

A Meta-Analytic Review of the Antecedents of Airline Passengers' Loyalty Behaviour

Havayolu Yolcularının Sadakat Davranışlarının Öncüllerine Yönelik Meta Analitik Bir İnceleme

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Abstract

Consumers put importance to be served by a numerous different components leading to loyalty behaviour but in relevant literature it is noticed that these various factors have not been taken into consideration sufficiently. To fill this gap, this study aimed to conduct a meta-analytic review to detect how airline consumers' loyalty behaviour has been shaped by different factors on the basis of Web of Science (WOS) database. The meta-analysis has been carried out with 45 empirical studies which have been mainly based on satisfaction variable affecting loyalty. This variable affects loyalty positively strong by a 0.633 effect size. The other variables which are trust, service quality, perceived value, and image have also positive moderate effect on loyalty by 0.505, 0.426, 0.519, 0.361 effects sizes. Also, commitment shows a positive weak effect on loyalty with a 0.159 effect size. Price has not a significant effect on loyalty. This study enriches the current literature quantitatively by exploring which factors leading loyalty and gives a chance to evaluate the lack of current studies in terms of loyalty behaviour.

Keywords: Passenger Loyalty, Consumer Behaviour, Airline Industry, Meta-Analysis, Jamovi.

Öz

Tüketiciler, sadakat davranışı geliştirmelerinde pek çok farklı hizmet unsuru önemli bulmaktadır; ancak, ilgili literatürde bu birbirinden farklı faktörlerin yeterince ele alınmadığı görülmektedir. Bu çalışma ile bahsedilen eksikliği gidermek amacı ile Web of Science (WOS) veri tabanındaki veriler temel alınarak havayolu yolcularının sadakat davranışlarını etkileyen faktörleri belirlemek için meta-analitik bir inceleme gerçekleştirilmiştir. Meta-analiz, büyük ölçüde sadakat davranışını etkileyen memnuniyet değişkenine odaklanan 45 ampirik çalışmayı kapsamaktadır. Memnuniyetin sadakat üzerindeki etkisi güçlü ve pozitif olup, etki büyüklüğü 0.633'tür. Diğer önemli değişkenlerden olan güven (0.505), hizmet kalitesi (0.426), algılanan değer (0.519) ve imaj (0.361) değişkenleri de sadakat üzerinde orta düzeyde pozitif etki göstermektedir. Bunun yanı sıra bağlılık değişkeninin sadakat davranışı üzerindeki etkisi ise daha zayıf olup, 0.159 etki büyüklüğüyle pozitif yöndedir. Öte yandan, fiyat değişkeninin sadakat üzerinde anlamlı bir etkisi bulunmamıştır. Bu çalışma, sadakat davranışına etki eden faktörleri nicel olarak ortaya koyarak literatüre katkı sağlamakta ve sadakat davranışı ile ilgili alandaki eksikliklerin değerlendirilmesine olanak sunmaktadır.

Anahtar Kelimeler: Yolcu Sadakati, Tüketici Davranışı, Havayolu Endüstrisi, Meta Analiz, Jamovi.

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Although recent studies (Cherchye et al., 2023; Nallainathan et al., 2025) emphasize that this cost difference varies across industries and contexts, earlier research consistently demonstrates that customer acquisition tends to be more expensive than customer retention (McDonald et al., 2003; Tatikonda PHD CMA CFM CPA, 2013). Additionally, a 5% improvement in customer retention leads to a 25% increase in profitability (Clapham, 2003). This situation can be explained by the repeat purchase behaviour of loyal customers and the positive word-of-mouth activities they engage in towards the brand. Therefore, businesses have aimed to identify the desires and needs of their consumers through customer relationship management (CRM), establish long-term relationships with them, and add new customers to their existing portfolios (Thakur & Summey, 2010). In other words, with it, businesses can ensure customer loyalty by identifying customer desires and needs at a personal level and implementing differentiated marketing strategies, in addition to the benefits provided by the 4Ps (Nguyen & Mutum, 2012). In this regard, it has become popular among businesses due to its ability to manage relationships with customers using various tools and technologies, establish strong relationships with existing customers, exert control over customers, and acquire new customers (Varis et al., 2021). Businesses that want their customers to exhibit loyalty behaviour should pay attention to this strategy that has emerged with advancing technology. With the rapid advancements in technology, digitalization has permeated all functions of business. Like other industries, the commercial air transportation industry has also begun to conduct some of its operational activities in virtual environments. Especially in terms of ticketing and reservation services, digital applications are of vital importance. Digitalization provides many conveniences to airline companies, such as reduced retention costs and decreased commissions paid to agents and global distribution systems (GDS), while also bringing some significant disadvantages. Especially with the development of internet technology and the emergence of dynamic pricing (Jayaraman & Baker, 2003), as well as the price competition brought about by competition, consumers can find products with the same features and quality at prices approximately 8% to 15% lower than in traditional stores (Brynjolfsson & Smith, 2000). Consumers can easily switch from one business's virtual platform to another due to the low prices they encounter because of intense competition in the electronic environment (Yuniawarti et al., 2023). This situation is a significant problem in the air transportation sector, just as it is in other industries. This behaviour observed in online consumers is referred to as "browse and switch" (Balakrishnan et al., 2014, p.1). Due to this behaviour observed in online consumers, which stems from price competition rooted in intense rivalry, businesses are unable to manage their pricing policies as they wish. With loyalty programs, businesses try to protect themselves from the negative effects of this behaviour, also known as "showrooming" (Balakrishnan et al., 2014, p.1), by creating switching costs. Although businesses try to prevent this behaviour, which reduces customer retention rates and profitability, with loyalty programs, it cannot be said that they are highly successful. For globally, it is known that the usage rate of loyalty programs by consumers is 14%, while the brand abandonment rate is 75% (Mattison Thompson & Tuzovic, 2020). Additionally, the negative experiences consumers have in the online environment are another issue that businesses need to pay attention to. The internet dissemination of negative experiences by individuals might significantly influence consumer attitudes and affect corporate objectives (Colmekcioglu et. al., 2022). In a traditional marketing environment, it is estimated that a consumer shares their negative experience with at least 11 people around them. The impact of this behaviour can be dangerous for virtual businesses because negative experiences in online shopping can quickly turn into negative sharing activities, much faster than in traditional markets (Wong Poh Ming, 2014). Especially through social media, negative shares made by consumers who are not satisfied with their shopping experience can go viral, damaging the reputation of businesses and reducing their profitability (Ye & Tripathi, 2016). To

mitigate the impact of negative shares, businesses should offer online services that make consumers feel valued. This will not only strengthen the emotional bond with these consumers but also make them feel that they are being considered by the businesses. As a result, consumers will not only be satisfied with this situation but will also recommend the business to their surroundings (Zhao et. al., 2023).

The negative effects brought about by the increased competition due to digitalization actually highlight the importance of why airline companies need to have loyal customers. Considering that the service industry has globally become the most important component of the economy and, for example, accounts for approximately 60% of the gross national product in America and produces 70% of new employment, the intensity of competition and the importance of loyalty behaviour in transportation services will be more easily understood (An & Noh, 2009). Such a customer base, as previously mentioned, offers unique benefits in terms of acquiring new customers through positive word of mouth (Cakir & Cetin, 2013). Airline companies must prioritize factors such as trust, customer satisfaction, and perceived value to have a loyal customer base (Chanpariyavatevong et al., 2021). In other words, airlines can ensure that consumers develop loyalty behaviour by prioritizing quality in the services they provide before, during, and after the flight (Etemad-Sajadi et al., 2016). In this context, accurately identifying the factors that lead airline consumers to become loyal customers in the digital environment is of vital importance for businesses. When the relevant literature was examined through the Web of Science database, it was observed that many studies have been conducted on passenger loyalty in recent years. However, it was determined that these studies primarily attempt to explain loyalty behaviour through constructed quantitative research models. It was observed that the factors leading to loyalty behaviour in these studies were not examined using a meta-analysis approach in the digital environment. In this context, the studies conducted in the WOS database regarding airline consumers are quite limited. There are only 3 meta-analysis studies focusing on airline consumers' behaviours in the WOS database. One of these was found to be conducted on loyalty behaviour. In this study, the effect of customer satisfaction on loyalty behaviour is attempted to be explained using the meta-analysis technique (Erturgut & Gürler, 2023). The first of the other two studies examines the price elasticity of airline consumers based on flight routes using the meta-analysis method (Gallet & Doucouliagos, 2014), while the other investigates the willingness of airline consumers to incur additional costs for emission reduction during their travels using the meta-analysis method (Wendt et al., 2024).

It is observed that Erturgut & Gürler (2023) examined loyalty behaviour in a one-dimensional manner by associating it with satisfaction. However, the topic of satisfaction alone is not sufficient to explain loyalty behaviour. Although, satisfaction is regarded as a crucial factor in fostering customer or brand loyalty; nevertheless, it fails to account for all variance in loyalty. Additionally, studies assert that any satisfied customer demonstrating loyalty to a brand or company would eventually depart (Chiou, 2004). The behaviour of loyalty, on the other hand, is a multifaceted variable that needs to be evaluated from different perspectives. In this concept, loyalty is a multifaceted concept encompassing both behavioural and positional elements; the positioning part indicates customers' attitudes towards a firm, while the behavioural dimension encompasses frequency of shopping, buy volume, size, variety, and availability (Oraită-, 2016). Besides that, loyalty can be regarded as a customer's inclination and commitment to remain a consistent patron over an extended period, purchasing and utilising the products of preferred companies while endorsing them to acquaintances and coworkers (Oraită-, 2016). In other words, a person's ongoing purchase relationship with any brand or business (Bayır, 2022). With this research, the factors leading to airline passenger loyalty behaviour are being explained using the meta-analysis technique. Meta-analysis is a quantitative method that allows for the unbiased summarization and synthesis of a large amount of data, determines the effect size, and enhances the impact and precision of research (Jain et. al., 2012). There are other methods to review literature, but a meta-analysis methodically integrates and synthesises results from numerous quantitative research, as opposed to

conventional systematic literature reviews (Paul & Barari, 2022). By revealing which variables are used and how frequently, as well as the magnitude of their effects on loyalty behaviour through the meta-analysis method, it fills an important gap and provides significant contributions to the relevant literature and researchers. Although the airline industry is a sector where loyalty programs are commonly implemented and customer relationship activities are meticulously monitored, it is quite surprising that the reputable studies in this field (included in the WOS database) have been limited to examining loyalty behaviour through methods such as structural equation modelling based solely on inter-variable relationships (Kim et al., 2016; Wehner et al., 2022; Hassan & Salem, 2022). Therefore, the investigation of the antecedents of loyalty behaviour in the field-specific context using meta-analysis techniques fills an important gap in the marketing discipline and provides significant insights and richness to the field. Additionally, the findings of this research provide a unique contribution to understanding how various variables, in terms of their roles, affect loyalty behaviour, thereby aiding in the development of more precise models. Also, analysing existing studies in the context of airline marketing literature and identifying factors that could influence loyalty behaviour but have not been studied provides significant contributions to researchers working in this field.

The rest of the present study is structured as follows: the subheading of the introduction addresses the related literature review. In the third and fourth sections, the methodology and the results are presented respectively, while the final section includes discussion and conclusion as well as research limitations, recommendations, and implications.

Airline Passenger Loyalty

Air transportation services, regarded as one of the most intangible businesses, necessitate continually high-quality service provision to air travellers to attain sustainable profitability and growth within this sector (Baloch & Jamshed, 2017). Besides that, the increasing number of new airlines entering the air transportation sector not only fuels competition in this industry but also highlights passenger loyalty as a vital success factor for businesses to sustain their profitability (Wehner et. al., 2022). Also, the internet, which has emerged with technological developments and allows consumers to access information continuously, along with harsh competitive conditions, forces businesses to place greater importance on retaining and satisfying their existing customers in order to survive, and to systematically identify the variables that affect consumer satisfaction and loyalty (Sandada and Matibiri, 2016). From this perspective, passenger loyalty plays a key role in enabling airline companies to benefit from important competitive advantages such as market share or share of wallet. Especially for airlines, obtaining sustainable market share and achieving success in the long term are shaped by their consumers' loyalty (Calisir et. al., 2016).

When the relevant literature is examined, it is seen that customer loyalty is conceptualised in a broad manner by several theories. One of the most important of these is Oliver's (1999) four-stage loyalty model, which conceptualises loyalty as a progression evaluated in terms of cognitive, affective, conative, and action loyalty (Evanschitzky & Wunderlich, 2006). In addition, relationship marketing theory emphasises the importance of long-term interactions between customers and businesses, where trust and commitment variables play a central role in sustaining customer loyalty behaviour (Bricci et al., 2015; Morgan & Hunt, 1994; Vatjanasaregagul, 2019). In this regard, loyalty is a relational outcome shaped by variables of emotional attachment and continuous value exchange. In addition, Expectation Confirmation Theory contributes to the understanding of the role of satisfaction in the formation of loyalty. It can even be said that it provides one of the most important foundations. According to this theory, customer satisfaction arises when the service provider's performance meets or exceeds the expected performance (which subsequently leads to repurchase behaviour and loyalty) (Morgan & Hunt, 1994). Finally, according to service quality theory (SERVQUAL), perceived service quality is

considered a key antecedent of customer satisfaction and loyalty (Cronin & Taylor, 1992; Parasuraman et al., 1985; Zeithaml et al., 1996). Especially in service-intensive sectors like the aviation industry, this is the case. As a result, when these theoretical approaches are evaluated together, it is seen that they support the presence of different antecedents in explaining the loyalty behaviour of airline consumers in a holistic manner. Based on these theoretical perspectives, this study adopts a multi-antecedent approach to examine airline passenger loyalty behaviour through meta-analysis, thereby providing a more comprehensive understanding of the relative importance of different antecedents.

At that point, loyalty is the consistent repurchase of products and services from the same company by consumers, regardless of marketing strategies that influence behavioural changes by rival companies (Rizan et al., 2020). According to Leon and Dixon, (2023) consumers gradually follow four steps that lead to loyalty. First is awareness, which competitors can easily beat with price and quality. After that comes affective loyalty. In this step, the focus is on the consumer's emotions towards the target brand or business. In the next step, conative loyalty, which is examined in two subcategories—commitment loyalty and behavioural intention—comes into play. Commitment loyalty is more often used to explain the behaviour of repeat purchases. Behavioural intentions, on the other hand, express the intention towards activities such as purchasing, recommending, and word of mouth. In the last step, it includes the action loyalty of the consumer, such as repurchasing, visiting, and recommend (Leon & Dixon, 2023). The stages of loyalty behaviour expressed here can be addressed in diverse ways in numerous studies. For example, Forgas et al. (2010) examine loyalty behaviour towards traditional carriers and low-cost carriers in terms of affective and conative loyalty in their studies. The findings indicate that the affective loyalty variable stands out as a precursor to conative loyalty, independent of market segment or firm. Again, Leon and Dixon (2023) use personality traits, trust, service quality, and commitment loyalty as predictor variables in their research, where they attempt to identify the variables that contribute to the formation of satisfaction and loyalty. The findings show that the variables of service quality, trust, and satisfaction have positive effects on loyalty.

When examining studies conducted from the perspective of airline consumers, the concept of loyalty is found to be more strongly associated with the satisfaction variable, just as in other fields (Chang & Chang, 2010; Chen & Wang, 2016). In the reviewed studies, although many different antecedents were used for the satisfaction variable, it was also found that in some studies, the perceived service quality variable played a mediating role in the effect on the loyalty behaviour variable (Ganiyu, 2016; Han et al., 2021; Hassan & Salem, 2022). In studies examining loyalty behaviour, the variable of perceived service quality plays a determining role in the formation of satisfaction among consumers (Etemad-Sajadi and Bohrer, 2019; Ragab et al., 2024). In some studies, within the same scope, it is used along with its sub-dimensions (Sandada & Matibiri, 2016; Yas et al., 2022). The perceived value variable is another variable that plays a vital role in the formation of loyalty from the perspective of airline consumers. Passengers make a general cost-benefit assessment by comparing the service offered to them with the cost they incur. This evaluation explains the perceived value variable. This variable has recently been widely used to predict loyalty behaviour (Ragab et al., 2024). Another variable as important as the perceived value variable is trust. The structure of trust is identified as one of the determinants of consumers establishing long-term relationships with businesses and exhibiting repeat purchase behaviour as a measure of loyalty in many different studies (Han et al., 2014; Mohd-Any et al., 2019). The positive image that airline companies possess is considered unbelievably valuable in terms of their efforts to retain customers and plays a role at least as decisive as other variables in the development of loyalty behaviour among airline consumers (Chonsalasin et al., 2020; Hameed et al., 2024).

Methodology

In this research, the meta-analysis technique was used to identify the variables that lead to the loyalty behaviour of airline consumers. The meta-analysis method focuses on calculating the variance of effect sizes, collecting, and integrating the numerical findings of scientific studies, and synthesising unrelated sets of information within a framework (Eshaghi et. al., 2024). Meta-analysis employs statistical effect sizes derived from individual research to ascertain the amount and direction of the relationship between variables x and y. The integration of effect sizes from individual research facilitates the assessment of the degree and direction of pairwise connections among variables (Ghosh & Satya Prasad, 2024). Meta-analysis has many advantages compared to traditional literature review methods, such as precision and scientific rigour. Additionally, by processing a large amount of data in the evaluation model, it can achieve both qualitative and quantitative results, as well as more scientific outcomes, compared to traditional literature review methods that only have qualitative analysis capacity (Wang et. al., 2024). In terms of bibliometric analysis, although it offers a quantitative viewpoint on emerging research subjects, is unable to provide a qualitative evaluation akin to meta-analytical method. Briefly, the distinction from other literature review methodologies is in the application of statistical techniques for the gathering, synthesis, and analysis of study outcomes. Briefly, a meta-analysis is an analytical process that aggregates the data of numerous small individual research through one or more statistical techniques, yielding enhanced information (Göktaş, 2017).

Research Questions:

The fundamental questions being sought in the research are as follows:

1. Which variables are determining the development of loyalty behaviour?
2. Is the role of the satisfaction variable dominant compared to other variables as assumed?
3. Is the development of loyalty behaviour in the digital environment being researched?

Searching Principles and Inclusion/Exclusion Criteria

To enhance the quality of the meta-analysis technique applied in this research, relevant publications were searched using only the WOS database. Within the scope of the research, the accessible publications were included in the analysis after applying the relevant inclusion and exclusion criteria. The publications included in the analysis consist solely of full-text articles. The keywords used for the relevant search are "Airline Passenger Loyalty," "Drivers" and "Airline Passenger Loyalty," "Determinants" and "Passenger Loyalty," "Loyalty" and "Airline," "Customer Loyalty" and "Airline."

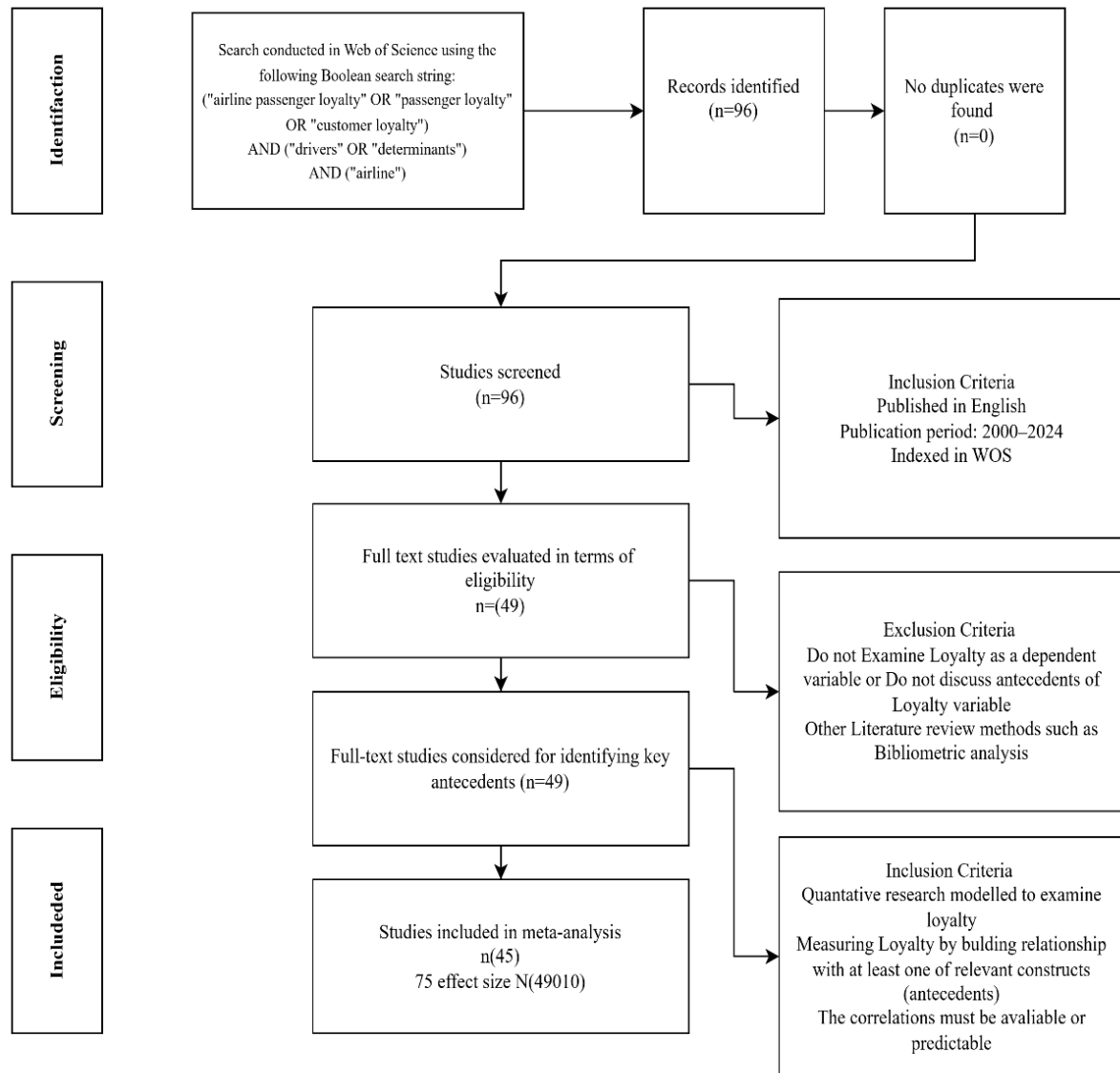
The inclusion/exclusion criteria used to filter the obtained search results are as follows:

1. The studies must be included in the WOS database.
2. The works must be in English only.
3. Studies should be based on quantitative research models.
4. In the studies, Loyalty Behaviour must be included by associating it with at least one relevant antecedent or antecedents (conceptualized as a dependent variable).
5. The studies must have been conducted between the years 2000 and 2024.
6. Studies must necessarily include quantitative findings such as correlations and sample sizes.

In the search conducted considering the keywords listed above, 96 results were initially reached. After screening the initial results with inclusion/exclusion criteria, the number was reduced to 49. Finally, the number of studies included in the research was reduced to 45 by excluding those that could not calculate effect sizes or could not be defined as antecedents. The criterion used for this process is that there should be at least 5 variables or 1000 observations available for the meta-analysis (Dirik, 2019). A detailed PRISMA flow diagram regarding the data collection process can be found in Figure 1.

Figure 1

Prisma Flowchart



Note. Adapted from Moher et al. (2009) and aligned with PRISMA 2020 guidelines.

Data Coding

The distinctions used for data coding are as follows, as in many similar studies (Leong et al., 2021; Bharti et al., 2022):

1. The title of the study,
2. The article in which the study was published,
3. The date the study was published,
4. The author or authors of the study,
5. The number of variables included in the study,
6. The type of sample used in the study (young consumers, students, etc.),
7. The method used in the study,
8. The sample size of the study.

Models for Meta Analysis

There are two different models which are fixed effect models and random effect models to carry out meta-analysis. Unlike the random effects model, which allows for variation in effect sizes, the fixed effects model assumes that a single true effect size is valid for all studies and attributes the variation in effect sizes to sampling error (Leong et. al., 2021). In summary, the fixed effects model posits that the studies are homogeneous, and any variability in the results is attributable solely to sampling error. The random effects model posits that the studies are heterogeneous, attributing the diversity in outcomes to methodological discrepancies or sampling error (Mason et. al., 2023). In this study, although it was assumed that the effect sizes of the studies examined in the sample were like each other, since their sizes were different, the random effects model was used in the analysis and interpretation of the effect size (Leong et. al., 2021).

Data Analysis

In analysis of the data, correlation coefficient was used as a metric to evaluate constructs' effect size (Santini et. al., 2019). In line with this metric, sample size was also used to measure the effect size of variables. Correlation coefficients and sample sizes were entered to JAMOV software, transforming correlation coefficients to Fisher's z values for each research (Erturgut & Gürler, 2023). Also, the bias of the research incorporated in this analysis was assessed. Scientific research may exhibit numerous biases, including publication bias and lag bias; nevertheless, publication bias exerts the most substantial influence on meta-analysis (Jia et. al., 2024). In this research, the failsafe Ns technique was utilized in the analyses conducted regarding the existence of publication bias.

Results

Results of Variable Coding

According to the results of coding process, the mostly appeared variable is satisfaction by a use of 31 times. It is followed by trust with a frequency of 11 occurrences. The third variable used more than others is service quality. The detailed information given in table 1.

Table 1

Antecedent Variables

Name of Variables	Frequency
Satisfaction	31
Price	3
Perceived Value	9
Trust	11
Service Quality	10
Image	7
Commitment	4

Results of Publication Bias Analysis

When considering the higher probability of the findings that are statistically significant being published than the ones that are not statistically valuable, publication bias can affect the analyses and cause exaggerated predictions (Milani et. al., 2024). This situation is known as the "file drawer" effect (Rosenthal, 1979). In this study, the Fail-Safe N criterion was used to address the threat of publication bias. The Fail-Safe N criterion was an important solution to the problem known as the file drawer effect because Rosenthal (1979) ensured the direct evaluation of the issue arising from sample bias in literature

reviews using this method (Orwin, 1983). Based on the Fail-Safe N criterion, the findings obtained from the meta-analysis impressively indicate that to nullify the significant effect obtained for the satisfaction variable, there would need to be 59,718,000 unpublished statistically non-significant studies. For the trust variable, this number is 5,994,000. For Service Quality, it is 2,888,000. For Perceived Value, it is 4,801,000. For Commitment, it is 115,000. For Image, it is 1,316,000. Although the Commitment variable has a lower Fail Safe N value compared to the others, it can be easily said that all variables, except for the price variable, actually show significant resistance against the file drawer problem. On the other hand, while the target significance level in the analysis is 0.050, the obtained p-values are $p < 0.001$ except for the Price variable. The difference suggests the robustness of the results. In this regard, it is observed that the results obtained according to the analysis findings are strong and robust, and at the same time, the threat of publication bias is under control.

Results of Heterogeneity Test

Different criteria can be considered for the heterogeneity test. Some of these include the Cochrane's Q, I^2 , H^2 , and τ^2 statistic criteria (Milani et al., 2024). Cochrane's Q and I^2 statistic criteria were deemed sufficient for heterogeneity in this study, as in many similar studies (Ma et al., 2024). Firstly, the I^2 statistic value ranges between 0 and 100%, and as it approaches 100%, this value indicates an increase in heterogeneity. A value of 75% or higher is considered an indication of high heterogeneity (Huedo-Medina et. al., 2006). Except for the price variable, the I^2 values obtained by all variables indicate high heterogeneity. When we examine the findings in terms of Cochrane's Q statistic, it is observed that the Q values obtained, except for the price variable ($p = 0.263 > 0.01$), fall within the $p < .001$ significance level. This result shows us that, apart from the price variable, heterogeneity is also supported for the other variables in terms of the Cochrane's Q statistic.

Results of Effect Size Analysis

With this research, the shaping of airline consumers' loyalty behaviours and the factors influencing these behaviours were examined considering scientific studies such as articles and papers indexed in the WOS database. To achieve this purpose, the effect size analysis, which measures the strength and impact of each factor extracted and coded from the scanned scientific studies, was utilized. In this sense, the quantitative results of the analyses conducted in Table 2 can be accessed. As seen in Table 2, one of the important criteria used in the analysis is the 95% Confidence Interval (CI). The CI value determines the range within which the true effect size is likely to fall by establishing lower and upper values. In addition to this value, P value, Q, I^2 , Fail-Safe N values were also included in the analysis to evaluate the statistical significance, heterogeneity, and publication bias of the obtained results from various perspectives. More importantly, using these important criteria, the variables affecting loyalty behaviour were identified. Thus, this study provided significant insights into the formation of loyalty behaviour by analysing the existing studies indexed in the WOS database.

According to the effect size analysis, all variables except for the Price variable positively influence loyalty behaviour. The obtained effect sizes vary from 0.159 to 0.633. The weakest effect was achieved with the Commitment variable. This variable shows a weak positive effect (0.159). The strongest effect was also obtained with the satisfaction variable. This variable shows a strong positive effect (0.633). The Perceived Value variable (0.519) also shows a strong positive effect, while the other variables, Trust Service Quality, and Image show a moderate positive effect (0.505, 0.426 and 0.361 respectively).

Table 2*Meta Analysis Findings of Antecedent of Passenger Loyalty and Effect Sizes*

Antecedents	Total sample size (N)	Number of effects (k)	r+	95% Confidence interval	P value	Q	I ²	Fail-safe N
Satisfaction	17,898	31	0.633	0.518–0.747	< .001	1,772,278	98.27%	59,718,000
Trust	7,008	11	0.505	0.266–0.744	< .001	874,333	98.98%	5,994,000
Service Quality	4,429	10	0.426	0.227–0.624	< .001	519,564	97.72%	2,888,000
Perceived Value	6,211	9	0.519	0.234–0.804	< .001	965,482	99.19%	4,801,000
Commitment	4,128	4	0.159	0.076–0.242	< .001	16,330	84.13%	115,000
Image	5,736	7	0.361	0.048–0.673	0.024	949,793	99.25%	1,316,000
Price	3,600	3	0.023	-0.027–0.067	0.311	2,670	9.68%	0

These results suggest that satisfaction plays a central role in shaping airline passenger loyalty, which is consistent with much of the existing literature. However, the findings also indicate that other variables such as perceived value, trust, and service quality have significant effects. This shows that loyalty behaviour cannot be explained by a single factor, but rather by a combination of different antecedents. On the other hand, the weak effect of the commitment variable may be explained by the limited number of studies focusing on this variable. Similarly, the insignificant effect found for the price variable may be related to the complexity of pricing strategies in the airline industry, where factors such as service quality and overall experience may be more influential than price.

Heterogeneity is a condition that arises from the nature of the meta-analysis technique and reflects differences across the studies included in the analysis. These differences stem from variations in sample characteristics, methodological approaches, and measurement tools, and they can affect the results of the meta-analysis, including pooled effect sizes, confidence intervals, and findings (Choi & Kang, 2025).

Regarding heterogeneity, the findings obtained from the study indicate significant relationships between loyalty behaviour and several antecedent variables; however, the heterogeneity levels (I²) among the studies included in the analysis are relatively high. This is not actually an unexpected result because meta-analyses conducted in the field of consumer behaviour and service marketing generally include studies carried out in different contexts. Among these contexts, there are various topics such as airline types (LCC, FSC, etc.), issues arising from geographical region differences, measurement scales, and sample characteristics. Therefore, the high heterogeneity obtained within the scope of the study actually reflects the diversity of the research environments, not the weakness of the analysis. In line with this situation, the use of a random effects model is deemed appropriate because this model accounts for the variability between studies and provides more generalisable effect size estimates.

However, limitations in the data did not allow for subgroup or moderator analyses. Moreover, while subgroup analysis is commonly used to investigate the causes of heterogeneity, especially in cases of high heterogeneity and uneven study distributions, a much larger number of studies are needed to achieve the necessary statistical power for this analysis (Cuijpers et al., 2021). Conducting subgroup analysis with limited data, as in this study, restricts the possibility of obtaining reliable results based on the desired statistical power. Inconsistencies in reporting study characteristics, such as airline types, geographical differences, and measurement approaches, made it difficult to conduct detailed comparisons. Therefore, future research may look at potential moderator effects to better explain the variability in effect sizes.

Discussion, Implications and Recommendations

Especially in recent years, loyalty behaviour, influenced by many varied factors, has gained significant importance in consumer research as part of customer retention strategies. Although the loyalty variable has the capacity to be influenced positively or negatively by many variables, it has been observed that studies conducted in the marketing literature are mostly based on the assumption that the satisfaction variable precedes loyalty behaviour. However, many variables such as price, image, and trust also play a significant role in the formation of loyalty behaviour (Mittal, 2016). The findings obtained from the data processing of the literature review indicate that the satisfaction variable is the most frequently used variable, with 31 instances. Additionally, considering the WOS database, it was found that the number of studies conducted in the field of airline marketing using the meta-analysis technique did not exceed 3, and only one of these studies investigated loyalty behaviour, but did not examine other variables that play a role in the formation of this structure, apart from satisfaction. In order to fill the research gap identified in this study, it was aimed to synthesize and reveal the relationships between the loyalty behaviour variable and other variables that affect this variable.

In the first impact size analysis, the strong effect of the satisfaction structure on the loyalty structure (0.633) is clearly evident. From this perspective, the result obtained supports the dominant role of the satisfaction structure on loyalty. This finding is also consistent with the result obtained from the only study conducted on loyalty behaviour in the airline marketing literature, which examined the satisfaction antecedent (Erturgut & Gürler, 2023). This situation reflects the significant role attributed to the satisfaction variable as a precursor in some way. In other words, it is anticipated that prominent levels of satisfaction will lead to customer satisfaction, and thus the development of loyalty behaviour. From this perspective, it would be appropriate for airline companies to further differentiate and enrich the set of values they offer to maintain elevated levels of customer satisfaction. Based on the findings, it was observed that all variables, except for the price variable, have significant effects on the formation of loyalty behaviour, despite being different from each other. The trust variable stands out as another variable that current publications emphasize, with eleven times appearances in terms of the number of effects. The effect size obtained with the trust variable is 0.505. This effect value is also in line with the findings of other studies conducted in the marketing literature (Pan et al., 2012; Tanford, 2016). The result obtained provides important data in terms of loyalty behaviour, which is the most significant outcome of businesses' efforts to retain customers. As consumers' levels of trust increase, their loyalty to businesses is positively affected. This is why it is essential for airline companies to take measures that will further increase the level of this component in the services they offer. In this context, the solutions that airlines develop regarding punctuality, delays, and flight cancellations, which are among their most significant issues, will serve as a trust-enhancing measure for consumers even in negative situations towards the companies. Service Quality's number of effects is 10, and with this number, it is the third variable most associated with the loyalty structure. In terms of effect size, the finding obtained is 0.426, which represents a moderately positive effect and is close to the findings of other studies in the general literature (Jung & Tanford, 2017; Zhang et al., 2022). The service quality component is not just a process that ends with the completion of the flight for airline companies. On the contrary, it is a process that continues before, during, and after the flight, and is one of the conditions for the airline to develop long-term relationships with passengers (Balci Tali & Karaduman, 2021). Additionally, because of consumers' perceptions of positive service quality, their tendency to recommend the airline to others increases (Ben Akpoyomare et. al., 2016). This, in turn, offers a unique benefit for airline companies by allowing them to add new customers to their portfolios at no cost. On the other hand, a perception of poor service quality will have the opposite effect and lead to customer loss. Airline companies should therefore consider feedback and complaints, continuously improving their service processes by diversifying quality practices. The perceived value structure has appeared nine times in the conducted

research in terms of the number of effects, and despite being the fourth premise, it has the highest impact (0.519) after satisfaction. This finding is consistent with the values obtained in similar studies (Gremier et al., 2020; Chen et al., 2023) and is also evidence that researchers and businesses should pay more attention to the perceived value variable. The perceived value component is simply the customers' perceptions of the comparison between the benefits they gain and the costs they incur. It is one of the most important tools for businesses to gain a competitive advantage. It is also one of the key factors in the formation of loyalty and satisfaction (Suryadi et. al., 2018). Based on the scope of the perceived value component, airline companies ensure that their products and services have positive outcomes in the eyes of consumers. Therefore, they should strive to enrich the product packages in terms of the sub-dimensions of the perceived value variable, such as "intrinsic and extrinsic attributes of product or service, perceived quality, price, prestige" (Basaran & Aksoy, 2017, p.1). Otherwise, the likelihood of an adverse situation regarding satisfaction and loyalty structures arising and the loss of competitive advantage is quite high. On the other hand, another variable that is a precursor to loyalty behaviour, commitment's number of effects is 4. This variable has the lowest value (0.159) among the findings of the effect size analysis. The fact that the commitment variable is represented by only four times appearances in loyalty-related studies is seen as the main reason for obtaining such a degree of effect. Regardless of this result, the commitment structure has a capacity that is at least as important as satisfaction in the formation of loyalty behaviour. The reason for this is that this structure reflects consumers' tendency to form long-term bonds with the business and the strength of their relationships with the business (Sritharan, 2018). In addition to that the intensity of a consumer's commitment is influenced by a multifaceted causal framework, wherein their resistance to change is heightened by the degree to which they (1) align with significant values and self-concepts linked to the preference, (2) are driven to pursue informational complexity and coherence within the cognitive framework supporting their preference, and (3) possess the autonomy to make choices that hold significance. Consequently, marketers can enhance client loyalty by optimising any or all these factors. Such tactics seem particularly relevant in-service sectors like the hotel or airline business, where retention rates are consistently influenced by competitive pressures (Pritchard et. al., 1999). In his study, Fullerton (2003) emphasizes the significant role of the Commitment variable in marketing activities and investigates how different forms of this construct play roles in the relationship between service providers and consumers. The obtained findings express that client commitment rooted in shared values and identification consistently enhances client loyalty. When consumer commitment relies on switching costs and reliance, it yields ambiguous effects on customer loyalty (Fullerton, 2003). Briefly, customer commitment encapsulates the total happiness of clients with your company's solutions. The confidence and dependability established between you and your clients dictate the achievement of your company (VIP Response, 2022). The importance of airline companies establishing trust and reliability through the services they provide to passengers, or in other words, paying attention to the dimensions that constitute the commitment variable, is of great significance in the formation of loyalty behaviour. Among the antecedents of loyalty behaviour, the variable that offers a moderately strong effect (0.361) in terms of effect size is image. This finding is like the results of other studies in the literature (Zhang et al., 2014; Jain, 2019). The moderately strong positive result obtained is not sufficient in terms of the image variable. Airline companies should continue their efforts to always maintain a better image perception in the minds of consumers. The reason of this is an enhanced image can result in improved customer service and heightened loyalty. Consumers endorse prominent brands owing to their market reputation, efficacy, and symbolic significance and this is underscoring the essential connection between image and loyalty (Tahir et. al., 2024). Finally, no significant finding was obtained with the price variable. In fact, this result can be considered normal because the number of studies related to this variable was only 3. This situation prevented the attainment of a significant finding. For this reason, the findings related to the price and commitment variables should be interpreted as exploratory, given the

limited number of studies ($k < 5$). Working with limited data in meta-analysis studies is a common practice, and some research is based on only a few studies. This situation raises the issue of instability in effect size findings and negatively affects their reliability. Previous studies indicate that traditional meta-analysis methods may be limited in their ability to produce accurate results when data is scarce, and these results may change as new studies become available. Some studies suggest that results obtained with limited data may approximate final estimates; however, the stability of these results remains uncertain. For these reasons, the findings of meta-analyses conducted with a limited number of studies should be evaluated cautiously and considered exploratory in nature (Anello & Fleiss, 1995; Guolo & Varin, 2017; Mathes & Kuss, 2018).

The examined studies show that the satisfaction variable is heavily used to explain loyalty behaviour. Other variables can be considered as secondary predictors in terms of the number of studies in which they are used being close to each other. This situation points to a significant gap in the relevant literature because loyalty represents a multidimensional behaviour. This behaviour should be examined more comprehensively with other variables and even new variables. For example, while the price variable is an important factor in loyalty and some studies have found that it has an even greater impact on loyalty than service quality (Amiruddin, 2013), it is very surprising that the studies included in the WOS database have not prioritized the price variable. Both researchers and airline companies should have a broader perspective on loyalty behaviour. Moreover, they should evaluate the formation of loyalty behaviour with a broad and inclusive approach considering different variables. Additionally, it was noted that the positive and negative effects of technological developments were not included in the examined studies. Another striking finding is the identification that one of the most important of these effects, the price variable, has been entirely unresearched. Since price has become variable and dynamic with the development of internet technology, it is a matter that businesses must carefully monitor in a highly competitive environment. Implementing unreasonable prices for businesses poses a significant threat when competitors offer lower prices for the same product, and consumers become aware of this situation through internet technology. Paying higher prices for the same product can create a sense of being taken advantage of among a sizeable portion of consumers and can undermine their trust in the business. This, unfortunately, will negatively affect loyalty behaviour. Therefore, examining loyalty behaviour both in terms of price variables and in terms of technology adaptation or the implications of technological developments in the online environment, expressed as e-service quality, e-trust, and e-perceived risk, will be beneficial for both researchers and businesses. In other words, the new variables that emerge in the online environment should also be examined in terms of loyalty behaviour.

In general, the findings of the study include results that are consistent with the nature of loyalty behaviour formation. The findings of this study align with the notion that loyalty behaviour among airline passengers emerges not under the influence of a single dominant variable, but rather through the combined effect of various antecedents. This result indicates that consumer behaviour in the service sector is complex and cannot be modelled or explained by a single variable. In this context, the findings obtained are consistent with the marketing literature; however, unlike other studies in the literature, they provide a clear perspective on how different antecedents play a role in the formation of loyalty behaviour from the perspective of the airline industry. From a broader perspective, the findings suggest that research on airline consumer loyalty should move beyond univariate approaches and focus on integrated models that encompass the multiple dimensions of customer experience, yielding better and more beneficial results.

This study makes a significant contribution by providing a comparative meta-analytic evaluation of multiple variables influencing airline consumers' loyalty behaviour, rather than focusing on a single variable such as satisfaction. In this way, it offers a clearer understanding of the relationships between

different antecedents. Additionally, the study identifies an important gap in the literature, particularly the limited examination of variables such as price and commitment, thereby providing direction for future research.

Conclusion

In this study, the antecedents of loyalty behaviour from the perspective of airline consumers were examined using the meta-analysis technique. For this purpose, a search conducted on Wos initially yielded 96 studies. By applying the Prisma approach to the obtained search findings, a total of 45 samples were reached. In the first phase of the analyses, publication bias was tested. The findings of the test conducted using the Fail-Safe N criterion suggested that all variables, except for the price variable, showed strong resistance to publication bias. Subsequently, heterogeneity analysis indicated that the included studies were heterogeneous. In the analyses, the random effect technique was utilized, and the effect sizes were interpreted according to this technique. The findings indicate that the satisfaction and perceived value variables have a strong positive impact, the service quality, trust, and image variables have a moderately strong positive impact, and the commitment variable has a weak positive impact. The price variable, on the other hand, does not have a significant effect. These results indicate that loyalty behaviour in the airline context is more strongly influenced by value-driven and experiential factors than by price considerations.

Limitations and Contributions

This research only investigates the antecedents of loyalty behaviour in terms of the marketing efforts of airline companies. Therefore, it is limited in terms of representing general consumer behaviour. Similarly, only WOS was used as the database in this study. In this study, the preferred application aimed at ensuring the high-quality level of the studies included in the sample, but it actually led to the exclusion of other databases, thereby limiting the study in terms of accessibility to various works or the richness of the research.

The research identifies the incorrect attitude towards explaining loyalty behaviour based on the satisfaction variable in the field and reveals the necessity of examining loyalty behaviour from different perspectives, providing significant contributions both practically and theoretically. At the same time, the identification of the necessity for airline companies to improve related services based on the values obtained regarding other variables from the perspective of airline consumers also provides significant contributions to both businesses and researchers examining the impacts of business practices.

Compliance with Ethical Standards

Ethical Approval

The research conducted did not require ethical committee approval, as it is a quantitative review of existing literature concerning passenger loyalty.

Author Contributions

The author solely conducted the review and wrote the manuscript.

Declaration of Conflicting Interests

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