

The Effects of New Generation Technologies on The Sales and Marketing Strategies of Airline Companies - A case study in Turkey

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Abstract

Today, the use of the internet as a trading tool has led to the emergence of the concept of electronic commerce and mobile technology. The aviation industry has also adopted new technologies and has started to use it because of the fact that it is one of the leading sectors that use technology the most. The use of basing internet information technologies has a positive impact on distribution costs in airline sector. It has also given a new format to the relationships between intermediaries and customers. Airline companies also see this technology as an effective means of competition in Turkey and invest heavily in this area. It is predicted that mobile technology will shape the future of the aviation industry. This research was conducted as descriptive quantitative design aiming to determine that the effects of new generation technologies on sales and marketing strategies of the airline companies. 400 people, who participated in the survey developed by the researcher, formed the sample of the research in the Turkey. The results of the study indicate that the 18-35 (Generation Y) age group, which uses the technology and closely follows the discounts & the campaigns should be given importance in customer-oriented marketing activities. In addition, it is seen that finding reasonable tickets and saving time parameters are important for the customers and that the airline sales and marketing strategies will be shaped through the mobile in the future.

Keywords: Airlines, sales and marketing, information technology, electronic trade, mobile technology

1. Introduction

Rapid developments in the 21st Century in the field of technology have led to the reshaping of sales marketing strategies and activities of the companies

in this direction. The changes that occurred in internet applications, the specifications of social media sites and the mobile technology products

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enable the interaction between customers and businesses. Big data technologies have started to redraw the fate of all sectors in recent years. In fact, the airline industry is highly specialized in customer experience and loyalty programs. Because of the advantages offered by the internet and the new generation technologies, airline companies that want to create loyal customers have not been able to remain indifferent to advanced technology applications and have adapted to change. Airline operators can raise awareness of their brands and services through distribution channels, reduce their costs by using the latest technologies and perform marketing activities more effectively and efficiently. According to the ICAO's preliminary compilation of annual global statistics, the 4.1 billion airline passengers (2017) and 4.3 billion airline passengers were carried in 2018. This growth was 6.4 percent higher than 2017 [1]. Low-cost carriers made 8.7 per cent growth with estimated 1.3 billion passengers in 2018. According to the latest ICAO long-term air traffic forecasts, expected passenger growth is going to be about 10.0 billion by 2040 [2]. Important increases have occurred in aircraft, passenger and cargo transportation in recent years compared to world averages in Turkey. The total number of passengers increased by 461% to 193.576.844 million, aircraft traffic increased by 261% to 1.914.017 million and the total cargo amount increased by 251% to 3.481.211 tons in the last fifteen years. This growth rate continued as commercial passengers (210.947.639 million), aircraft traffic (2.017.220 million) and total cargo (3.855.231 tons) in 2018 [3]. According to the above data, the airline market has become more competitive with low cost carriers due to increased traffic volume and passenger demand. All these developments have led to the transition to the customer-oriented sales and marketing approach in the airline industry. Sales and production-oriented marketing concept has been abandoned by traditional airlines because the products presented in this way, no longer meet today's customer needs and expectations [4]. In this study; it was aimed to find the factors that influence the efforts to expand the sales-marketing network of airlines that use the latest technology marketing techniques and social media sites. Due to the fact that there are not a wide variety and rich researches in this field, I believe that it can contribute to literature.

Highlights

- Information technologies has a positive impact on distribution costs in airline sector.
- Mobile technology will shape future of the aviation industry
- The airline industry is highly specialized in customer experience and loyalty programs.
- Big data technologies have led to the transition to the customer-oriented sales and marketing approach in the aviation industry

2. Literature

In recent years, the use of technology in airlines and the proliferation of self-services have attracted scholars. It can be summarized some studies as follow.

Suki, N. M., & Suki, N. M. [5], this study aims to examine the intention of individuals to use such apps, and uses Structural Equation Modelling (SEM) to analyse the data gathered from individuals in Malaysia. Perceived usefulness represents maximum effect on individuals in respect of their intention to engage with such an app. offered on a mobile device. Due to intensive market competition, airline companies are enriching their business operations by offering flight ticket booking apps that can be downloaded on mobile devices. Airline companies should take into account of using interactive and attractive features of online channels in order to encourage more individuals to try their flight ticket booking apps on mobile devices, if they wish to become more competitive in the current market.

Amaro, S., & Duarte, P. [6], based on the Theory of Reasoned Action, the Theory of Planned Behaviour, the Technology Acceptance Model and the Innovation Diffusions Theory, this research paper submits and empirically tests an integrated model to investigate which factors affect intentions to purchase travel online. The experimental results, achieved in a sample of 1732 internet users show that intentions to purchase travel online are mostly determined by attitude, compatibility and perceived risk.

Oyewole, P., Sankaran, M., & Choudhury, P. [7], the aviation industry is actively adopting various forms of technological innovations. This study

analyze the impact of the use of Information Communication Technology (ICT) on passenger airline services in Malaysia. Airlines, travel agents, and passengers were reached through a questionnaire survey. The results show that the perception of the airlines does not match with that expressed by the travel agents and the passengers. While the airlines are thinking that ICT alone is enough to provide suitable services and customer satisfaction, the agents and passengers consider that ICT alone is not enough and that human interaction is necessary.

Forgas, S., Palau, R., Sánchez, J., & Huertas-García, R. [8], this study investigates passengers' loyalty to websites of airlines by analyzing differences among users belonging to the Y, X and baby boomer generations. The results show that to achieve users' loyalty for a company's site, it is necessary to first affective e-loyalty through e-trust, which is also positively influenced by offline perceived value, e-satisfaction, and indirectly by e-quality.

Jeon, H. M., Ali, F., & Lee, S. W. [9], this paper investigates customers' adoption and acceptance of smartphone apps to book their flight tickets. It includes 7 different variable: performance expectancy, effort expectancy, social influence, facilitating conditions, customers' innovativeness, customers' interest and perceived trust. Data were obtained from 369 customers who had booked their flight tickets via smartphone apps. Findings suggest that performance expectancy, facilitating conditions, customer innovativeness and perceived trust are positive and significant factor of customers' intentions to book their flight tickets on smartphone apps.

Gures, N., Inan, H., & Arslan, S. [10], because of the increasing importance of SST, many airlines have introduced Self-Service Technologies (SST) and encouraged their passengers to use these technologies more. In this survey, questionnaires were applied to the participants both online and face to face in various airports in Turkey. According to the analysis results, it was revealed that Y-Generation passengers have given preference to SST usage and experienced SST heavily during the pre-flight services. In addition, it was found that functionality, enjoyment and speed level of SST are important factors effecting Y-Generations' actual usage of SST.

Smit, C., Roberts-Lombard, M., & Mpinganjira, M. [11], this paper aims to determine passengers' level of technology readiness and its influence on their adoption of mobile self-service technologies in the airline industry of South Africa. Primary data were obtained from 315 respondents using a structured questionnaire. The sample is contained South African citizens who had travelled using an airline either domestically or internationally within the previous 12 months. Regression analysis was applied to test hypotheses posited in the study. The findings is indicated that airline self-service mobile application adoption is influenced by technology readiness, perceived ease of use and perceived usefulness. Also, both perceived ease of use and perceived usefulness are influenced by technology readiness; and perceived ease of use strongly influences perceived usefulness. In addition, effective communication aimed at increasing the perception that airline self-service mobile applications are easy to use is obligatory to rise the adoption of mobile applications in the airline industry.

3. Methodology

This research was conducted as descriptive quantitative design aiming to determine that the effects of new generation technologies on the sales and marketing strategies of airline companies.

A convenience sample is a type of non-probability sampling method where the sample is taken from a group of people easy to contact or to reach. For example, being at an airport or a tourism event and asking people to answer questions would be an example of a convenience sample. In this study, it has been tried to reach participants who have different demographic characteristic as possible by using non-probability sampling method. Non-probability sampling is a sampling technique where the odds of any member being selected for a sample cannot be calculated. In total 400 people, who participated in the survey developed by the researcher, formed the sample of the research in Turkey. First of all, a pilot application was done with 40 participants who are %10 of the total sample. As a result of the application, the participants' responses were evaluated and it was decided that the items on the questionnaire were understandable. The participant questionnaires in the pilot application were included in the sampling without any changes on the questionnaire items.

Afterwards, the questionnaires were presented to the participants via email, social media tools between 20th of October 2018 - 26th of November 2018. After the missing questionnaires were excluded from the study, a total of 400 questionnaires was taken into consideration. The survey prepared by the researcher contains 20 items. The first 6 items of the survey are prepared for the descriptive characteristics of participants and include questions about age, gender, educational status, sector of employment, residence city and monthly income level. In the next 14 items on the survey are prepared to determine levels of ownership of technological tools and usage levels of the internet based technologies in the purchasing process of airline service. In order to determine the factors affecting the sales and marketing techniques with the effect of technology in airline management, all of the data collected in the study were analyzed with SPSS 23 Statistical Program. Based on the structure and objectives of the data collected for the research, two statistical techniques were applied.

These;

The frequency, percentage distributions and descriptive statistics were examined in order to examine demographic characteristics of the airline customers, levels of ownership of technological tools and usage levels of tech devices in their journeys.

The Chi-square test was applied for the categorical data to compare the levels of ownership of technological means and the use of these technological means in their travels based on the demographic characteristics of the airline customers. Parametric t-test, one-way analysis of variance and correlation analysis were used for the continuous data, when the normality distribution assumption was provided.

All statistical analyses were based on $p < .05$ significance level in differences between the groups and the relationships between the variables.

4. Finding and Discussions

The first 6 items of the questionnaire applied to 400 people in the scope of the research were aimed to define the demographic data of the participants who answered the questionnaire. The demographic

characteristics of the participants were presented in Table 1.

Table 1. Demographic Characteristics of The Participants (N=400)

Demographics Characteristics	Groups	N	%
Age	18-24	60	15.0
	25-34	112	28.0
	35-44	113	28.2
	45-54	68	17.0
	55 and over	47	11.8
Gender	Female	196	49.0
	Male	204	51.0
Education	Up to high school (12 th grade)	54	13.5
	College & Undergraduate	223	55.8
	Graduate	123	30.8
	Working Status	Student	44
Working Status	Public Sector	89	22.3
	Private Sector	209	52.3
	Retired & Other	58	14.5
Monthly Income	2.000 TL and less	69	17.3
	2.001-5.000 TL	180	45.0
	5.001-7.000 TL	62	15.5
	7.001-10.000 TL	41	10.3
	10.001 TL & over	48	12.0

In 7 - 20 items on the survey, it is explained to determine levels of ownership of technological tools and usage levels of the internet based technologies in the purchasing process of airline service. The obtained results were presented in Table 2-7 and Figure 1-2.

Also, it has been examined whether ownership of technological device and usage levels of current device vary according to demographic characteristics of airline customers. Age, working status and monthly income variables were regrouped for some analysis.

5. Conclusion

Aviation firms prefer to uniformity in accessing the technology, tariffs and services they use; but the firms go towards differentiation in terms of service conception. According to the research of Canoz [12], it has been concluded that “the image is important with the ease of access to prices, tariff, comfort and services in order to be differentiated and preferable in the service delivery of airline

companies’’. The development of the internet in the last 15 years has had a positive impact on sales and marketing activities. In order to determine the sales and marketing strategies in terms of the airline, the customer profiles give important clues. Airline companies sell service-oriented and non-stockable products. Today, customer-oriented sales and marketing activities have to be carried out because of developing technology and high customer expectations. The customers’ needs and expectations have to be analyzed very well and have to be offered services in that way. As a result of the field survey applied, it was found that the passengers using the airline differed in terms of various characteristics. In line with the findings of the survey applied, it is possible to summarize the results in terms of airline companies as follows:

Airline companies use direct and indirect distribution channels in the process of delivering their services to their customers. Direct distribution channels used by airline companies include their own ticket selling and reservation offices, corporate websites, automatic ticket selling machines, call center units. According to the research of Gun [13], it has been concluded that “nowadays, the rapid development of the internet has led to serious changes in the air transport sector and the internet has become an important direct distribution channel option among the airline companies’’. The following findings that are considered important related internet and mobile: According Statista 2018 data [14], digital travel sales performed via the internet are expected to be 817 billion dollars in 2020, compared to 694 billion dollars in 2018 in the world. The turnover of mobile sales, which have more than 100 billion dollars of turnover in the online travel market is expected to exceed 200 billion dollars by the year 2020. According Deloitte 2017 Global Mobile market research [15], 92% of turkish users had the smart phones, 81% of users had the laptop computers and 63% of them have stated that they had access to the tablet.

Table 2. Frequency and percentage distributions of device ownership and devices used to buy flight tickets (N=400)

Devices used to buy flight ticket (while planning a travel online)*	n	%
Smartphone	334	83.5
PC	260	65.0
Tablet	62	15.5
Other	9	2.3
Distribution of device ownership *		
Smartphone	394	98.5
Computer	346	86.5
Tablet	171	42.8
Other	54	13.5
None	2	0.5

*Participants were able to mark multiple options

According our research study in 2018, table 2 shows that 98.5% of the participants stated that they had smartphones and 86.5% of them had laptop access. Considering the socioeconomic status of participants in the survey, 83.5% of the participants stated that they use their smart phones to buy the flight tickets. The smartphones with a such universal ownership became to be the most effective weapons in the digital space. The age group of 18-34 prefers mobile phones more than the computers compared to the age group of 35-50. While 19% of the users were using smartphones to make purchases on the internet in 2015, this rate increased to 38% in 2018.

Table 3. Frequency and percentage distributions of yearly flying frequency of the airline customers and the last time purchasing flight tickets from an agency /office (N=400)

Yearly flying frequency	Frequency	Percentage (%)
Less than 5 times	214	%53.5
5-10 times	98	%24.5
11-15 times	28	%7
16-20 times	26	%6.5
More 21 times	34	%8.5
The last time purchasing flight tickets from an agency	Frequency	Percentage (%)
A week before	21	%5.3
A month before	41	%10.3
3-6 months before	71	%17.8
More than a year	100	%25.0
Never	167	%41.8

*Participants were able to mark multiple options

Table 3 shows that 41.8% of the participants indicated that they did not go to the agency/office any time. In total, 61.8% of the passengers that they did not buy any tickets from the agency/office for more than a year.

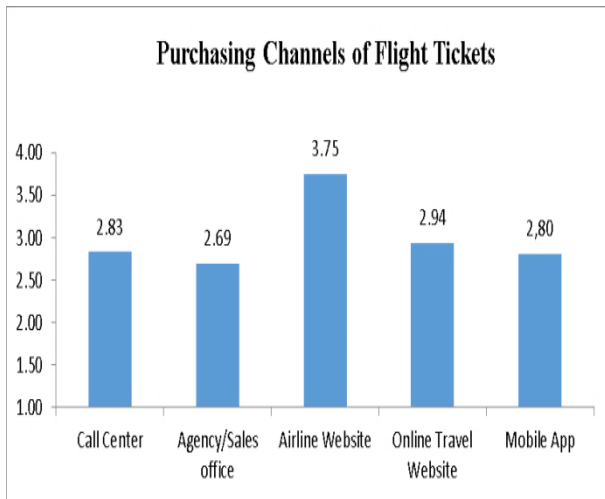


Figure 1. Purchasing channels preferred by the airline customers

Fig. 1 shows that the most preferred purchasing channels were Airline websites, mobile applications and OTA sites. Overall, 72.5% of the purchase channels that used as the first choice channels were online channels. The businesses are able to provide services such as online ticket sales and reservations through the website easier, at less cost and without time shortages. In the same way, customers can save money, time and energy through these services. According to the research of Abca [16], it has been concluded that “airline web sites have a very important role in reaching the customer and ensuring customer loyalty and customer's easy and fast access to the airline's website provides a great benefit both for the time and cost”. In this sense, websites are definitely the most efficient tool for customers to reach and see their services.

Table 4. Frequency and percentage distributions for the reporting channels of problems about flight/travel (N=400)

Reporting channels preferred for problems*	Frequency	Percentage (%)
Call center	277	%69.3
Sales office	55	%13.8
Web site	153	%38.3
Mobile	94	%23.5
Social media channels	52	%13.0
No problem	78	%19.5

Table 4 shows that when the customers have problems in their travels, %69.3 of them stated that use the call center as complaint channel. It is revealed that call centers play an important role for customer satisfaction and after sales support. Today, the customers do not want to depend on people when buying services, but they look to contact with human beings when they have any problem.

On the other hand, it was found that only education background significantly affects problem reporting channels about travelling via call center ($X^2=15.03$, $df=2$, $p=.001$). A post-hoc residual analysis reveals that, proportionally, customers who have got college/undergraduate and graduate degree were reporting problems about travel via call center significantly more than customers who have got high school degree.

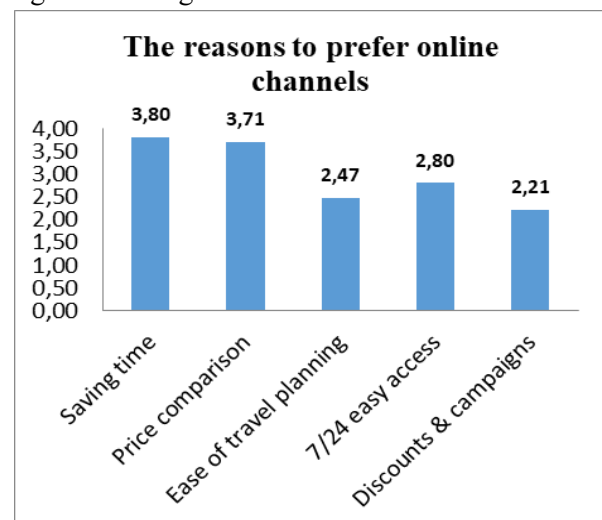


Figure 2. The reasons for preferring online channels when buying a flight ticket

The profile of today's passengers is constantly moving and consist of passengers with limited time. In this research, Fig 2 shows that saving time and price comparison among the reasons of why online channels are preferred are at the top of the list. Post-hoc Scheffe test indicates that, discounts and campaigns[$F(3, 396)=3.42, p=.017$] are followed more by young passengers ($M=2.52$ and $M=2.43$ respectively) than older passengers ($M=2.08$ and $M=1.99$ respectively). Airline companies should design more useful interfaces and strengthen their market share by offering affordable price options. In light of these developments, airlines should be canalized to direct distribution, which enables direct relationships with customers in order to compete with other businesses and to reduce distribution costs. For this reason, it is seen that airline companies offer the opportunity to choose the extra service options they want with some discounts to passengers using online channels.

Nowadays, technology is developing rapidly, customer preferences are changing and competition between airlines is increased. By analyzing the research data of the customers, arranging new routes and offering special campaigns to the demands of the passengers, airline companies can increase their annual sales. As a result of this situation, airline companies are directed to alternative distribution channels. Now, the customers want to choose the suitable travel preferences from his / her home or office and prefer the airline companies that offer this opportunity. In the study, table 5 shows that more than half of the airline passengers are surely buying extra services with their flight tickets. A post-hoc residual analysis shows ($X^2=10.63, df=3, p=.014$) older male customers (between age 35-44 and $45 \geq$) rent cars significantly more than young customers (between age 18-24 and 25-34). 93.3% of the passengers prefer credit card as their method of payment. The primary purpose of airline companies should be to offer a full range of attractive offers by developing current sales strategies.

Table 5. Frequency and percentage distributions of services bought with flight ticket and payment methods

Services bought when buying a flight ticket *	Frequency	Percentage (%)
Rent a car	91	22.8
Accommodation	98	24.5
Insurance	83	20.8
Additional services (Additional luggage right, dinning in the cabin etc.)	101	25.3
Duty Free	15	3.8
None	173	43.3
Means of payment for buying flight tickets and additional services*		
Cash	52	13.0
Credit Card	373	93.3
Mobile payment/electronic wallet	52	13.0
EFT	21	5.3

Table 6. Levels and purposes of participants using mobile / web tools when purchasing airline services (N=400)

Levels and purposes of participants using mobile / web tools when purchasing airline services	Frequency	Percentage (%)
<u>Do you think the use of mobile / web tools has a positive impact on the Airline service purchase process?</u>		
Yes	386	%96.5
No	14	%3.5
<u>On which trips do you buy your flight ticket by using web / mobile?*</u>		
Business	178	%44.5
Vacation	303	%75.8
Visiting relatives	152	%38.0
Education	54	%13.5
Other	44	%11.0
Never use Web/mobile	46	%11.5
<u>How often do you use mobile applications of airline companies?</u>		
Never	85	%21.3
Rarely	117	%29.3
Regularly	120	%30
Often	78	%19.5
<u>For what purpose do you use mobile applications of airline companies?*</u>		
Checking a journey	169	%42.3
Making a reservation	159	%39.8
Purchasing a ticket	267	%66.8
Check-in	226	%56.5
Boarding pass	92	%23.0
Never use	82	%20.5

*Participants were able to mark multiple

Table 6 shows that the market of airline companies operating in Turkey are leisure travelers. 75.8% of the respondents said that the tickets they bought using Web / Mobil were for holiday purposes. By using the internet as a distribution channel, it is possible to provide personalized services. The distribution with the internet has been shown to

significantly reduce the costs of airlines. According to the study, more than half of current airline customers are using mobile applications in order to plan travel, check in and purchasing tickets. A post-hoc residual analysis shows passengers over 35 years old fly more than younger passengers in different age groups ($X^2=14.22, df=6, p=.048$).

As an additional means of expanding direct distribution, airline companies can also increase the rate of use of the automated ticket machines and should develop artificial intelligence and virtual reality applications besides mobile apps. Meanwhile, automatic ticket and check in machines not only in the airports, but also can be generalized in city centers. However, in order to be successful with this method and to create customer loyalty, airline operators must give great importance to the correct operation of the system. Airline operators that adopt the direct distribution method need to make their services adequately marketing and inform potential customers about these services. In detail, the airlines need to analyze the behavior of consumers who tend to shop online. The steps taken to eliminate the environment of insecurity play a critical role for the customers who experience the problem of trust. Reliable payment system, continuous information, after-sales feedbacks and direct and sincere communication with consumers are very important. According to the research of Aksoy [17], It has been concluded that “the trust plays a key role in the development of electronic markets and marketing practices”. In an increasingly competitive environment, the use of the price which as the only competitive tool has become inadequate. The customers also began to give importance to other variables than price. In the future, Turkish civil aviation is expected to grow due to economic changes. The results of the study remind us that customer-oriented marketing activities should be carried out with from end to end service concept by analyzing big data technologies in detail. In these analyzes, attention should be given to the customers between 22-36 ages called Y generation. According to the research of Yuksekbilgili [18], it has been concluded that “they follow and use the technology closely and the internet is the most important areas of communication for them”.

Table 7. The correlation between airline ticket purchasing channels and reasons to choose them

Variable	Reasons to choose flight ticket purchasing channel					
		Saving time	Price comparison	Ease of travel planning	7/24 easy access	Discounts and campaigns
Flight ticket purchasing channels	Call center	<i>r</i> .104*	-0.075	.300***	.185***	.118*
		<i>p</i> 0.038	0.133	0.000	0.000	0.019
	Agency/sales office	<i>r</i> 0.001	-0.038	.326***	-.222***	-0.043
		<i>p</i> 0.981	0.444	0.000	0.000	0.391
	Airline web site	<i>r</i> 0.054	0.011	.263***	.148**	0.033
	<i>p</i> 0.282	0.822	0.000	0.003	0.516	
Online travel sites	<i>r</i> .122*	.161**	0.078	0.021	0.023	
	<i>p</i> 0.014	0.001	0.121	0.672	0.651	
Mobile app	<i>r</i> 0.035	0.038	.276***	.221***	0.095	
	<i>p</i> 0.490	0.444	0.000	0.000	0.058	

p*.05, *p*.01, ****p*.001

Table 7 shows that;

Buying a ticket from call center and ease of travel planning (*r*=.300, *p*<.001), 7/24 easy access (*r*=.185, *p*<.001) and discounts and campaigns (*r*=.118, *p*=.019) were positively correlated.

Buying a ticket from the agency / sales office and ease of travel planning (*r*=.326, *p*<.001) were positively correlated while with 7/24 easy access (*r*=-.222, *p*<.001) was negatively correlated.

Buying a ticket via the airline web site and ease of travel planning (*r*=.263, *p*<.001) and 7/24 easy access (*r*=.148, *p*=.003) were positively correlated.

Buying a ticket via online travel sites and saving time (*r*=.122, *p*=.014) and price comparison (*r*=.161, *p*=.001) were positively correlated.

Buying tickets via a mobile app and ease of travel planning (*r*=.276, *p*<.001) and 7/24 easy access (*r*=.221, *p*<.001) were positively correlated.

Table 8. Chi-square analysis of frequency of using an airline application by yearly flying frequency

Variable	Group	Frequency of using an airway application				Total	Chi-Square		
		Not using	Very seldom	Using	Often using		χ^2	<i>df</i>	<i>p</i>
Yearly flying frequency	>5	66	74	59	13	214	85.13	6	0.000***
	5-10	13	28	32	25				
	times								
	11 ≥	6	15	29	40				
	Total	85	117	120	78	400			

****p*<.001

Table 8 shows that customers with different yearly flying frequency were significantly difference on to frequency of using an airline application ($\chi^2=85.13$, *df*=6, *p*<.001). A post-hoc residual analysis reveals that, proportionally, those customers who use the airline apps. regularly or often fly more frequently than the customers who do not use airline application or use very seldom.

According Sita 2019 Passenger IT Insights Survey [19], IT spend is expected to reach 40 billion dollar by airline CIO's. It is seen that major investment priorities are cloud computing, cybersecurity, passenger mobile services, data centers and business intelligence – technologies for airline companies and airports. Ownership rates of this kind of programs by airlines are more than % 95. That means digital transformation. There is a similar evolution in the passenger mobile applications.

Check-in and mobile boarding apps. became to be universal and airlines are focusing personalized services as well as artificial intelligence (AI)-driven chatbot services. Today's key applications (virtual agents, chatbots, and predictive analytics) became to be more important. Also, airline companies make invest to provide more mobile service for passenger flow management. It is getting more reputable that to provide wait time information, self boarding automation and bag tracking services to passengers via mobile apps. in pre-boarding process. Also, airlines became to use data lake strategy to perform artificial intelligence. All of emerging tech investments made and personalized services offered by airlines are for passenger satisfaction and loyalty.

The data of Sita 2019 global passenger survey fully support to subject of research paper and findings found, too.

Finally, it is a fact that finding reasonable tickets and saving time parameters are very important for the customers and the airline sales and marketing strategies will be shaped through the mobile in the future.

Ethical Approval

Not applicable.

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