socio-political factors</b>        | 2               | 4           | 2                              | 6                     | 0                       | 14  |

Table 1 presents DEMATEL's market segmentation assessment's segmentation factors, competition, financial and economic elements, technological considerations, and sociopolitical aspects. The total value of all parameters with high values is 15 as seen in Table 1.



**FIGURE 1** Shows the chart of market segmentation evaluation.

Figure 1 depicts DEMATEL's market segmentation assessment's segmentation factors, competition, financial and economic factors, technological factors and socio-political factors.

**TABLE 2** Normalization of direct relation matrix

|                                       | Segment factors | Competition | Financial and economic factors | Technological factors | Socio-political factors |
|---------------------------------------|-----------------|-------------|--------------------------------|-----------------------|-------------------------|
| <b>Segment factors</b>                | 0               | 0.066666667 | 0.266666667                    | 0.2                   | 0.333333333             |
| <b>Competition</b>                    | 0.066666667     | 0           | 0.2                            | 0.066666667           | 0.2                     |
| <b>Financial and economic factors</b> | 0.133333333     | 0.133333333 | 0                              | 0.2                   | 0.266666667             |
| <b>Technological factors</b>          | 0.466666667     | 0.333333333 | 0.133333333                    | 0                     | 0.066666667             |

|                                |             |             |             |     |   |
|--------------------------------|-------------|-------------|-------------|-----|---|
| <b>Socio-political factors</b> | 0.133333333 | 0.266666667 | 0.133333333 | 0.4 | 0 |
|--------------------------------|-------------|-------------|-------------|-----|---|

Table 2 shows the normalized direct correlation matrix for the market segmentation estimation. Figure 2 shows that the diagonal values of the data are all zero seen in figure 2. Table 2 is taken as Y value.

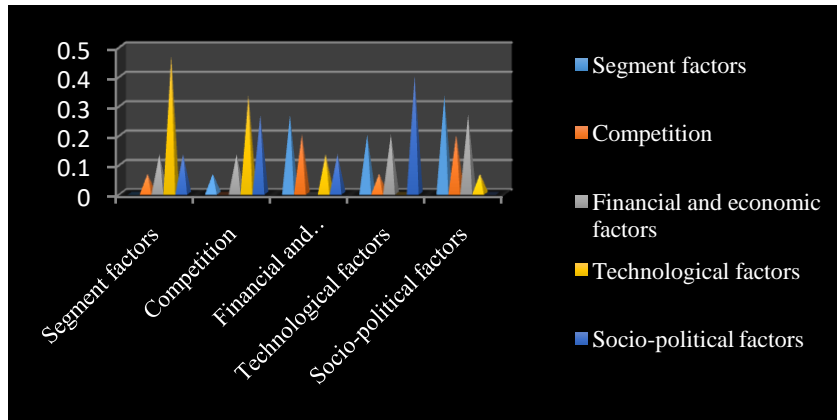


FIGURE 2 Normalization of direct relation matrix

TABLE 3 I= Identity matrix

|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 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 3 given that the Identity matrix the matrix diagonal line got values one other values is zero.

TABLE 4 I-Y value

|                                       |          |          |          |          |          |
|---------------------------------------|----------|----------|----------|----------|----------|
| <b>Segment factors</b>                |          | -0.06667 | -0.26667 | -0.2     | -0.33333 |
| <b>Competition</b>                    | -0.06667 |          | -0.2     | -0.06667 | -0.2     |
| <b>Financial and economic factors</b> | -0.13333 | -0.13333 |          | -0.2     | -0.26667 |
| <b>Technological factors</b>          | -0.46667 | -0.33333 | -0.13333 |          | -0.06667 |
| <b>Socio-political factors</b>        | -0.13333 | -0.26667 | -0.13333 | -0.4     |          |

Table 4calculated the I-Y value. All values are negative but diagonal line values are positive values.

TABLE 5 (I-Y)-1 value

|                                       |             |          |          |          |          |
|---------------------------------------|-------------|----------|----------|----------|----------|
| <b>Segment factors</b>                | 1.837730412 | 0.906806 | 0.963669 | 1.069623 | 1.122225 |
| <b>Competition</b>                    | 0.570288629 | 1.517861 | 0.632618 | 0.623341 | 0.703923 |
| <b>Financial and economic factors</b> | 0.832291451 | 0.834297 | 1.638107 | 0.926863 | 0.942909 |
| <b>Technological factors</b>          | 1.225220467 | 1.112497 | 0.938396 | 1.910289 | 1.008498 |
| <b>Socio-political factors</b>        | 0.99816807  | 1.081909 | 0.89096  | 1.196538 | 1.866463 |

Table 5 calculated the (I-Y)-1 value.

TABLE 6 total Relation matrixes (T)

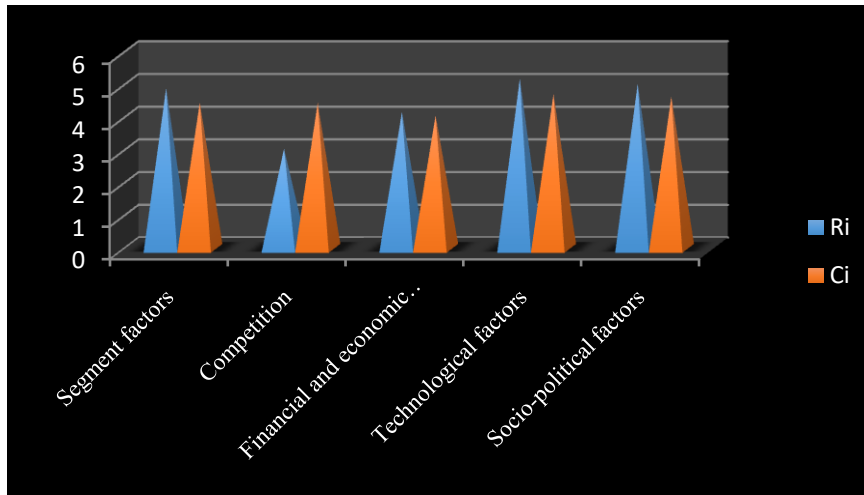
|                                       |             |          |          |          |          |
|---------------------------------------|-------------|----------|----------|----------|----------|
| <b>Segment factors</b>                | 0.837730412 | 0.906806 | 0.963669 | 1.069623 | 1.122225 |
| <b>Competition</b>                    | 0.570288629 | 0.517861 | 0.632618 | 0.623341 | 0.703923 |
| <b>Financial and economic factors</b> | 0.832291451 | 0.834297 | 0.638107 | 0.926863 | 0.942909 |
| <b>Technological factors</b>          | 1.225220467 | 1.112497 | 0.938396 | 0.910289 | 1.008498 |
| <b>Socio-political factors</b>        | 0.99816807  | 1.081909 | 0.89096  | 1.196538 | 0.866463 |

Table 6 shows the total correlation matrix, the direct correlation matrix, multiplied by the inverse of the identity matrix's value after the direct correlation matrix value has been subtracted.

**TABLE 7 Ri and Ci**

|                                       | <b>Ri</b> | <b>Ci</b> |
|---------------------------------------|-----------|-----------|
| <b>Segment factors</b>                | 4.900053  | 4.463699  |
| <b>Competition</b>                    | 3.048031  | 4.453369  |
| <b>Financial and economic factors</b> | 4.174468  | 4.06375   |
| <b>Technological factors</b>          | 5.1949    | 4.726655  |
| <b>Socio-political factors</b>        | 5.034038  | 4.644017  |

Table 7 shows the positive values and negative values. All values are positive values seen in figure 3.

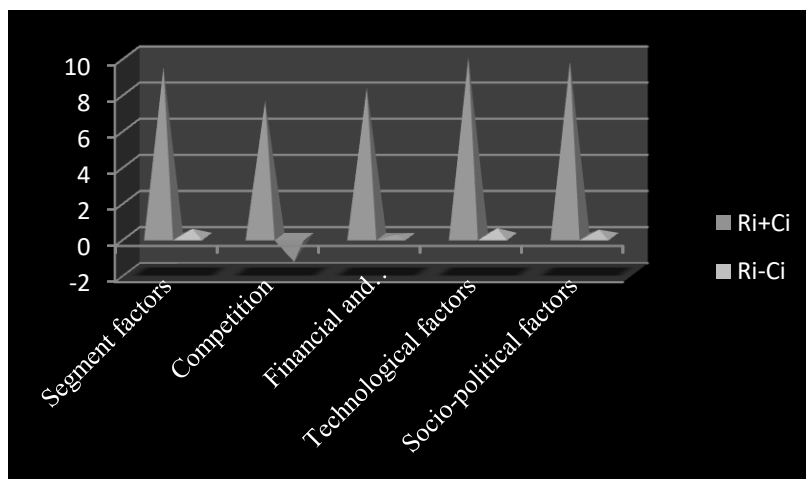


**FIGURE 3 Ri and Ci values**

**TABLE 8. Ri+Ci, Ri-Ci and Identity**

|                                       | <b>Ri+Ci</b> | <b>Ri-Ci</b> | <b>Identity</b> |
|---------------------------------------|--------------|--------------|-----------------|
| <b>Segment factors</b>                | 9.363752     | 0.436354     | cause           |
| <b>Competition</b>                    | 7.501401     | -1.40534     | effect          |
| <b>Financial and economic factors</b> | 8.238218     | 0.110718     | cause           |
| <b>Technological factors</b>          | 9.921555     | 0.468245     | cause           |
| <b>Socio-political factors</b>        | 9.678055     | 0.390021     | cause           |

Table 8 shows in Ri+Ci, Ri-Ci and Identity values seen in figure 4. Identity values are Ri-Ci in negative and positive value. Negative values are effect positive values are cause.

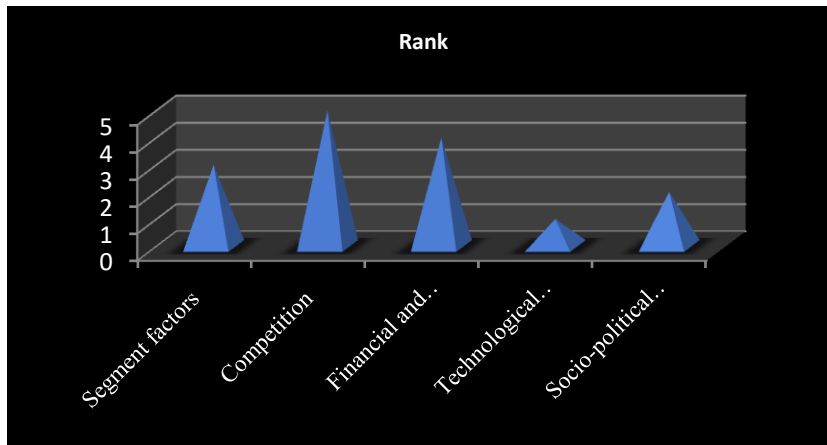


**FIGURE 4.** graphs is shows in Ri+Ci values and Ri-Ci values

**TABLE 9.**Ranking

|                                       |   |
|---------------------------------------|---|
| <b>Segment factors</b>                | 3 |
| <b>Competition</b>                    | 5 |
| <b>Financial and economic factors</b> | 4 |
| <b>Technological factors</b>          | 1 |
| <b>Socio-political factors</b>        | 2 |

Table 9 given ranking Technological factors for a first rank ,Socio-political factors for a second rank, Segment factors for a third rank, Financial and economic factorsfor a fourth rank, and Competition for a fifth rankseen in figure 5.



**FIGURE 5.**graph is shows in ranking.

**Conclusion**

As the market climate gets more and more competitive, businesses must make intelligent decisions when it comes to marketing-related matters. Market segmentation evaluation and selection is one of the key concerns. For all firms, evaluating and choosing market segments is an essential managerial marketing task. By allowing a company to choose its target segment or segments, it is able to focus its competitive advantages, assets, opportunities, and marketing strategies on successfully meeting the needs and wants of its target market. In this study, a DEMATAL-based MCDM technique for choosing the best market segment is proposed. The DEMATAL technique is recommended to rank market sectors from best to worst, and it is used to calculate the weight of each criterion. This application demonstrated how effectively the model can be used to assess and choose segments. The model proposed in this study can be implemented to the decision-making process with just minor alterations; however, it is only relevant to the assessment and choice of market segments. In the final ranking, Technological factors are in first place while Competition is in last place.

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