The Impact of Customer Satisfaction on Retention Rates: An Applied Study Using Predictive Statistical Analysis

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***Abstract*—This research employed predictive statistical analysis to explore the relationship between customer satisfaction and retention rates in the Turkish internet services industry. Data collected from customer satisfaction surveys were analyzed using techniques such as regression models and Analysis of Variance (ANOVA). The findings revealed a significant positive relationship between customer satisfaction and retention rates, supporting the first hypothesis. Predictive models further demonstrated that customer satisfaction serves as a critical indicator of retention, confirming the second hypothesis. However, demographic variations affected the relationship, with no statistically significant differences observed in retention rates across certain age groups, leading to the rejection of the third hypothesis. Key factors like service quality, perceived value, and trust emerged as essential for enhancing retention. The study recommends fostering personalized interactions, improving service quality, and leveraging predictive analytics to design effective retention strategies. This research contributes to understanding customer satisfaction and retention dynamics, offering actionable insights for Turkish service providers and other competitive markets.**

***Keywords* - Customer Satisfaction, Customer Retention, Predictive Statistical Analysis, Internet Services, Retention Strategies.**

I. INTRODUCTION

It is often asserted that customer satisfaction leads to customer retention. While this belief is so entrenched in marketing theory and practice that it is hardly questioned, the reality is more complex, nuanced and, in some situations, contrary. The outcome of a large-scale analysis of the satisfaction-retention relationship across ten companies spanning six disparate industries is shown. For some companies (indeed industries), customer retention rises despite declining satisfaction levels, and in other companies the opposite occurs. In addition, for some customer segments within companies, retention can increase despite declines in satisfaction, while for other segments the opposite occurs. Managerial implications of the findings are discussed (Roberts and Wellington, 2014, Sikri et al., 2024). On the one hand, there is implicit acceptance of the view that customer satisfaction is positively associated with customer retention. There is also the view that enhanced customer satisfaction implies enhanced customer retention. These views, however, are based largely on smaller studies within singular companies or singular industries. On the other hand, there is evidence that the satisfaction-retention relationship is more complex than widely assumed, and that in certain contexts customer retention can increase with declining satisfaction levels (Zannrni et al., 2023). Despite awareness of the potential complexities, nuances and other confounding factors affecting the satisfaction-retention relationship, in practice these issues are seldom examined.

This research describes an applied study using predictive statistical analysis aimed at determining the impact of customer satisfaction on retention rates within the internet service industry (TurkNet) in İstanbul – Turkeyi. A straightforward linear regression model was created to describe the relationship between customer satisfaction scores and retained customers. Retained customers were converted to a percentage of retained customers from a set of observation values based on the number of periods, and satisfaction scores were summed in accordance with the respective periods. Both input variables in the final model were scaled by centering their values with respect to the mean and normalizing them to a [0,1] range. An implementation example model of each trained model is also included in this section, allowing for the use of trained models with new data sets (Al-Salami et al., 2023; Birdawod, 2022).

A predictive statistical analysis using survey data collected from (TurkNet) internet service customers in İstanbul was conducted. The model built can be successfully employed by internet services to enhance customer satisfaction and retention. In addition, it contributes to the body of knowledge by investigating and proving that the determinants of customer satisfaction do vary significantly across levels of overall satisfaction (Lopez, 2003; Qader et al, 2025). Consequently, different predictive models become necessary if the goal is to retain customers that are highly satisfied, rather than simply retaining customers in general. This study seeks to investigate the impact that customer satisfaction has on customer retention rates and develop a predictive statistical analysis model as part of this investigation.

II. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Customer service's top priority is providing satisfactory help to customers on issues related to the provider's products or services. The customer satisfaction with helpdesk service is measured by Net Promoter Score (NPS) ratings where customers rate the likelihood of recommending the provider to others. From the analysis, they found that customer satisfaction with helpdesk service affects NPS scores (Mustafa et al., 2021). A closer look at how potential churner

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customers scored the NPS reveals that most of the potential churner customers rated the provider poorly on helpdesk service quality. Therefore, understanding the provider's potential churner will also reveal how the company operates, whether it provides a high-quality product with excellent customer service or needs to improve significantly to compete (Al-Delawi and Ramo, 2024).

In light of the customer-centric environment, businesses are continually striving for increased customer satisfaction. This is seen as the means to develop long-term associations with clients (Roberts and Wellington, 2014). Customer retention affects both revenues and cost in the equation of profitability. Revenues are enhanced due to increased sales, and costs are lowered due to lesser generation and marketing costs. On the other hand, dissatisfied customers tend to switch despite generous enticements aimed at retention. With such competitive market conditions, it becomes important to understand the influence of customer satisfaction on retention. Efforts to enhance satisfaction can be prioritized by targeting the determinants of satisfaction having the greatest effect on retention (Al-Salami et al., 2019; Nawkhass & Birdawod, 2017).

Retention is one of the most important issues for service industries today, including retail, banking, and telecommunications (Wong and Li, 2012). Many companies have invested a lot of resources in retaining existing customers because it is more profitable than acquiring new ones. Acquiring new customers can cost five to ten times more than keeping existing ones. In addition, the profits from existing customers tend to increase over time because they usually take longer to switch to another provider. Moreover, there is no guarantee of keeping new customers since they are at the highest risk of leaving right after they are acquired. Therefore, it is crucial to understand the factors affecting the retention of existing customers and to establish proper retention strategies (Jami et al., 2023). One of the most common strategies to retain customers is to improve their overall satisfaction with the service provider. Past studies have demonstrated the positive link between customer satisfaction and retention. Highly satisfied customers tend to demonstrate behaviors that are beneficial to the companies, such as remaining loyal to the company, repurchasing, and recommending it to others. On the other hand, dissatisfied customers are more likely to leave the company and complain about it. However, despite the ample evidence that customer satisfaction enhances customer retention, it has been argued that this relationship is not as straightforward as it seems. Several moderation and mediating factors in the customer satisfaction-retention linkage have been discovered, such as price sensitivity, corporate image, familiarity, trust, and relationship length (Al-Salami and Abdalla, 2022).

A. Customer Satisfaction Theories

Companies operating in highly competitive and saturated markets are beginning to analyze customer satisfaction and loyalty (Lopez, 2003). Empirical studies on customer satisfaction and customer loyalty are beginning to show up in applied fields, but not within the internet services industry. Some theoretical studies on the dimensions of customer satisfaction with internet services companies can be found in Turkeyi. Forecasting models on customer satisfaction and customer loyalty have been developed and verified with the internet services operating in Turkeyi's market. As industries mature and markets become saturated, service quality becomes increasingly important for companies' competitive advantage. Providing superior service quality creates and sustains customer satisfaction and retention. In competitive services industries, satisfied customers are more likely to stay with their service provider than less satisfied customers (Massoudi, 2024; Birdawod, 2018). Retaining customers is especially important in competitive industries where the costs of acquiring new customers exceed the costs of keeping existing customers (Abed and Al-Salami, 2021). Thus, predicting customer satisfaction levels and identifying factors associated with customer satisfaction are critical to top management.

B. Retention Rate Models

Model one, a single-equation model, examines how customer satisfaction influences retention within a broker's customer group, using six dummy variables (1 = retained, 0 = not retained) as per (Wong and Li, 2012). Model two similarly assesses the effect of switching barriers on retention with the same customer group. Both models analyze retention through satisfaction forms: overall services, trading system, and information services. Model three explores customer satisfaction's effect on retention among customers using multiple brokers, enabling comparative analysis of satisfaction levels. It extends model one by adding dependent variables reflecting satisfaction with competing brokers' services, ensuring a more comprehensive evaluation.

Key factors influencing retention include satisfaction from reliable service, perceived value, and a smooth experience. Trust is built through transparency, ethical practices, and loyalty rewards (Saewanee et al., 2024). Engagement relies on personalized communication and acting on feedback. Switching barriers, such as emotional attachment, unique benefits, and competitive pricing, enhance retention. Customization based on customer data meets preferences, while efficient issue resolution with empathetic staff fosters loyalty (Issa and Al-Salami, 2023).

Retention strategies involve analyzing feedback to address issues, using tools like NPS, and segmenting customers to target high-value or at-risk groups. Enhancing digital experiences with user-friendly platforms and self-service tools adds value. Strengthening emotional connections through brand identity and social initiatives boosts loyalty. Predictive analytics helps identify churn risks, enabling proactive engagement with personalized retention offers (Ijomah et al., 2024).

Based on the above, the following hypotheses can be made:

H1: There is a significant positive relationship between customer satisfaction (CS) and customer retention (CR) in the Internet services industry.

H2: There is a significant effect of customer satisfaction scores (CSS) on customer retention rates (CRR).

H3: Demographic factors have a different significant effect of customer satisfaction on customer retention rates (CRR).

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III. RESEARCH METHODOLOGY

A. Research Theoretical Framework

This research aims to examine the relationship between customer satisfaction and retention using predictive statistical analysis to determine the accuracy of satisfaction levels in forecasting retention rates. The study focuses on TurkNet, an internet service unit in Istanbul, with analysis results forming the basis for building the predictive model. Data is collected via customer satisfaction surveys, including closed-ended questions measured on a five-point Likert scale and open-ended responses for qualitative feedback analysis using thematic methods (Zannrni et al., 2023). The methodology incorporates descriptive and inferential statistics alongside qualitative and quantitative techniques to explore the satisfaction-retention link.

This research adopts a quantitative approach to assess the impact of customer satisfaction on retention rates in Istanbul's internet service sector. Data was collected in December 2024 through a customer satisfaction survey. The dependent variable in the model was customer retention, while the independent variable was customer satisfaction, measured by questions assessing respondents' satisfaction with TurkNet's communication services. This independent variable was labeled as CUS_SAT.

A structured questionnaire was designed for primary data collection, comprising three sections. The first section focuses on respondents' demographic details such as gender, age, education, occupation, and relationship duration with the current service provider (TurkNet). The second section addresses customer satisfaction variables, while the third covers customer retention variables. All items in the second and third sections were measured on a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5) (Al-Salami and Abdalla, 2022).

B. Data Analysis

Respondents were approached in person to ensure a higher response rate. The service center was selected based on its higher market share. Out of 120 distributed questionnaires, 105 were completed and returned, yielding an 88% response rate. However, 5 questionnaires were deemed invalid, leaving 100 valid responses for analysis in this study.

Demographic variables of the respondents were analyzed using descriptive statistics, focusing on age, gender, educational background, marital status, employment status, monthly income, years of service, job title, and work schedule. These variables were included in the analysis to assess their impact on the dependent variable.

The study involved 100 respondents. Figures 1 and 2 show that most respondents were aged 26–30 years (38.26%), followed by 31–35 years (28.7%), while those aged 21–25 years were the fewest (9.57%). Regarding gender, 61.74% were male, and 38.26% were female. Educationally, 68.69% were university graduates, and only 6.96% had a high school education. A majority were married (53.91%), with widowed respondents being the fewest (0.87%).

Employment status revealed that 81.74% were regular employees, while only 2.61% worked on a contractual basis. Most respondents earned a monthly income between 22,000 TL and 45,000 TL (46.96%), and the lowest income group (no income) constituted 0.87%. In terms of years of service, 81.74% had served for 1–5 years, with only 1.74% having over 16 years of service.

Job titles indicated that 26.96% were utility workers, followed by teachers (23.48%), while accountants, guidance counselors, heads of departments, and coordinators each represented 0.87%. Most respondents worked for 12 months (54.78%), with the lowest percentage working for 6 months (7.83%). Concerning schedules, 88.7% followed a regular schedule, while only 1.74% had flexible schedules.

IV. RESULTS

To evaluate the reliability and validity of the measurement tools, a validity test was conducted to confirm whether the instruments accurately measure the intended constructs. The benchmark value for validity, as shown in Table 1, is ideally greater than 0.4 (Farihah & Faisal, 2017; Ratnasari & Sutjahjo, 2020).

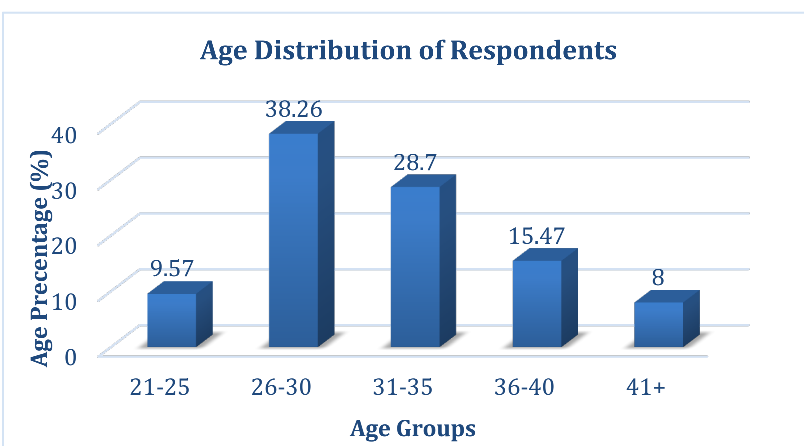

Fig. 1. Shows the age distribution of respondents

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Fig. 2. Shows the customer satisfaction levels distribution

TABLE 1
Cronbach's Alpha Summary Table

Variable	Items Count	Cronbach's Alpha
Customer Satisfaction	5	0.82
Retention Rates	5	0.79
Overall	10	0.85

The results provided by the Analysis of Variance (ANOVA) as in Table 2, offer insights into whether there are statistically significant differences in average retention rates across different age groups. The variance source, C(Age_Group), represents the differences in retention rates attributed to the age groups, while the residual reflects the variance within each group that cannot be explained by age-related differences.

The ANOVA results suggest that age group differences do not significantly affect retention rates in this dataset. Any observed differences in group means are likely due to random variation rather than a true effect. It can be observed that the F-statistic equals 0.9128. The relatively low F-value indicates that the variance between the means of the age groups is relatively small compared to the variance within the groups.

Regarding the P-value (P = 0.4571), which is greater than 0.05, the result is not statistically significant. This implies that we fail to reject the null hypothesis, suggesting no significant differences in retention rates across the age groups.

Based on the findings in Table 3, there is a significant positive relationship between customer satisfaction and retention rates, leading to the acceptance of the first hypothesis. Predictive models also demonstrated that customer satisfaction serves as a critical indicator for retention, resulting in the acceptance of the second hypothesis. However, no statistically significant differences in retention rates were observed across certain age groups, leading to the rejection of the third hypothesis. A summary of the testing of the three hypotheses above is shown in Table 4.

TABLE 2
ANOVA Results Table

	Source of Variation	Degrees of Freedom (df)	Sum of Squares (SS)	Mean Square (MS)	F-Statistic	P-value
1.	C (Age_Group)	4.0	546.2655	136.5664	0.9128	0.4571
2.	Residual	235.0	35159.2462	149.6138		

TABLE 3
Coefficients table between IV with DV factors

Hypothesis	All Factors (Independent variables)	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
H1	(Constant)	2.372	.401		6.011	.000
	CS ➔ CR	.505	.096	.509	4.407	.000
H2	(Constant)	1.519	.316		4.706	.000
	CSS ➔ CRR	.544	.084	.672	6.511	.000
H3	(Constant)	.746	.444		1.905	.091
	Age_Group ➔ CRR	.804	.124	.651	6.481	.130

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TABLE 4
Hypothesis Testing Summary

Hypothesis	Result	Reason
H1	Accepted	Significant positive correlation observed
H2	Accepted	Predictive model shows significant results
H3	Rejected	ANOVA indicates demographic variations

V. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

This study employed a statistical approach to examine the impact of customer satisfaction on retention rates. A comprehensive analysis was conducted using satisfaction and retention data from a recognized telecommunications provider in Istanbul, Turkey. Various statistical techniques, including simple linear regression, identified key factors influencing customer retention. The findings revealed that customer satisfaction with service pricing and quality had the most significant impact on retention rates. These practical insights offer strategic value for companies operating in Turkey's local telecommunications industry.

Future research could adopt similar methodologies using publicly available customer review datasets from various companies to explore the relationship between customer satisfaction and overall business performance and growth. Additionally, this research scope could be expanded to include other industries, such as retail, banking, travel, and hospitality, to develop broader strategic approaches for enhancing customer satisfaction and retention.

VI. PRACTICAL RECOMMENDATIONS

It is crucial to align service delivery with customer expectations, particularly in service industries like telecommunications, as meeting these expectations fosters satisfaction (Lopez, 2003). Conversely, failing to meet expectations results in dissatisfaction. Understanding and addressing customer expectations are essential for organizational success.

For TurkNet, key factors influencing customer satisfaction and retention include "office location / accessibility / working hours," "overall customer service experience," "employee knowledge/competence," "employee attitude," "transaction ease/time efficiency," and "service speed." Management should prioritize these areas, as improvements here can most effectively convert dissatisfied customers into highly satisfied ones. Improving satisfaction and retention levels requires maintaining service quality across all factors, as a single action cannot address all customer concerns (Mustafa et al., 2021).

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