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The Evaluation of Marketing Performance of Airline Companies with AHP and TOPSIS Methods

Mehmet Etlioğlu [1]

Abstract

Marketing performance is a critical success factor in achieving sustainable profitability and competitive advantage for airline companies in the global competitive environment. Increasing competition in the sector and diversification of consumer expectations have made the effectiveness of marketing strategies dependent not only on traditional product/service, price, place and promotion elements but also on comprehensive criteria such as digital marketing, brand positioning, technology and innovation management and customer experience. In addition, the importance of digitalization and customer-oriented strategies in achieving competitive advantage is gradually increasing. In the literature, studies conducted using multi-criteria decision-making techniques in airline companies generally focus on basic performance indicators, financial and service quality. In this context, it is evaluated that the study will contribute to the literature and sector practitioners by evaluating the marketing performances of airline companies with multi-criteria decision-making techniques, AHP and TOPSIS. In this context, it has become mandatory for airline companies to evaluate their marketing strategies with multi-dimensional and analytical approaches for sustainable success. The aim of the study is to evaluate the prioritization of marketing strategies in the airline sector systematically and comprehensively with multi-criteria decision-making methods. In line with this purpose, considering the limitations in the literature, the weights and importance rankings of basic marketing criteria were determined with the AHP method; Then, the marketing performances of four airline companies operating in Türkiye were compared using the TOPSIS method. The analysis results revealed that pricing (0.232), product/service quality (0.206) and digital marketing (0.113) were the most critical criteria. Technology and innovation management (0.111) also has an important place in competitive strategies. In the TOPSIS analysis, Airline A showed the highest performance in the areas of product/service, place, promotion, digital marketing, brand positioning, customer experience and technology-innovation. Airline B ranked second, and Airlines C and D ranked third. These findings provide significant contributions to airline companies in making their marketing strategies more effective and efficient and thus achieving competitive advantage.

Keywords: Marketing Performance, Airline Companies, AHP, TOPSIS, Multi-Criteria Decision-Making Methods

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Havayolu Şirketleri Pazarlama Performanslarının AHP ve TOPSIS Yöntemleri ile Değerlendirilmesi

Mehmet Etlioğlu[2]

Öz

Küresel rekabet ortamında havayolu şirketleri için pazarlama performansı sürdürülebilir karlılık ve rekabet avantajı elde etmede kritik bir başarı faktörüdür. Sektörde artan rekabet ve tüketici beklentilerinin çeşitlenmesi, pazarlama stratejilerinin etkinliğini sadece geleneksel ürün, fiyat, dağıtım ve tutundurma unsurlarına değil aynı zamanda dijital pazarlama, marka konumlandırma, teknoloji ve inovasyon yönetimi ve müşteri deneyimi gibi kapsamlı kriterlere de bağımlı hale getirmiştir. Ayrıca rekabet avantajı elde etmede dijitalleşmenin ve müşteri odaklı stratejilerin önemi giderek artmaktadır. Literatürde havayolu şirketlerinde çok kriterli karar verme teknikleri kullanılarak yapılan çalışmalar genellikle temel performans göstergeleri, finansal ve hizmet kalitesine odaklanmaktadır. Bu bağlamda çalışmanın havayolu şirketlerinin pazarlama performanslarını çok kriterli karar verme teknikleri, AHP ve TOPSIS ile değerlendirerek literatüre ve sektör uygulayıcılarına katkı sağlayacağı değerlendirilmektedir. Bu bağlamda havayolu şirketlerinin sürdürülebilir başarı için pazarlama stratejilerini çok boyutlu ve analitik yaklaşımlarla değerlendirmeleri zorunlu hale gelmiştir. Çalışmanın amacı, havayolu sektöründe pazarlama stratejilerinin önceliklendirilmesini çok kriterli karar verme yöntemleri ile sistematik ve kapsamlı bir şekilde değerlendirmektir. Bu amaç doğrultusunda literatürdeki kısıtlılıklar göz önünde bulundurularak temel pazarlama kriterlerinin ağırlıkları ve önem sıralamaları AHP yöntemi ile belirlenmiş; ardından Türkiye'de faaliyet gösteren dört havayolu işletmesinin pazarlama performansları TOPSIS yöntemi ile karşılaştırılmıştır. Analiz sonuçlarına göre en önemli kriterlerin fiyatlandırma (0,232), ürün/hizmet kalitesi (0,206) ve dijital pazarlama (0,113) olduğu ortaya çıkmıştır. Teknoloji ve inovasyon yönetimi (0,111) de rekabet stratejilerinde önemli bir yere sahiptir. TOPSIS analizinde Havayolu A, ürün, dağıtım, tutundurma, dijital pazarlama, marka konumlandırma, müşteri deneyimi ve teknoloji-inovasyon alanlarında en yüksek performansı göstermiştir. Havayolu B ikinci, Havayolu C ve D ise üçüncü sırada yer almıştır. Bu bulgular havayolu işletmelerinin pazarlama stratejilerini daha etkin ve verimli hale getirerek rekabet avantajı elde etmelerinde önemli katkılar sağlamaktadır.

Anahtar Kelimeler: Pazarlama Performansı, Havayolu Şirketleri, AHP, TOPSİS, Çok Kriterli Karar Verme Yöntemleri

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Introduction

Due to intense competition, service similarity and diversified customer expectations, marketing strategies are among the critical success factors in the airline industry. Marketing performance plays a decisive role in analyzing customer needs, creating loyalty and increasing market share (Alp, 2023, p. 137; Karaağaoğlu & Ülger, 2020, p. 186). The dynamic structure of the sector forces companies to constantly develop innovative and differentiating strategies (SHGM, 2020). Digital marketing, customer service and data-based applications have become the key to competitive advantage (Karaağaoğlu & Ülger, 2020, p. 199). In Türkiye, major players such as Turkish Airlines, Pegasus, AnadoluJet and SunExpress are constantly renewing their strategies in the fields of marketing mix, digitalization and innovation (THY, 2023b; Pegasus, 2025; Işılar, 2021, pp. 42-63). Turkish Airlines focus on global brand image and digital analysis; Pegasus focuses on low cost and digital investments; AnadoluJet focuses on regional prevalence; SunExpress focuses on tourism-focused campaigns (THY, 2023b; SunExpress, 2025). These strategies are constantly updated in line with digital transformation and aim to respond to customer expectations (Işılar, 2021, p. 60). As a result, success in marketing performance depends on the continuity of customer-focused, innovative and flexible strategies.

The marketing performance of airline companies is based on multidimensional and dynamic criteria such as product/service quality, pricing, place, promotion, digital marketing, brand positioning, customer experience and innovation management. However, in the literature, holistic analysis of these comprehensive criteria with Multi-Criteria Decision Making (MCDM) methods such as AHP and TOPSIS is limited; comparative performance analyses are insufficient, especially in the context of Türkiye. This situation points to a significant research gap in the prioritization, weighting and evaluation of the performances of companies accordingly. In this context, The research question of this study is defined "Which criteria determine the marketing performance of four airline companies operating in Türkiye and how do company strategies differ according to these priorities?" In seeking an answer to this question, the study relies on the MCDM approach in the marketing management literature and the extended marketing mix theory.

This study aims to contribute to airline companies gaining competitive advantage, developing strategies in line with customer expectations, and integrating digitalization and innovation into marketing processes by analyzing the multidimensional structure of marketing performance. Analyzing marketing criteria with scientific and systematic methods is also important in terms of efficiency in resource use and optimization of customer experience. The study expands the traditional 4P (product/service, place, price, promotion) framework and includes current criteria such as brand positioning, digital marketing, customer experience, and innovation management in the scope of the analysis. This expanded approach allows marketing strategies to be evaluated with multidimensional and current dynamics. As a result, the study analyzes the marketing performance of airline companies in Türkiye with AHP and TOPSIS methods, reveals the priority criteria and the best performing company; thus, it offers a methodological innovation to the literature and strategic guidance to the sector.

1. Literature Review

The literature review systematically evaluates studies that address marketing performance in the airline industry within an analytical framework. Marketing performance is defined by multidimensional criteria such as product/service quality, pricing, place, promotion, digital marketing, brand positioning, customer experience and technology-innovation, and the critical role of these elements in business success is emphasized. However, existing studies generally exhibit one-dimensional approaches and comprehensive analyses conducted with multi-criteria decision making (MCDM) methods are limited. In Türkiye, the lack of comparative and original marketing performance analyses reveals the research gap in this area.

This study uses AHP and TOPSIS methods in an integrated manner to determine the relative importance of marketing performance criteria and to compare airline companies. While AHP determines the weights of the criteria through pairwise comparisons (Saaty, 1980, p. 22); TOPSIS reveals the best performance by calculating the proximity of alternatives to the ideal solution with these weights (Hwang & Yoon, 1981, p. 69). The comparative analysis of four airline companies in Türkiye adds practical value to the study, provides concrete roadmaps for the development of marketing strategies and fills the methodological gap in the literature.

Marketing performance is a multidimensional concept used to evaluate the outcomes of a firm's marketing activities. It is not limited to financial results but also encompasses strategic outcomes such as customer satisfaction, brand equity, market share, and customer loyalty (Morgan, Clark & Gooner, 2002, p. 364). This performance is assessed through indicators that measure the value creation potential of marketing efforts, the efficiency of resource utilization, and the role of marketing in achieving competitive advantage. Rust et.al. (2004, p. 76) classify marketing performance into three main categories: customer-related metrics (e.g., satisfaction and loyalty), financial metrics (e.g., revenue, ROI), and brand-related metrics (e.g., brand awareness and reputation). From the Resource-Based View (RBV) perspective, marketing capabilities are considered strategic resources that directly contribute to firm performance (Vorhies & Morgan, 2005, p. 82). Furthermore, meta-analyses that examine the impact of marketing activities on financial performance indicate that expenditures on advertising and promotion yield long-term positive effects through enhanced brand value and strengthened customer relationships (Krasnikov & Jayachandran, 2008, p. 10). In this context, marketing performance is positioned as a managerial concept with strong theoretical and practical dimensions, evaluated through both internal capabilities and external market outcomes. It can be defined as a multidimensional measurement system that assesses the impact of a firm's marketing efforts on financial, customer-based, and brand-based outcomes.

Marketing performance is of strategic importance in terms of increasing customer satisfaction, strengthening brand value and providing sustainable competitive advantage to airline companies. Effective evaluation of marketing strategies in line with increasing competition, digitalization and changing passenger expectations has become critical in terms of positioning in the sector. In this context, Resource-Based View (RBV) and Contingency Theory provide solid theoretical foundations in the analysis of marketing strategies. While RBV emphasizes the role of rare and valuable resources such as digital marketing, customer experience and innovation in creating competitive advantage (Barney, 1991, p. 628); Contingency Theory argues that strategies should be shaped in accordance with environmental factors and customer demands (Donaldson, 2001, p. 345). When these two approaches are evaluated together, it becomes clear that airline companies need to structure their strategies according to both internal resources and external environmental conditions. In this context, multi-criteria decision-making (MCDM) methods such as AHP and TOPSIS provide effective tools in determining strategic priorities and enable the evaluation of marketing performance criteria in a hierarchical and analytical structure. In conclusion, while this study demonstrates the applicability of MCDM methods in airline marketing at a theoretical level, it contributes to strategic decision-making processes by providing a comparative marketing performance analysis for airline companies in Türkiye at a practical level.

2. Airline Marketing Strategies

The boundaries between marketing strategies, performance, and KPIs are unclear, and each is considered as a tool to support and measure marketing activities. This study adopts an expanded marketing approach that includes digital marketing, brand positioning, customer experience management, and technology-innovation strategies in addition to the traditional 4Ps (product, price, place, promotion).

In the literature, studies conducted on airline companies using multi-criteria decision-making techniques generally focus on financial and service quality. There are a limited number of studies that include existing criteria such as digital marketing, customer experience and innovation. Studies conducted on airline companies using multi-criteria decision-making techniques; key performance indicators (Garg & Agrawal, 2023, p. 21), destination selection (Akman et.al., 2018, p.1), financial performance (Avcı & Çınaroğlu, 2018, p.316), service quality (Chien-Chang, 2012, p. 246; Chang & Yeh, 2002, p. 166; Bakır & Atalık, 2018, p. 617; Kuo, 2011, p.1177; Öztürk & Onurlubaş, 2019, p. 81; Tsaur et.al., 2002, p. 107), aircraft selection (Kıracı & Bakır, 2018, p. 13), supplier selection (Rezaei et.al., 2014, p. 8165), passenger number and traffic forecast (Grosche et.al., 2007, p.175; Nam & Schaefer, 1995, p. 239; Suryani et.al., 2010, p. 2324), revenue management (Zhang & Cooper, 2005, p. 415; Van Ryzin & McGill, 2000; p. 2) marketing performance (Gürsoy et.al., 2022, p. 135), financial and operational efficiency (Pineda, 2018, p. 103), corporate image and reputation (Chuang et.al., 2007, p. 1) can be given as examples.

Product/service strategies increase customer value with personalized services by improving the quality of pre-flight, during-flight, and post-flight experience (Ferrell & Hartline, 2011, p. 293). Pricing is dynamically optimized according to cost, demand, and segments (Talluri & Van Ryzin, 2006, p. 14). Distribution is multi-channel and digitalization-supported, and social media and mobile applications increase customer access (Pearson, 2013, p. 2). Promotion strategies strengthen customer relationships with

data-driven campaigns and social media interaction (Kotler & Armstrong, 2021, p. 205; Wensveen, 2023, p. 158). Digital marketing strategies provide effective access to the target audience with social media, SEO, big data analytics, and personalized campaigns (Chaffey et al., 2013, p. 56), while mobile applications and VR/AR technologies increase user experience and brand loyalty (Morosan, 2010, pp. 52-58). Differentiation strategies such as low cost, premium quality, and environmental awareness stand out in brand positioning (Fragomeni, 2024). Customer experience management aims to provide consistent service at every stage of the flight with biometric passes, AI-supported chatbots and loyalty programs (Shaw, 2016, p. 242; THY, 2023a). Technology and innovation management increases operational efficiency and customer satisfaction with IoT, automation, AI and digital twin applications (Halpern et al., 2021, p. 193). This holistic marketing approach is critical to improving airline performance, building customer loyalty and providing sustainable competitive advantage.

3. Emprical Study

The purpose of this study is to determine the most effective marketing strategy among four airline companies operating in Türkiye based on product/service, price, place, promotion, digital marketing, brand positioning, customer experience and technology-innovation strategies. In this context, evaluation was made on 8 main and 46 sub-criteria using AHP and TOPSIS methods in line with the opinions of field experts and academicians.

The criteria determination process was designed as a multi-stage procedure that integrated both rigorous academic literature and expert evaluations. The initial phase involved an extensive review of national and international studies focused on airline marketing and strategic marketing performance. Foundational constructs were drawn from frameworks such as the marketing mix (4Ps) as defined by Kotler (2022, p. 34), and further supported by works including Kotler et.al. (2022, p. 88) and Buhalis & Foerste (2015, pp. 152–153). Particular attention was paid to eight strategic dimensions: product/service quality, pricing, place/distribution, promotion, digital marketing, brand positioning, customer experience, and innovation. These dimensions are commonly cited in empirical airline marketing studies, emphasizing the importance of adapting offerings and strategies to evolving digital and experiential contexts (Moghadas & Mokhles, 2021, p. 115; Keke, 2024, pp. 60–61; Altexsoft, 2024).

Following this literature-based screening, 62 potential indicators were identified and subsequently refined through a two-round Delphi process. In the first round, an open-ended questionnaire was administered to a panel comprising three senior marketing managers with at least ten years of experience in the aviation industry and two academic experts. Based on their qualitative feedback, redundant, ambiguous, and overlapping items were eliminated. In the second round, the remaining 50 indicators were rated by the same panel using a 1–9 Likert scale to evaluate each item's applicability and importance.

The Content Validity Ratio (CVR) was calculated for all items in accordance with Lawshe's (1975, p. 565) method, and only indicators exceeding the critical threshold of 0.49 were retained. As a result, 46 indicators were finalized for further analysis.

In the final stage, a pilot test was conducted with the same panel to reassess the wording,

scope, and conceptual clarity of the selected criteria. Linguistic refinements and structural adjustments were made based on expert feedback. This systematic process ensured that all criteria were not only theoretically grounded and empirically supported but also validated for practical implementation.

Ultimately, eight main categories and 46 sub-criteria—derived from literature and refined through expert consensus—were determined to be valid and reliable for use in the AHP-based weighting and TOPSIS-based ranking phases of the study, providing a robust framework for evaluating strategic marketing performance in the airline industry. Therefore, grounded in both theoretical frameworks and empirical airline marketing research, the eight selected dimensions—product/service, pricing, place, promotion, digital marketing, brand positioning, customer experience, and innovation—emerged as the most comprehensive and contextually relevant criteria (Park et al., 2020, pp. 2–3; Raza et al., 2025, p. 3886; Karaağaoğlu & Çiçek, 2019, p. 611).

3.1 Analytical Hierarchy Process (AHP)

Analytical Hierarchy Process (AHP) is one of the most widely used approaches among multi-criteria decision making (MCDM) methods developed by Saaty (1977). AHP allows decision makers to evaluate the relative importance of criteria or alternatives intuitively and consistently, especially in cases where quantitative data is insufficient (Saaty, 1977, p. 52). Saaty (1980) presented a systematic method that converts pairwise comparisons into numerical priorities. The basic stages generally accepted in the literature are; converting the decision problem into a hierarchical structure, making pairwise comparisons, checking consistency and calculating priorities**:**

Step 1: Defining the Decision Problem and Determining the Purpose

The decision problem to be solved is clearly defined and the main purpose of the decision is determined. In this stage, the scope and goals of the decision are determined and the direction of the process is drawn.

Step 2: Establishing the Hierarchical Structure by Determining the Criteria and Sub-Criteria

The main criteria and sub-criteria affecting the decision problem are determined. These criteria are organized in a hierarchical structure together with the purpose. The hierarchy usually consists of the purpose at the top, the criteria and sub-criteria in the middle, and the alternatives at the bottom.

Step 3: Determining the Relative Importance of the Criteria by Pairwise Comparisons

The criteria at each hierarchical level are subjected to pairwise comparison using a standard importance rating scale such as the scale in Table 1. The relative priorities of the criteria are determined by these comparisons.

Table 1. Pairwise comparison scale

Value	Semantic Meaning
1	The two decision items have the same importance.
3	The selected decision item is weakly more important than the other one
5	The selected decision item is strongly more important than the other one.
7	The selected decision item is very strongly more important than the other one.
9	The selected decision item is absolutely more important than the other one.
2,4,6,8	Intermediate values

Kaynak: Saaty, 1980, p. 21

Step 4: Normalizing the Comparison Matrix

The values in each column in the created binary comparison matrix are normalized by dividing them by the sum of that column. Thus, the relative weights between the criteria are standardized.

Step 5: Calculating the Priority Vector

A vector showing the priorities of the criteria (priority vector) is created by taking the arithmetic average of each row of the normalized matrix. This vector numerically expresses the relative importance of the criteria.

Step 6: Creating the Weighted Total Matrix (Eigenvector)

The priority vector is multiplied by the initial comparison matrix to obtain the weighted total matrix. This matrix is used to check the consistency of the comparisons.

Step 7: Calculating the largest eigenvalue (λmax)

Each element in the weighted total matrix is divided by the corresponding element in the priority vector. The average of the elements of the new matrix is taken to calculate the λmax (maximum eigenvalue) value.

Step 8: Calculating the Consistency Index (CI)

The Consistency Index (CI) is calculated by subtracting the number of criteria (n) from the largest eigenvalue (λmax) and dividing the result by (n - 1).

$$\boldsymbol{CI} = \frac{(\boldsymbol{\lambda}\,\mathbf{max} - \boldsymbol{n})}{(\boldsymbol{n} - \mathbf{1})}$$

Step 9: Calculating the Consistency Ratio (CR)

The Consistency Ratio is found by dividing the Consistency Index (CI) by the random index (RI) value (CR= CI / RI). The random index table is shown in Table 2. The CR value determines whether the decision matrix is within acceptable consistency limits. Generally, if CR ≤ 0.1, the matrix is considered consistent.

$$\boldsymbol{CR} = \frac{\boldsymbol{CI}}{\boldsymbol{RI}}$$

Table 2. Random index

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Value	0	0	0.58	0.9	1.12	1.24	1.32	1.41	1.45	1.49	1.51	1.53	1.56	1.57	1.59

Kaynak: Saaty, 1980, p. 21

The AHP method evaluates criteria and alternatives with pairwise comparisons in a hierarchical structure, mathematically integrating quantitative and qualitative data with expert opinions. It is suitable for group decisions, its flexibility can be tested with sensitivity analysis, and it provides reliable decisions (Saaty, 1977, p. 56; Tzeng & Huang, 2011, p. 152).

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

The TOPSIS method was developed by Hwang and Yoon (1981) and is based on the alternatives being closest to the positive ideal solution and farthest from the negative ideal solution. This method provides more realistic models by allowing the criteria to balance each other (Tzeng & Huang, 2011, p. 217). While the positive ideal solution maximizes the benefit criteria and minimizes the cost criteria, the negative ideal solution applies the opposite (Wang & Elhag, 2006, p. 310). It is widely used to determine the most effective strategy by comparing the marketing strategies of airline companies within the scope of product/service, price, place, promotion, digital marketing, brand positioning, customer experience and innovation criteria. The stages are presented below.

Step 1: Creating the Decision Matrix

A decision matrix with m*p dimensions in equatition 3.1 is created by the decision maker, including the decision alternatives (m) to be compared and the evaluation criteria (p) to be used in the decision process in the matrix columns (Hwang & Yoon, 1981, p. 63).

$$A_{\mathrm{l}J} = \begin{bmatrix} a_{11} & a_{12} & \dots & a_{1p} \\ a_{21} & a_{22} & \dots & a_{2p} \\ \vdots & \vdots & \vdots & \vdots \\ a_{m1} & a_{m2} & \dots & a_{mp} \end{bmatrix} \qquad 3.1$$

Step 2: Creation of Normalized Decision Matrix (R)

After the decision matrix is created, the normalized matrix elements (rij) are obtained by dividing the value in each column (aij) by the square root of the sum of the squares of all elements of the relevant column with the formula in 3.2 (Mahmoodzadeh et.al., 2007, p. 138) and the matrix given in 3.3 is obtained.

$$r_{ij} = \frac{a_{ij}}{\sqrt{\sum_{i=1}^{m} a_{ij}^2}} \left(i = 1, \dots, m \; ve \; j = 1, \dots, p\right) \qquad 3.2$$

$$R = \begin{bmatrix} r_{11} & r_{12} & \cdots & r_{1p} \\ r_{21} & r_{22} & \cdots & r_{2p} \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ r_{m1} & r_{m2} & \cdots & r_{mp} \end{bmatrix} \qquad 3.3$$

Step 3: Creation of Weighted Normalized Decision Matrix (V)

The value in each column of the normalized matrix (r_{ij}) is multiplied by the weight value (w_i) related to the evaluation criterion expressed by the relevant column to obtain the normalized matrix weighted in 3.4. The elements of this matrix are symbolized as v_{ij} (Rao, 2008, p. 1975).

$$V = \begin{bmatrix} w_1 r_{11} & w_2 r_{12} & \cdots & w_n r_{1p} \\ w_1 r_{21} & w_2 r_{22} & \cdots & w_n r_{2p} \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ w_1 r_{m1} & w_2 r_{m2} & \cdots & w_n r_{mp} \end{bmatrix} = \begin{bmatrix} v_{11} & v_{12} & \cdots & v_{1p} \\ v_{21} & v_{22} & \cdots & v_{2p} \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ \vdots & \vdots & \vdots & \vdots \\ v_{m1} & v_{m2} & \cdots & v_{mp} \end{bmatrix} \qquad 3.4$$

Step 4: Creating Positive Ideal (A^*) and Negative Ideal (A^-) Solutions

After the weighted normalized matrix (V) is created, positive (A^+) and negative (A^-) ideal solution values are determined. The highest values in the maximized criteria and the lowest values in the minimized criteria are taken as A^+; the opposite values are taken as A^-.

Positive ideal solution values

$$A^+ = \left\{\max v_{ij} | j = 1, \dots p; i = 1, \dots, m\right\} \qquad 3.5$$

$A^+ = \{v_1^+ \; v_2^+, v_n^+\}$ Column maximum values.

Negative ideal solution values

$$A^- = \left\{\max v_{ij} | j = 1, \dots p; i = 1, \dots, m\right\} \qquad 3.6$$

$A^- = \{v_1^- \; v_2^-, v_n^-\}$ Column minimum values.

Step 5: Calculation of distance values (S^+ and S^-) to positive ideal and negative ideal solutions.

When calculating the distances (S^+ and S^-) to the positive and negative ideal solutions, the Si+ and Si- values are obtained separately for each alternative using the Euclidean distance formulas with the help of the formula in 3.7 and 3.8 (Mahmoodzadeh et.al., 2007: 139).

$$S_i^+ = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_j^+\right)^2} \quad 3.7$$

$$S_i^- = \sqrt{\sum_{j=1}^{n}\left(v_{ij} - v_j^-\right)^2} \quad 3.8$$

Step 6: Calculation of the relative closeness value (C) to the ideal solution

The relative closeness value of each decision alternative to the ideal solution is calculated using the distances to the positive and negative ideal solutions. The closeness value to the positive ideal solution takes values in the range $C_i^+ 0 \leq C_i^+ \leq 1$. While $C_i^+ = 1$ indicates the absolute closeness of the relevant decision alternative to the positive ideal solution, $C_i^+ = 0$ indicates the absolute closeness of the relevant decision alternative to the negative ideal solution (Özdemir, 2015, p. 136). As a result of the specified steps, the calculated C_i^+ values are ranked according to their magnitude and the order of importance is determined for each decision alternative (Hwang & Yoon, 1981, p. 19).

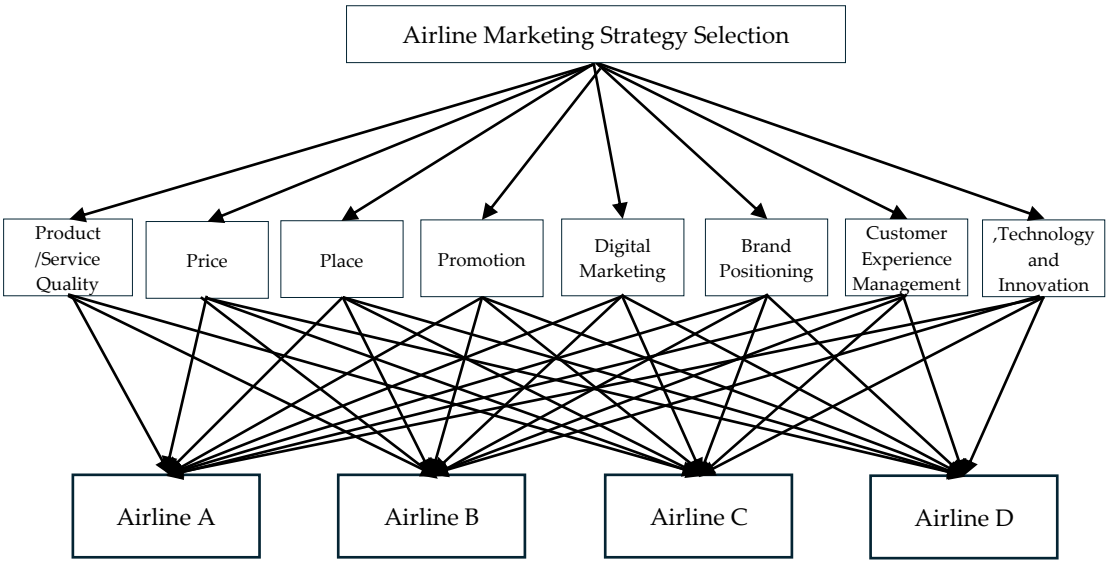
$$C_i^+ = \frac{S_i^-}{S_i^- + S_i^+} \quad 3.9$$

4. Application

4.1. Determining Criteria Weights of Marketing Strategies with AHP Method

In the first stage of the AHP method, the decision problem is structured hierarchically as purpose, main and sub-criteria and options (Figure 1, Table 3). The relationship between airline companies and marketing strategies is also shown in Figure 1. Criteria weights were determined with AHP over the decision matrix created by pairwise comparisons made by experts and academicians on a scale of 1-9; group decision was calculated with geometric mean, and consistency rates were checked. The weights obtained were integrated into the TOPSIS method and the marketing strategy performance of airline companies was compared.

Figure 1. Hierarchical framework



As a result of comparing the main criteria with each other, it was concluded that price is more important (PRIC: 0.232), the order of importance of other main criteria is PRDCT (0.206), DMKT (0.113), TIM (0.111), PLC (0.106), PRMT (0.094), BRDP (0.085) and CEXM (0.053). As a result of pairwise comparisons, the consistency index (CI) value (0.07) was accepted as consistent since it was below 0.1 (Table 4).

Table 4. Comparison of main criteria

	PRDCT	PRIC	PLC	PRMT	DMKT	BRDP	CEX	TIM	W	λ	λ_max	CI	CR
PRDCT	0,187	0,233	0,093	0,086	0,404	0,230	0,148	0,266	0,206	1,875	9,098		
PRIC	0,187	0,233	0,434	0,158	0,220	0,222	0,159	0,240	**0,232**	2,051	8,851		
PLC	0,187	0,050	0,093	0,086	0,078	0,109	0,121	0,126	0,106	0,927	8,710		
PRMT	0,187	0,127	0,093	0,086	0,021	0,088	0,079	0,073	0,094	0,803	8,509	0,10	0,07
DMKT	0,036	0,083	0,093	0,317	0,078	0,088	0,108	0,101	0,113	0,985	8,722		
BRDP	0,071	0,092	0,075	0,086	0,078	0,088	0,121	0,065	0,085	0,732	8,664		
CEXM	0,071	0,083	0,044	0,061	0,041	0,041	0,056	0,027	0,053	0,460	8,653		
TIM	0,071	0,098	0,075	0,119	0,078	0,136	0,208	0,101	0,111	0,942	8,504		

Pairwise comparisons of sub-criteria, their relative priorities and consistency rates are shown in Tables 4-13. Accordingly; In terms of product/service strategies, innovative products and services PRDCT1 (0.529), competition-based pricing PRIC3 (0.436) in price strategies, multi-channel distribution and omni-channel PLC6 (0.476 in the place strategies), customer loyalty and incentive programs PRMT6 (0.347) in the promotion strategy, big data and personalization DMKT4 (0.503) in digital marketing strategies, global and regional network power focused positioning BRDP10 (0.311) in brand positioning strategies, loyalty programs and special privileges CEXM4 (0.400) in customer experience strategies and

security and smart airport technologies (biometric authentication & blockchain) TIM1 (0.338) in technology and innovation strategies constitute the most important sub-criteria. The consistency rate (CR) of all matrices is below 0.10.

Table 5. Comparison of product/service sub-criteria

	PRDCT1	PRDCT2	PRDCT3	PRDCT4	W	λ	λ_max	CI	CR
PRDCT1	0,54	0,60	0,51	0,47	**0,529**	2,15729	4,08		
PRDCT2	0,16	0,18	0,24	0,16	0,186	0,76	4,09	0,02	0,02
PRDCT3	0,21	0,14	0,19	0,28	0,206	0,83324	4,04		
PRDCT4	0,09	0,09	0,06	0,08	0,079	0,32021	4,05		

Table 6. Comparison of price sub-criteria

	PRIC1	PRIC2	PRIC3	PRIC4	PRIC5	PRIC6	W	λ	λ_max	CI	CR
PRIC1	0,0529	0,0389	0,0584	0,0332	0,0517	0,0321	0,045	0,2904	6,5177		
PRIC2	0,1213	0,0891	0,0574	0,0677	0,1227	0,1245	0,097	0,6388	6,5791		
PRIC3	0,3185	0,5454	0,3511	0,4993	0,4446	0,4581	**0,436**	2,9214	6,6979	0,1178	0,0950
PRIC4	0,1488	0,1230	0,0656	0,0934	0,1227	0,0590	0,102	0,6422	6,2916		
PRIC5	0,1732	0,1230	0,1337	0,1288	0,1693	0,2139	0,157	1,0542	6,7148		
PRIC6	0,1853	0,0805	0,3339	0,1777	0,0889	0,1124	0,163	1,0983	6,7332		

Table 7. comparison of place sub-criteria

	PLC1	PLC2	PLC3	PLC4	PLC5	PLC6	W	λ	λ_max	CI	CR
PLC1	0,0490	0,0337	0,0247	0,0652	0,0329	0,0606	0,044	0,2767	6,2376		
PLC2	0,0490	0,0337	0,0115	0,0203	0,0293	0,0576	0,034	0,2033	6,0552		
PLC3	0,1243	0,1829	0,0627	0,0687	0,0410	0,0637	0,091	0,5644	6,2332	0,0713	0,0575
PLC4	0,1182	0,2607	0,1436	0,1572	0,1615	0,1535	0,166	1,0705	6,4572		
PLC5	0,2402	0,1858	0,2469	0,1572	0,1615	0,1459	0,190	1,2485	6,5850		
PLC6	0,4193	0,3032	0,5105	0,5314	0,5738	0,5187	**0,476**	3,1291	6,5717		

Table 8. Comparison of promotion sub-criteria

	PRMT1	PRMT2	PRMT3	PRMT4	PRMT5	PRMT6	W	λ	λ_max	CI	CR
PRMT1	0,113	0,236	0,277	0,122	0,134	0,088	0,162	1,0241	6,332		
PRMT2	0,020	0,041	0,024	0,049	0,040	0,054	0,038	0,23018	6,052		
PRMT3	0,018	0,079	0,045	0,055	0,060	0,053	0,052	0,31042	6,008	0,049	0,040
PRMT4	0,333	0,304	0,297	0,361	0,410	0,366	0,345	2,17919	6,320		
PRMT5	0,050	0,061	0,045	0,052	0,060	0,073	0,057	0,35609	6,258		
PRMT6	0,467	0,279	0,312	0,361	0,297	0,366	**0,347**	2,25896	6,513		

Table 9. Comparison of digital marketing sub-criteria

	DMKT1	DMKT2	DMKT3	DMKT4	DMKT5	DMKT6	W	λ	λ_max	CI	CR
DMKT1	0,0645	0,0445	0,0503	0,0690	0,0605	0,0662	0,059	0,3678	6,2139		
DMKT2	0,1001	0,0691	0,1589	0,0713	0,0835	0,0472	0,088	0,5408	6,1202		
DMKT3	0,0645	0,0219	0,0503	0,0713	0,0278	0,0449	0,047	0,2814	6,0149	0,0397	0,0320
DMKT4	0,4911	0,5088	0,3702	0,5251	0,5747	0,5498	**0,503**	3,1817	6,3220		
DMKT5	0,0890	0,0691	0,1511	0,0763	0,0835	0,0961	0,094	0,5802	6,1592		
DMKT6	0,1906	0,2866	0,2192	0,1869	0,1700	0,1957	0,208	1,3243	6,3614		

Table 10. Comparison of brand positioning sub-criteria

	BRDP 1	BRDP 2	BRDP 3	BRDP 4	BRDP 5	BRDP 6	BRDP 7	BRDP 8	BRDP 9	BRDP 10	W	λ	λ_max	CI	CR
BRDP1	0,048	0,083	0,060	0,009	0,037	0,146	0,082	0,090	0,026	0,063	0,064	0,68677	10,675		
BRDP2	0,018	0,032	0,037	0,017	0,022	0,023	0,029	0,032	0,030	0,048	0,029	0,31099	10,836		
BRDP3	0,104	0,112	0,131	0,141	0,061	0,106	0,166	0,184	0,146	0,154	0,130	1,44905	11,108		
BRDP4	0,293	0,118	0,050	0,054	0,035	0,037	0,053	0,043	0,056	0,054	0,079	0,92788	11,709		
BRDP5	0,097	0,110	0,163	0,115	0,076	0,118	0,074	0,166	0,102	0,043	0,106	1,20829	11,367	0,127	0,085
BRDP6	0,048	0,203	0,181	0,211	0,094	0,146	0,178	0,184	0,113	0,162	0,152	1,68174	11,069		
BRDP7	0,018	0,034	0,024	0,031	0,032	0,026	0,031	0,009	0,026	0,050	0,028	0,31111	11,044		
BRDP8	0,018	0,034	0,024	0,043	0,016	0,027	0,116	0,034	0,056	0,050	0,042	0,44669	10,656		
BRDP9	0,104	0,058	0,050	0,054	0,041	0,072	0,067	0,034	0,056	0,047	0,058	0,65908	11,319		
BRDP10	0,251	0,217	0,280	0,327	0,586	0,298	0,204	0,225	0,390	0,329	**0,311**	3,60828	11,613		

Table 11. Comparison of customer experience sub-criteria

	CEXM1	CEXM2	CEXM3	CEXM4	W	λ	λ_max	CI	CR
CEXM1	0,298	0,377	0,410	0,249	0,333	1,371	4,11302		
CEXM2	0,043	0,055	0,043	0,075	0,054	0,217972	4,037112	0,02626	0,029177
CEXM3	0,146	0,255	0,201	0,249	0,213	0,860985	4,043546		
CEXM4	0,512	0,313	0,346	0,428	**0,400**	1,647503	4,121438		

Table 12. Comparison of technology and ınnovation sub-criteria

	TIM1	TIM2	TIM3	TIM4	W	λ	λ_max	CI	CR
TIM1	0,3340	0,3256	0,3679	0,3264	**0,338**	1,3620	4,0242		
TIM2	0,2263	0,2206	0,1718	0,2366	0,214	0,8582	4,0134	0,0060	0,0067
TIM3	0,1057	0,1495	0,1164	0,1105	0,121	0,4833	4,0098		
TIM4	0,3340	0,3044	0,3439	0,3264	0,327	1,3167	4,0245		

Tablo 13. AHP main criteria weights

Main Criteria	**Weights**
Product/Service	0,206
Pricing	**0,232**
Place	0,106
Promotion	0,094
Digital Marketing	0,113
Brand Positioning	0,085
Customer Experience	0,053
Technology and Innovation	0,111

According to AHP results, pricing (0.232) and product/service quality (0.206) have the highest priority among marketing performance criteria in airline companies; this shows that consumers see cost and service quality as the most critical factors. The weights of place (0.106) and digital marketing (0.113) are seen to be at a medium level. This supports the increasing role of digitalization and easy accessibility in marketing strategies today. Technology and innovation management (0.111) is important for competitive advantage but is not as much a priority as price and product/service quality. Promotion (0.094) and brand positioning (0.085) are lower, and customer experience management has the lowest weight (0.053), indicating that it is not prioritized enough in practice. The results show that price and product/service quality are the main determinants of marketing strategies in the airline sector, digitalization and technology investments are of increasing importance, but customer experience and brand management are still secondary. These findings emphasize that investment in digital marketing and innovative technology is mandatory in addition to price and product/service quality for competition.

4.2. Determining the Business with the Best Marketing Performance with the TOPSIS Method

The TOPSIS method was applied in six steps to determine the airline company with the highest marketing performance (Hwang & Yoon, 1981, p. 56; Özdemir, 2015, p. 137). First, the evaluations of the airline alternatives determined by the decision makers and the eight marketing criteria were scored with a 5-point Likert scale to create a decision matrix (A) of m × p size (Tables 14, 18, 22, 26, 30, 34, 38, 42, 46). In the second step, the matrix values were normalized to obtain the rij matrix (Tables 15, 19, 23, 27, 31, 35, 39, 43, 47). In the third stage, the normalized values were multiplied by the criteria weights (wi) obtained by AHP to form a weighted normalized matrix (V) (Tables 16, 20, 24, 28, 32, 36, 40, 44, 48). In the fourth stage, positive ideal (A+) and negative ideal (A−) solutions were determined from these matrices. The positive ideal includes the maximum values in the benefit criteria and the minimum values in the cost criteria, while the negative ideal is the opposite. In the fifth stage, the Euclidean distances (S+ and S−) of each airline to A+ and A− were calculated (Tables 17, 21, 25, 29, 33, 37, 41, 45, 49). Finally, the relative proximity value (Ci) of each alternative was calculated and the airline with the best marketing performance was determined by ranking

them in the range of 0–1 (Table 50).

Table 14. Product/Service decision matrix

	PRDCT1	PRDCT2	PRDCT3	PRDCT4
A AIRLINE	4,0000	4,0000	5,0000	4,0000
B AIRLINE	3,0000	3,0000	3,0000	3,0000
C AIRLINE	2,0000	3,0000	3,0000	3,0000
D AIRLINE	3,0000	3,0000	3,0000	3,0000
	6,1644	6,5574	7,2111	6,5574

Table 15. Product/service normalized decision matrix

	C1	C2	C3	C4
A AIRLINE	0,6489	0,6100	0,6934	0,6100
B AIRLINE	0,4867	0,4575	0,4160	0,4575
C AIRLINE	0,3244	0,4575	0,4160	0,4575
D AIRLINE	0,4867	0,4575	0,4160	0,4575
w	0,5291	0,1857	0,2062	0,0790

Table 16. Product/service weighted normalized decision matrix and positive (A^+) and negative (A^-) ideal solutions

	C1	C2	C3	C4
A AIRLINE	0,3433	0,1133	0,1430	0,0482
B AIRLINE	0,2575	0,0850	0,0858	0,0362
C AIRLINE	0,1717	0,0850	0,0858	0,0362
D AIRLINE	0,2575	0,0850	0,0858	0,0362
A*	0,3433	0,1133	0,1430	0,0482
A-	0,1717	0,0850	0,0858	0,0362

Table 17. Product/service positive and negative-distances to ideal solution (Si+ & Si^-),

proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,1835	C1	1,0000	1
S2*	0,1076	S2-	0,0858	C2	0,4437	2
S3*	0,1835	S3-	0,0000	C3	0,0000	4
S4*	0,1076	S4-	0,0858	C4	0,4437	2

Table 18. Price decision matrix

	PRIC1	PRIC2	PRIC3	PRIC4	PRIC5	PRIC6
A AIRLINE	3,0000	4,0000	4,0000	5,0000	4,0000	5,0000
B AIRLINE	4,0000	4,0000	5,0000	3,0000	4,0000	4,0000
C AIRLINE	4,0000	3,0000	3,0000	2,0000	3,0000	3,0000
D AIRLINE	4,0000	3,0000	4,0000	3,0000	4,0000	3,0000
	7,5498	7,0711	8,1240	6,8557	7,5498	7,6811

Table 19. Price normalized decision matrix

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,3974	0,5657	0,4924	0,7293	0,5298	0,6509
B AIRLINE	0,5298	0,5657	0,6155	0,4376	0,5298	0,5208
C AIRLINE	0,5298	0,4243	0,3693	0,2917	0,3974	0,3906
D AIRLINE	0,5298	0,4243	0,4924	0,4376	0,5298	0,3906
w	0,0446	0,0971	0,4362	0,1021	0,1570	0,1631

Table 20. Price weighted normalized decision matrix and positive (A+) and negative (A^-) ideal solutions

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,0177	0,0549	0,2148	0,0744	0,0832	0,1062
B AIRLINE	0,0236	0,0549	0,2684	0,0447	0,0832	0,0849
C AIRLINE	0,0236	0,0412	0,1611	0,0298	0,0624	0,0637
D AIRLINE	0,0236	0,0412	0,2148	0,0447	0,0832	0,0637
A*	0,0236	0,0549	0,2684	0,0744	0,0832	0,1062
A-	0,0177	0,0412	0,1611	0,0298	0,0624	0,0637

Table 21. Price positive and negative-distances to ideal solution (Si+ & Si^-), proximity to

ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0540	S1-	0,0855	C1	0,6127	2
S2*	0,0366	S2-	0,1134	C2	0,7561	1
S3*	0,1263	S3-	0,0059	C3	0,0446	4
S4*	0,0759	S4-	0,0598	C4	0,4405	3

Table 22. Place decision matrix

	PLC1	PLC2	PLC3	PLC4	PLC5	PLC6
A AIRLINE	5,0000	5,0000	5,0000	4,0000	5,0000	5,0000
B AIRLINE	5,0000	3,0000	2,0000	3,0000	5,0000	4,0000
C AIRLINE	4,0000	3,0000	3,0000	3,0000	4,0000	3,0000
D AIRLINE	4,0000	4,0000	4,0000	4,0000	4,0000	3,0000
	9,0554	7,6811	7,3485	7,0711	9,0554	7,6811

Table 23. Place normalized decision matrix

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,5522	0,6509	0,6804	0,5657	0,5522	0,6509
B AIRLINE	0,5522	0,3906	0,2722	0,4243	0,5522	0,5208
C AIRLINE	0,4417	0,3906	0,4082	0,4243	0,4417	0,3906
D AIRLINE	0,4417	0,5208	0,5443	0,5657	0,4417	0,3906
w	0,0444	0,0336	0,0906	0,1658	0,1896	0,4761

Table 24. Place weighted normalized decision matrix and positive (A+) and negative (A^-) ideal solutions

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,0245	0,0219	0,0616	0,0938	0,1047	0,3099
B AIRLINE	0,0245	0,0131	0,0246	0,0703	0,1047	0,2480
C AIRLINE	0,0196	0,0131	0,0370	0,0703	0,0837	0,1860
D AIRLINE	0,0196	0,0175	0,0493	0,0938	0,0837	0,1860
A*	0,0245	0,0219	0,0616	0,0938	0,1047	0,3099
A-	0,0196	0,0131	0,0246	0,0703	0,0837	0,1860

Table 25. Place positive and negative-distances to ideal solution (Si+ & Si^-), proximity to

ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,1335	C1	1,0000	1
S2*	0,0764	S2-	0,0656	C2	0,4621	2
S3*	0,1306	S3-	0,0123	C3	0,0862	4
S4*	0,1265	S4-	0,0343	C4	0,2133	3

Table 26. Promotion decision matrix

	PRMT1	PRMT2	PRMT3	PRMT4	PRMT5	PRMT6
A AIRLINE	5,0000	4,0000	5,0000	5,0000	4,0000	5,0000
B AIRLINE	4,0000	3,0000	4,0000	3,0000	4,0000	4,0000
C AIRLINE	3,0000	2,0000	3,0000	2,0000	3,0000	3,0000
D AIRLINE	3,0000	2,0000	3,0000	2,0000	3,0000	3,0000
	7,6811	5,7446	7,6811	6,4807	7,0711	7,6811

Table 27. Promotion normalized decision matrix

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,6509	0,6963	0,6509	0,7715	0,5657	0,6509
B AIRLINE	0,5208	0,5222	0,5208	0,4629	0,5657	0,5208
C AIRLINE	0,3906	0,3482	0,3906	0,3086	0,4243	0,3906
D AIRLINE	0,3906	0,3482	0,3906	0,3086	0,4243	0,3906
w	0,1617	0,0380	0,0517	0,3448	0,0569	0,3468

Table 28. Promotion weighted normalized decision matrix and positive (A+) and negative (A^-) ideal solutions

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,1053	0,0265	0,0336	0,2660	0,0322	0,2258
B AIRLINE	0,0842	0,0199	0,0269	0,1596	0,0322	0,1806
C AIRLINE	0,0632	0,0132	0,0202	0,1064	0,0241	0,1355
D AIRLINE	0,0632	0,0132	0,0202	0,1064	0,0241	0,1355
A*	0,1053	0,0265	0,0336	0,2660	0,0322	0,2258
A-	0,0632	0,0132	0,0202	0,1064	0,0241	0,1355

Table 29. Promotion positive and negative-distances to ideal solution (Si+ & Si^-),

proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,1893	C1	1,0000	1
S2*	0,1179	S2-	0,0739	C2	0,3855	2
S3*	0,1893	S3-	0,0000	C3	0,0000	3
S4*	0,1893	S4-	0,0000	C4	0,0000	3

Table 30. Digital marketing decision matrix

	DMKT1	DMKT2	DMKT3	DMKT4	DMKT5	DMKT6
A AIRLINE	5,0000	5,0000	5,0000	5,0000	5,0000	5,0000
B AIRLINE	5,0000	4,0000	4,0000	4,0000	3,0000	4,0000
C AIRLINE	3,0000	3,0000	3,0000	2,0000	1,0000	2,0000
D AIRLINE	3,0000	3,0000	3,0000	2,0000	1,0000	2,0000
	8,2462	7,6811	7,6811	7,0000	6,0000	7,0000

Table 31. Digital marketing normalized decision matrix

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,6063	0,6509	0,6509	0,7143	0,8333	0,7143
B AIRLINE	0,6063	0,5208	0,5208	0,5714	0,5000	0,5714
C AIRLINE	0,3638	0,3906	0,3906	0,2857	0,1667	0,2857
D AIRLINE	0,3638	0,3906	0,3906	0,2857	0,1667	0,2857
w	0,0592	0,0884	0,0468	0,5033	0,0942	0,2082

Table 32. Digital marketing weighted normalized decision matrix and positive (A+) and negative (A^-) ideal solutions

	C1	C2	C3	C4	C5	C6
A AIRLINE	0,0359	0,0575	0,0305	0,3595	0,0785	0,1487
B AIRLINE	0,0359	0,0460	0,0244	0,2876	0,0471	0,1190
C AIRLINE	0,0215	0,0345	0,0183	0,1438	0,0157	0,0595
D AIRLINE	0,0215	0,0345	0,0183	0,1438	0,0157	0,0595
A*	0,0359	0,0575	0,0305	0,3595	0,0785	0,1487
A-	0,0215	0,0345	0,0183	0,1438	0,0157	0,0595

Table 33. Digital marketing positive and negative distances to ideal solution (Si+ & Si^-),

proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,2435	C1	1,0000	1
S2*	0,0849	S2-	0,1599	C2	0,6532	2
S3*	0,2435	S3-	0,0000	C3	0,0000	3
S4*	0,2435	S4-	0,0000	C4	0,0000	3

Table 34. Brand positioning decision matrix

	BRDP1	BRDP2	BRDP3	BRDP4	BRDP5	BRDP6	BRDP7	BRDP8	BRDP9	BRDP10
A AIRLINE	4,0000	3,0000	5,0000	5,0000	5,0000	5,0000	5,0000	5,0000	4,0000	5,0000
B AIRLINE	2,0000	5,0000	4,0000	3,0000	3,0000	4,0000	4,0000	3,0000	3,0000	3,0000
C AIRLINE	2,0000	4,0000	3,0000	3,0000	2,0000	2,0000	3,0000	2,0000	2,0000	2,0000
D AIRLINE	3,0000	4,0000	4,0000	3,0000	3,0000	3,0000	4,0000	3,0000	2,0000	3,0000
	5,7446	8,1240	8,1240	7,2111	6,8557	7,3485	8,1240	6,8557	5,7446	6,8557

Table 35. Brand positioning normalized decision matrix

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A AIRLINE	0,6963	0,3693	0,6155	0,6934	0,7293	0,6804	0,6155	0,7293	0,6963	0,7293
B AIRLINE	0,3482	0,6155	0,4924	0,4160	0,4376	0,5443	0,4924	0,4376	0,5222	0,4376
C AIRLINE	0,3482	0,4924	0,3693	0,4160	0,2917	0,2722	0,3693	0,2917	0,3482	0,2917
D AIRLINE	0,5222	0,4924	0,4924	0,4160	0,4376	0,4082	0,4924	0,4376	0,3482	0,4376
w	0,0643	0,0287	0,1305	0,0792	0,1063	0,1519	0,0282	0,0419	0,0582	0,3107

Table 36. Brand positioning weighted normalized decision matrix and positive (A+) and

negative (A-) ideal solutions

	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10
A AIRLINE	0,0448	0,0106	0,0803	0,0549	0,0775	0,1034	0,0173	0,0306	0,0405	0,2266
B AIRLINE	0,0224	0,0177	0,0642	0,0330	0,0465	0,0827	0,0139	0,0183	0,0304	0,1360
C AIRLINE	0,0224	0,0141	0,0482	0,0330	0,0310	0,0414	0,0104	0,0122	0,0203	0,0906
D AIRLINE	0,0336	0,0141	0,0642	0,0330	0,0465	0,0620	0,0139	0,0183	0,0203	0,1360
A*	0,0448	0,0177	0,0803	0,0549	0,0775	0,1034	0,0173	0,0306	0,0405	0,2266
A-	0,0224	0,0106	0,0482	0,0330	0,0310	0,0414	0,0104	0,0122	0,0203	0,0906

Table 37. Brand positioning positive and negative-distances to ideal solution (Si+ & Si-), proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0071	S1-	0,1653	C1	0,9590	1
S2*	0,1054	S2-	0,0668	C2	0,3879	2
S3*	0,1653	S3-	0,0035	C3	0,0209	4
S4*	0,1111	S4-	0,0563	C4	0,3363	3

Table 38. Customer experience decision matrix

	CEXM1	CEXM2	CEXM3	CEXM4
A AIRLINE	5,0000	5,0000	5,0000	5,0000
B AIRLINE	4,0000	4,0000	3,0000	3,0000
C AIRLINE	3,0000	3,0000	3,0000	3,0000
D AIRLINE	3,0000	3,0000	3,0000	3,0000
	7,6811	7,6811	7,2111	7,2111

Table 39. Customer experience normalized decision matrix

	C1	C2	C3	C4
A AIRLINE	0,6509	0,6509	0,6934	0,6934
B AIRLINE	0,5208	0,5208	0,4160	0,4160
C AIRLINE	0,3906	0,3906	0,4160	0,4160
D AIRLINE	0,3906	0,3906	0,4160	0,4160
w	0,3333	0,0540	0,2129	0,3997

Table 40. Customer experience weighted normalized decision matrix and positive (A+)

and negative (A^-) ideal solutions

	C1	C2	C3	C4
A AIRLINE	0,2170	0,0351	0,1476	0,2772
B AIRLINE	0,1736	0,0281	0,0886	0,1663
C AIRLINE	0,1302	0,0211	0,0886	0,1663
D AIRLINE	0,1302	0,0211	0,0886	0,1663
A*	0,2170	0,0351	0,1476	0,2772
A-	0,1302	0,0211	0,0886	0,1663

Table 41. Customer experience positive and negative-distances to ideal solution (Si+ & Si^-), proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,1533	C1	1,0000	1
S2*	0,1331	S2-	0,0440	C2	0,2483	2
S3*	0,1533	S3-	0,0000	C3	0,0000	3
S4*	0,1533	S4-	0,0000	C4	0,0000	3

Table 42. Technology and innovation decision matrix

	TIM1	TIM2	TIM3	TIM4
A AIRLINE	5,0000	5,0000	4,0000	4,0000
B AIRLINE	4,0000	4,0000	3,0000	4,0000
C AIRLINE	4,0000	4,0000	3,0000	3,0000
D AIRLINE	4,0000	4,0000	3,0000	3,0000
	8,5440	8,5440	6,5574	7,0711

Table 43. Technology and innovation normalized decision matrix

	C1	C2	C3	C4
A AIRLINE	0,5852	0,5852	0,6100	0,5657
B AIRLINE	0,4682	0,4682	0,4575	0,5657
C AIRLINE	0,4682	0,4682	0,4575	0,4243
D AIRLINE	0,4682	0,4682	0,4575	0,4243
w	0,3385	0,2138	0,1205	0,3272

Table 44. Technology and innovation weighted normalized decision matrix and

positive (A+) and negative (A-) ideal solutions

	C1	C2	C3	C4
A AIRLINE	0,1981	0,1251	0,0735	0,1851
B AIRLINE	0,1585	0,1001	0,0551	0,1851
C AIRLINE	0,1585	0,1001	0,0551	0,1388
D AIRLINE	0,1585	0,1001	0,0551	0,1388
A*	0,1981	0,1251	0,0735	0,1851
A-	0,1585	0,1001	0,0551	0,1388

Table 45. Technology and innovation positive and negative distances to ideal solution (Si+ & Si-), proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,0684	C1	1,0000	1
S2*	0,0503	S2-	0,0463	C2	0,4790	2
S3*	0,0684	S3-	0,0000	C3	0,0000	3
S4*	0,0684	S4-	0,0000	C4	0,0000	3

Table 46. Main criteria decision matrix

	PRDCT	PRIC	PLC	PRM	DMKT	BRDP	CEX	TIM
A AIRLINE	4,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00
B AIRLINE	3,00	5,00	4,00	4,00	4,00	4,00	4,00	4,00
C AIRLINE	3,00	4,00	4,00	3,00	4,00	3,00	3,00	3,00
D AIRLINE	3,00	4,00	4,00	3,00	4,00	3,00	3,00	3,00
	6,56	9,06	8,54	7,68	8,54	7,68	7,68	7,68

Table 47. Main criteria normalized decision matrix

	C1	C2	C3	C4	C5	C6	C7	C8
A AIRLINE	0,6100	0,5522	0,5852	0,6509	0,5852	0,6509	0,6509	0,6509
B AIRLINE	0,4575	0,5522	0,4682	0,5208	0,4682	0,5208	0,5208	0,5208
C AIRLINE	0,4575	0,4417	0,4682	0,3906	0,4682	0,3906	0,3906	0,3906
D AIRLINE	0,4575	0,4417	0,4682	0,3906	0,4682	0,3906	0,3906	0,3906
w	0,2060	0,2318	0,1064	0,0944	0,1130	0,0845	0,0532	0,1108

Table 48. Main criteria weighted normalized decision matrix and positive (A+) and

negative (A-) ideal solutions

	C1	C2	C3	C4	C5	C6	C7	C8
A AIRLINE	0,1257	0,1280	0,0623	0,0614	0,0661	0,0550	0,0346	0,0721
B AIRLINE	0,0943	0,1280	0,0498	0,0491	0,0529	0,0440	0,0277	0,0577
C AIRLINE	0,0943	0,1024	0,0498	0,0369	0,0529	0,0330	0,0208	0,0433
D AIRLINE	0,0943	0,1024	0,0498	0,0369	0,0529	0,0330	0,0208	0,0433
A*	0,1257	0,1280	0,0623	0,0614	0,0661	0,0550	0,0346	0,0721
A-	0,0943	0,1024	0,0498	0,0369	0,0529	0,0330	0,0208	0,0433

Table 49. Main criteria positive and negative distances to ideal solution (Si+ & Si-), proximity to ideal solution (Ci) values and performance rankings

						Rank
S1*	0,0000	S1-	0,0639	C1	1,0000	**1**
S2*	0,0430	S2-	0,0344	C2	0,4447	2
S3*	0,0639	S3-	0,0000	C3	0,0000	3
S4*	0,0639	S4-	0,0000	C4	0,0000	3

Table 50. Ranking

Airline	PRDCT	PRIC	PLACE	PRMT	DMKT	BRDP	CEXM	TIM	General
A	1	2	1	1	1	1	1	1	***1***
B AIRLINE	2	1	2	2	2	2	2	2	***2***
C AIRLINE	4	4	4	3	3	4	3	3	***3***
D AIRLINE	2	3	3	3	3	3	3	3	***3***

According to AHP results, pricing (0.232) and product/service quality (0.206) stand out as the most critical marketing criteria in airline companies; this shows that consumers primarily care about price and product and service quality. Digital marketing (0.113) and technology-innovation (0.111) also play a decisive role in competitive marketing strategies with significant weights. In the TOPSIS ranking, Airline A ranks first with its superior performance in these priority criteria. Thus, multi-criteria analyses show that, in addition to price and product/service quality, digitalization and innovation are also critical for achieving competitive advantage in airline marketing.

5. Discussion and Conclusion

The results of this study reveal critical insights into how strategic marketing performance is shaped in the airline sector. The AHP analysis demonstrates that pricing (0.232) and product/service quality (0.206) are the most influential factors affecting airline marketing strategies. These findings align with foundational value-perception models, which emphasize that consumers evaluate offerings based on the trade-off between perceived benefits and perceived sacrifices (Kotler & Keller, 2016, p. 150; Zeithaml, 1988, p. 13;). This relationship is especially salient in the airline industry, where passengers display high price

sensitivity while simultaneously expecting a baseline of service quality such as punctuality, cleanliness, and convenience (Tarn, 1999, p. 30). Therefore, the commonly cited marketing maxim — "customers seek maximum value at minimum cost" — is not only theoretically sound but empirically validated in this context.

Beyond price and product/service quality, digital marketing (0.113) and technology-innovation (0.111) emerge as essential, though secondary, components in competitive marketing strategies. This reflects a paradigmatic shift in the airline industry, where digitalization and technological agility are increasingly replacing traditional channels as the dominant drivers of differentiation (Buhalis & Foerste, 2015, p. 154; Keke, 2024, p. 63). For example, digital tools such as mobile apps, real-time booking systems, loyalty programs, and data-driven personalization are no longer optional but expected service components. These tools not only enhance operational efficiency but also significantly impact customer acquisition and retention, thereby expanding the marketing value chain beyond the 4P framework to include digital and experiential touchpoints (Chaffey et al., 2013, p. 56).

The TOPSIS results further reinforce the multidimensional nature of marketing performance. Airline A, which did not lead in price but achieved top scores in digital marketing and innovation, ranked highest overall. This outcome validates the strategic importance of integrating cost-effectiveness with technological advancement. Conversely, Airline B, despite leading in pricing, failed to secure top-tier marketing performance—highlighting the limitations of cost leadership in the absence of service or innovation differentiation (Moghadas & Mokhles, 2021, p. 118). This suggests that airline managers must avoid over-relying on price-based competition, and instead adopt hybrid strategies that balance affordability with perceived service excellence and technological appeal.

Interestingly, customer experience (0.053) and brand positioning (0.085) received the lowest AHP weights. However, literature clearly establishes their long-term value in building brand equity and fostering customer loyalty. Emotional, sensory, and behavioral brand experiences have been shown to significantly influence repurchase intentions and customer engagement (Raza et al., 2025, p. 3890). Moreover, Park et al. (2020, pp. 2–3) demonstrated that tangible service factors — including check-in processes, staff courtesy, and in-flight amenities — are integral to customer satisfaction. These findings indicate that while these criteria may not drive immediate performance metrics, they represent critical investments for sustainable brand value creation. Their low AHP weights may reflect underinvestment or a managerial focus on short-term returns, pointing to a potential misalignment between strategic intent and customer expectations.

From a theoretical standpoint, this study extends Resource-Based View (RBV) applications by empirically validating that unique marketing capabilities—such as digital engagement and service personalization—act as strategic assets that create sustained competitive advantage (Vorhies & Morgan, 2005, p. 82; Barney, 1991, p. 628). The findings also support Contingency Theory, demonstrating that marketing effectiveness is contingent upon both internal resources and external environmental dynamics, including customer demands and technological shifts (Donaldson, 2001, p. 345). By incorporating MCDM methods like AHP and TOPSIS, this research further contributes methodologically by offering a structured decision-making framework for prioritizing strategic alternatives, addressing a key gap in the literature on airline marketing performance evaluation (Garg & Agrawal, 2023, p. 21;

Gürsoy et al., 2022, p. 135).

The practical implications of this study are equally significant. Airline managers should not treat pricing as a standalone solution but as a component of an integrated marketing strategy that includes digital marketing, customer experience, and technological innovation. In an industry characterized by volatile demand and increasing commoditization, sustained differentiation requires more than cost control—it necessitates a proactive investment in digital infrastructure, data analytics, customer-centric innovations, and brand development initiatives. Managers are encouraged to allocate marketing budgets not only toward acquisition but also toward loyalty programs, experiential enhancements, and digital transformation projects that provide long-term strategic returns.

In conclusion, this study affirms that airline marketing performance is best understood through a comprehensive lens that incorporates both economic rationality and emotional value propositions. Pricing and product/service quality remain foundational pillars, but their effectiveness is amplified when complemented by digital engagement, technological agility, and consistent customer experiences. By integrating AHP and TOPSIS into the evaluation framework, this research provides both theoretical enrichment and practical utility. It serves as a strategic compass for both scholars and practitioners navigating the complex and evolving landscape of airline marketing.

Future studies should expand the model by including emerging criteria such as sustainability practices, environmental responsibility, crisis response strategies, and AI-based personalization—elements increasingly relevant in the post-pandemic and environmentally conscious travel ecosystem. Additionally, integrating consumer perception data alongside expert judgment could balance supply-side insights with demand-side expectations, leading to a more holistic performance evaluation model. This would further strengthen the theoretical grounding and empirical robustness of airline

marketing strategy research in both domestic and global contexts.

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Benzerlik Taraması	Yapıldı – Ithenticate
Etik Bildirim	itobiad@itobiad.com
Çıkar Çatışması	Çıkar çatışması beyan edilmemiştir.
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