THE COST OF OPERATION OF AIRCRAFT OF THE MAJOR US AIR CARRIERS

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ABSTRACT

The indicators of the cost and profitability of passenger traffic are studied using the statistics of American Airlines, Delta Airlines and United Airlines as well as financial and statistical analysis of US companies.

The indices of the cost of transportation and profitability in the period of significant reduction in prices for jet fuel in 2014-2016 are compared. The focus is on the analysis of the fleet of aircraft and changes in individual items of expenditures.

An algorithm for calculating the cost of transportation by types of aircraft according to the statistical accounting is proposed. The calculations take into account the fact that in the US air transportation industry one keeps statistical records of direct flight costs by types of aircraft. The share of direct flight costs is 50%. Indirect costs are distributed by means of calculation.

The cost of seat-kilometer for direct and indirect cost items of narrow-body aircraft 737-800/900 and A319/320/321 at a distance of 2000 km ranges from 8,8 to 11 cents. At a distance of more than 2000 km the cost decreases to 7,7–8,3 cents.

The cost of seat-kilometer for the aircraft 757-200/300 and wide-body aircraft 767-300 777-300, A330-200/300 at a distance of 3000–5000 km is 6,8–7,8 cents per seat-kilometer. The cost of seat-kilometer for wide-bodied aircraft 777-200 / 300, 787-800 / 900, A330-200 / 300 at distances over 6000 km ranges from 6,0 to 6,7 cents.

KEY WORDS AIR TRANSPORTATION, AIRLINES, REGIONAL, ALLIANCES, AGREEMENTS, TYPES OF AIRCRAFT, COST OF SEAT-KILOMETER, FUEL CONSUMPTION, DELIVERIES, LEASING.

INTRODUCTION

The main criterion of efficiency in air transport is the cost of air transportation. Indicators of the cost of flights, the volumes of flight or air transport works, flight hours, units of air transport works are applied.

The cost of flights is calculated taking into account the planned or actual costs for wages, maintenance and ownership of aircraft per flight hour and the costs of jet fuel and paid aeronautical and airport services. The costs per unit of work (flight hour, seat-kilometer, passenger-kilometer and ton-kilometer) are used to compare different or similar types of aircraft. They also serve as a cost benchmark in the formation of requirements for the basic performance characteristics of aircraft. The costs price is used in the justification of tariffs for air transportation, in the development of business plans of airlines, in estimating the cost of airplanes in accordance with the profits approach.

The cost of transportation is calculated as a quotient from dividing the sum of expenses specified in the regulatory documents by the volume of performed works (transportation): seat-kilometers (seat-miles), passenger-kilometers (passenger-miles), flight hours, ton-kilometers (ton-miles), maximum ton-kilometers (ton-miles) for the aircraft fleet as a whole for aviation companies or for certain types of aircraft. The cost of transportation is a cost estimate of aviation fuel, materials, energy, fixed assets, labor resources, the cost of overflights and the provision of take-off and landing services for aircraft, passengers and cargo. The cost is significantly affected by the flight performance of the aircraft, in particular, commercial payloads varying according to the range of non-stop flights, flight speed, fuel consumption, route characteristics and flight modes.

The cost of transportation is significantly influenced by cost indicators:

- price of jet fuel;
- cost of ownership of aircraft; wage rates and number of staff;
- maintenance costs and repairs of aircraft;
- charges and tariffs at airports, charges for air navigation and meteorological services;
- cost of passenger services, cost of sales of transportation, insurance, advertising, etc.

Cost parameters vary in time, due to fluctuations in oil prices and technical improvement of aircraft and aircraft engines.

The regional differences in transportation costs are explained by:

- Different prices for jet fuel in countries producing and processing hydrocarbons and in countries importing petroleum products;
- differences in the costs of leasing and maintenance and repair in countries, which produce aircraft and in countries that import airplanes, aircraft engines and spare parts for maintenance and repairs.
- differences in the wage levels of pilots, whose number in the recent years has proved to be insufficient);
- differences in the cost of airport services located in different climatic zones.

The world civil aviation has adopted a direct accurate accounting of fuel consumption by aircraft types (in tons or gallons). In addition, the number of flights, flight hours and the volume of traffic are calculated according to the types of aircraft. In the Russian Federation such accounting is reflected in statistical forms 32GA and 33GA, which correspond to the forms of the International Civil Aviation Organization (ICAO). The accounting makes it possible to determine the specific fuel consumption by type of aircraft per flight hour, seat-kilometer or kilometer with reference to the average range of non-stop flight.

In order to substantiate the advantages of new modifications one uses an indicator of reduction of specific fuel consumption compared to the existing types of aircraft, an increase in productivity (commercial payload and speed) and flight range.

RESEARCH METHODOLOGY

The International Civil Aviation Organization (ICAO) collects, analyzes and publishes data on the cost of seat-kilometers and passenger-kilometers of airlines. By comparing the cost of a seat-kilometer with revenue rates one can draw conclusions about the profits or losses of airlines.

This article analyzes the cost of transportation of American Airlines Inc., Delta AirLines Inc. and United AirLines Inc. The indices of the cost of transportation and profitability in the period of considerable reduction in prices of jet fuel in 2014–2016 are compared. The focus is on analyzing the fleet renewal and changes (increases) in the main items of expenditures.

One distinguishes between the planned and actual costs. The planned costs are determined by the specified type of aircraft based on the route length, estimated flight time and consumption of jet fuel. Cost parameters are the published prices of fuel, air navigation services, airports, maintenance costs per flight hour and estimated costs of aircraft ownership.

The actual cost is determined according to the initial data of flight time records, the cost of jet fuel, transported passengers, cargo and mail, as well as the data of accounting documents. Determining the actual cost by type of aircraft is a difficult task, because the results of calculations are not always reliable. More correct results can be obtained if at least 50% of the costs are directly recorded according to the types of aircraft.

The collection of the mentioned statistics by types of aircraft is implemented by the US airlines. The reports on flight hours, fuel consumption and direct flight costs are quarterly published by the United States Transportation Statistics Bureau (transtats.bts.gov) in the Airline Finance (AirCarrierFinancial) section of regular (Schedule) for large carriers and annually for other carriers (AirCarrierFinancial: ScheduleP-5.2, P-5.1) [Bureau of Transportation Statistics, [s.a.]].

Indirect costs include the costs of passenger services, airport services (primarily for the take-off and landing of aircraft), air navigation support, transportation sales, advertising, insurance, rental and maintenance of ground infrastructure and other costs. The costs of American carriers for the listed items are recorded for the airline as a whole in Air Carrier Financial: Schedule P-7. For the purpose of the study indirect costs by type of aircraft are distributed in proportion to the flights or aircraft-kilometers (aircraft-miles) taking into account the coefficients reflecting the take-off weight of airplanes.

Cost accounting is also conducted in a group according to economic elements (without separating by type of airline operations) with distinguishing the following items: wages with charges, materials (including jet fuel), services, rent, depreciation and amortization, etc. Airlines data are reflected in the AirCarrierFinancial report: Schedule P-6. The accounting data on cost elements are required when comparing the performance of different types of transport.

ANALYSIS OF THE COST OF TRANSPORTATION FOR US AIRLINES

The US airlines can be classified into three categories: the leading airline, major airlines and regional airlines. The leading airlines such as American Airlines, DeltaAirLines and UnitedAirlines are large passenger carriers with hubs and a network used by regional airlines operating aircraft with smaller capacity. Major airlines such as Southwest Airlines, Spirit and JetBlue operate from hubs and do not attract regional airlines for flights on their route networks.

It took a long time for the relations between regional carriers and their larger American partners to be formed. The existing organization of the regional airlines’ business is based on regular flights on airplanes with a capacity less than 90 seats from small destinations and secondary hub airports in accordance with contracts for the provision of capacities of regional carriers to large network carriers: American Airlines – American Eagle brand; Delta Airlines – Delta Connection brand and United Airlines – United Express brand.

The existing contractual agreements impose restrictions on the capacity of regional aircraft, the number of regional aircraft that can be used depending on their ratio to the operated main aircraft, limit the range of routes for aircraft of regional airlines and limit the number of regional flights from hub to hub and hours of regional airlines. Restrictions are defined in collective agreements developed by the unions of flight personnel, and are aimed at protecting the interests of pilots of the main airlines. The main reason for the restrictions is the lack of pilots.

Under the current long-term fixed-payment agreements the major airlines pay a fixed rate to regional airlines for operating

the aircraft based on the number of flights, the hours flown and the number of aircraft under the contract. In addition, regional airlines performing regional flights on their route networks are reimbursed for fuel, owning or leasing of airplanes, airport and other ground maintenance costs, transportation sales, etc.

The peculiarities of business organization are reflected in the cost structure: united in groups large companies include the items of costs for regional companies into their costs.

American Airlines Group Inc.

The history of American Airlines Group Inc. began with the formation of AMR Corporation in 1982. On December 9, 2013 a subsidiary of AMR Corporation merged with the US Airways Group Inc. After the merger the new company was named American Airlines Group Inc. The integration was completed in April 2015, when the Federal Aviation Administration gave a single operational certificate for both carriers. Today, this big network operator provides regular air transportation of passengers and cargo.

The subsidiaries of American Airlines Group Inc. are American Airlines Inc. operating on the main routes, and regional companies Envoy Aviation Group Inc., PSA Airlines Inc. and Piedmont Airlines Inc.

The American Eagle brand currently uses 10 airlines, including subsidiaries: Envoy, Piedmont and PSA.

Together with regional airlines American Airlines operate about 6700 flights daily (mainly from Charlotte, Chicago, Dallas/Fort Worth, Los Angeles, Miami, New York, Philadelphia, Phoenix and Washington) to 350 destinations in 50 countries. In 2017 American Airlines Group Inc. transported about 200 million passengers.

American Airlines Group Inc. is one of the founders of the Alliance Oneworld World, whose members coordinate passenger transfers, fares and services. The availability and the use of the fleet of aircraft, transportation volumes, revenues and expenses of the main and regional companies are accounted for separately.

As of December 31 2017 American Airlines operated 948 long-haul aircraft (Table 1). In 2017, the group continued the extensive fleet renewal program launched in 2015. During 2017 American Airlines introduced 57 new long-haul aircraft and decommissioned 39 long-haul aircraft.

The group supported the renewal of the fleet of its own and third-party regional carriers, which operated flights under the agreements on the purchase and sale of the carriage capacities. As a result of the fleet update the American Airlines Group Inc. had the smallest age of aircraft compared with other major US network operators.

In 2017, under the American Eagle brand a total of 597 regional aircraft performed the flights (Table 2). During 2017 63 aircraft joined the regional fleet while 72 aircraft were decommissioned.

Obligations regarding the acquisition of long-haul and regional aircraft are shown in Tables 3, 4. In addition, the group has agreements for 37 spare engines, which will be supplied from 2018. The share of the company's own aircraft was 56%. The planned long-term costs (liabilities) for the purchase and rental of aircraft, as well as the purchase of carriage capacities of regional companies, are shown in Table 4.

In 2017 the costs of wages and benefits amounted to about 35% of total operating expenditures. As of December 31, 2017 about 126600 active full-time employees worked in the company, approximately 85% of them were members of various trade unions. The distribution of the key personnel by trade unions and professions is given in Table 5.

Financial results are largely influenced by jet fuel prices. The data on fuel consumption and fuel prices for American Airlines Group Inc. are given in Table. 6. The reduction in aviation fuel costs in 2016 was caused by the decrease in the average price per gallon of fuel by 17,4% or by 1,41 dollar per gallon compared to 2015. In 2017 the price of aviation fuel increased by 21,8%. Compared with 2016 the share of jet fuel costs increased by 2 points.

The increase in the average price of a gallon of fuel was partially offset by a 0,7% reduction in specific fuel consumption, which was caused by the introduction of more fuel-efficient aircraft during 2017.

Revenues, expenses, results and other financial and economic indicators of the American Airlines Group Inc. for 2014–2017 are given in Tables 7–8.

American Airlines Group Inc. remained profitable in 2017. The revival of the economy contributed to the growth in demand for transportation. Compared to 2016 the profitability of passenger transport increased by 3,2% (see Table 7, 8 and Fig. 1), the total revenues from passenger transportation increased by 1,55 billion dollars or by 4,5% mainly due to the increase in profitability. The internal consolidated profitability increased by 3,5%, while international profitability increased by 3,2% mainly due to the improved performance in Latin America.

Table 1
The fleet of long-haul aircraft of AmericanAirlines, Inc. as of December 31, 2017

Type of aircraft	Average number of seats	Average age (years)	Ownership	Rent	Total
A319	128	13,8	21	104	125
A320	150	16,7	10	38	48
A321	178	5,4	165	54	219
A330–200	251	6,0	15	—	15
A330–300	291	17,4	4	5	9
737–800	160	8,1	132	172	304
737–8 MAX	172	0,1	4	—	4
757–200	180	18,1	31	3	34
767-300ER	209	19,1	24	—	24
777-200ER	269	17,0	44	3	47
777-300ER	310	3,8	18	2	20
787–8	226	2,1	20	—	20
787–9	285	0,7	14	—	14
Embraer 190	99	10,2	20	—	20
MD-80	140	21,3	13	32	45
Total	—	10,1	535	413	948

Table 2
The fleet of subsidiary regional operators and regional operators operating under the American Eagle brand as of December 31, 2017

Type of aircraft	Average number of seats	Ownership	Rent	Property or rental of a third-party carrier	Total	Regional carrier	The number of the operated aircraft
CRJ 200	50	12	23	33	68	PSA	35
						Air Wisconsin (2)	23
						SkyWest	10
						Total	68
CRJ 700	66	54	7	49	110	PSA	34
						Envoy	27
						SkyWest	37
						ExpressJet	12
						Total	110
CRJ 900	77	54	-	64	118	PSA	54
						Mesa	64
						Total	118
Dash 8–100	37	3	-	-	3	Piedmont	3
Dash 8–300	48	-	11	-	11	Piedmont	11
E175	76	64	-	84	148	Envoy	44
						Republic	84
						Compass	20
						Total	148
ERJ 140	44	21	-	-	21	Envoy	21
ERJ 145	50	118	-	-	118	Envoy	68
						Piedmont	35
						Trans States	15
						Total	118
Total		326	41	230	597		597

Cargo revenues increased by100 million dollars or 14,3% due to the increase in freight volumes. Other revenues include loyalty program revenues, baggage fees, ticket change fees, airport lounges and lighting services. Other revenues increased by 373 million dollars or 7,6% mainly due to higher profits associated with the loyalty program. Total operating revenues increased by 2,0 billion dollars or 5,0% mainly due to the increase in passenger revenues.

According to the financial report, operating expenses increased by 3,3 billion dollars or 9,5% (see Table 8). An increase in operating expenses was caused mainly by higher fuel costs and higher wage rates for pilots, flight attendants and engineering and technical personnel.

An increase in the costs of maintenance, repairs and materials is due to the changes in contracts: some flight hardware was transferred to the contracts based on paying for logged flight hours, instead of paying for expenses incurred during the maintenance and repairs. An increase in expenses for the sale of tickets is explained by the increase in commissions from higher sales, as well as an increase in award tickets, the commissions for which are higher. Increased depreciation and amortization costs are associated with the fleet renewal program. Other expenses increased due to the improved flight catering and staff training costs.

Table 3
Orders for planes of AmericanAirlines, Inc. in the future

Type of aircraft	2018	2019	2020	2021	2022	2023 and later	Total
Airbus							
A320neo Family	—	25	25	25	20	5	100
A350 XWB	—	—	2	5	5	10	22
Boeing							
737 MAX Family	16	20	19	21	20	—	96
787 Family	6	2	—	—	—	—	8
Embraer							
E175 (*)	5	5	—	—	—	—	10
Total	27	52	46	51	45	15	236

*These aircraft can be operated by subsidiaries; they can be leased to third-party regional carriers who will operate the aircraft within the framework of the procurement of carriage capacities.

Table 4
The planned long-term costs for the fleet of AmericanAUSGroupInc

Liabilities	2018	2019	2020	2021	2022	2023 and later	Total
Contract payments for airplanes and engines	1826	2730	2730	2858	2138	1482	13764
Rental payments	2195	1974	1784	1339	1159	3266	11717
Fixed obligations under the contracts for the sale of capacities with third-party regional carriers	1457	1311	1063	866	699	2073	7469
Rental costs not included in the purchase of carriage capacities	377	355	320	282	239	699	2272

Compared to 2016, in 2017 regional operating expenses increased by 502 million dollars or by 8,3% due to the increased fuel costs (the growth of 54%) and an increase in carriage capacities of mainly the regional companies (an increase of 46% in regional expenditures).

Special expenditures, including expenditures on integration mergers, fleet restructuring, income taxes, payments under labor contracts, etc., have remained practically unchanged.

In 2017 profits before taxes and net revenues amounted to 3,1 billion dollars and $ 1,9 billion dollars, respectively. In 2016 operating profits were 4,3 billion dollars and net profits were 2,7 billion dollars.

Table 9 shows the results of calculations of the cost of a seat-kilometer of the main airline American Airlines by types of aircraft in 2015 2017. The share of direct and indirect costs was approximately the same – 50% each.

Indirect costs are distributed according to the types of planes in proportion to the volume of traffic taking into account the correction factors for the weight of the aircraft and the number of seats.

The following results were obtained for the cost of seat-kilometers of long-haul aircraft operated by AmericanAirlines:

- A319, A320, A321, 737–800 and 757–200 – from 10 cents at a distance of 1000 km to 8,5 at a distance of 2000 km and more;
- A330–200/300 and 787–900 – from 6,5 to 7,5 cents at a distance of 3000–6000 km;
- 777–200, 777–300 and 787–800 – from 6,8 to 9,0 cents at distances over 6000 km.

Delta AirLines Inc.

Delta AirLines Inc. performs regular air transportation of passengers and cargo in the United States and around the world. In 2008 the company acquired 100% of the shares of the American airline Northwest Airlines. By early 2010 the operational certificates of both carriers were consolidated into a single certificate.

The main administrative office is located at the international airport Hartsfield-Jackson Atlanta (Atlanta). The destination network is based on American hubs, international hubs and the key airports in Amsterdam, Atlanta, Boston, Detroit, London, Los Angeles, Minneapolis, New York, Paris, Salt Lake City, Seattle and Tokyo. The airline performs air transportation according to the classic model Hub-and-Spoke. Passenger transportation prevails while regional flights collect traffic in one geographic region for the flights operated by long-haul aircraft on international routes. At destination airports the traffic is distributed among regional destinations in another geographic region.

Table 5
Approximate number of active full-time employees as of December 31, 2017

Trade union	Profession	Number of members, people
Mainline:		
The American Pilots' Association (APA)	Pilots	13 200
Association of Professional Flight Attendants (APFA)	Flight attendants	24 900
Passenger Service Employee Association (CWA-IBT)	Passenger service	16 000
The International Association of Machinists and Aerospace Workers (TWU-IAM)	Mechanics (engineering and technical staff)	31 400
Transport Workers Union (TWU)	Traffic controllers and trainers of flight crews	750
Envoy		
The Air Line Pilots Association (ALPA)	Pilots	2200
Association of Flight Attendants (AFA)	Flight attendants	1300
TWU	Mechanics	5020
Communications Workers of America (CWA)	Passenger service	4300
Piedmont		
ALPA	Pilots and instructors	590
AFA	Flight attendants	300
International Brotherhood of Teamsters ((IBT)	Mechanics	350
IBT	Traffic controllers	70
CWA	Aircraft maintenance and passenger service	3400
PSA		
ALPA	Pilots	1500
AFA	Flight attendants	1000
International Association of Machinists and Aerospace Workers (IAM)	Mechanics	350
TWU	Traffic controllers	50
Total		106 680

Table 6
Fuel costs of American Airlines Group Inc., including taxes, in 2014–2017

Year	Fuel consumption, million gallons	Average price per gallon, dollars.	Fuel costs, million dollars.	The share of total expenses,%	Year-to year change			
					Fuel consumption	Price per gallon	Fuel costs	The share in total expenses, pts
2017	4352	1,73	7510	19,7	0,1	21,8	21,5	2,0
2016	4347	1,42	6180	17,7	0,6	–17,4	–17,1	–3,7
2015	4323	1,72	7456	21,5	–0,2	–40,9	–40,8	–11,3
2014	4332	2,91	12601	32,8	1,0	–5,5	–4,7	–2,2

Delta AirLines Inc. is a member of international joint ventures, alliances with foreign airlines and the global international alliance SkyTeam. It has signed agreements with several regional carriers registered in the United States that operate under the Delta Connection brand.

The airline operates more than 5400 flights daily serving an extensive domestic and international network, which includes 319 destinations in 54 countries. In 2016 Delta had the largest passenger turnover (342 billion passenger-kilometers and carriage capacity (405 billion seat-km) among American companies. Its services were used by 184 million passengers.

International alliances. Alliances involve the sharing of codes and loyalty programs for frequent flyers, access to airport lounges. Agreements with some carriers may include the terms of coordination of sales and marketing, co-location of airport facilities, etc.

Joint Venture Agreements. Currently Delta AirLines Inc. manages five joint ventures: with AirFrance, KLM, and Alitalia

Table 7
The indicators of efficiency of air transportation for American Airlines Group Inc. in 2014-2017

Indicator	Year ended on December 31				Increase (reduction),%		
	2017	2016	2015	2014	2017-2016	2016-2015	2015-2014
The main company American Airlines Inc							
Passenger turnover, million passenger-miles	201 351	199 014	199 467	195 651	1,2	–0,2	2,0
Maximum passenger turnover, million seat-miles	243 806	241 734	239 375	237 522	0,9	1,0	0,8
The rate of seat occupancy, %	82,6	82,3	83,3	82,4	0,3*	(1,0) *	0,9*
Profitability, cent/passenger-mile	14,52	14,02	14,56	15,74	3,6	–3,7	–7,5
Profitability of passenger transportation to maximum seat-mile, cent	11,99	11,55	12,13	12,97	3,8	–4,8	–6,5
Profitability of passenger transportation to maximum seat-kilometer, cent	7,45	7,18	7,54	8,06	3,8	–4,8	–6,5
Cost of seat-mile, cent	12,96	11,94	12,03	13,42	8,5	–0,7	–10,4
Airplanes by the end of the period	948	930	946	983	1,9	–1,7	–3,8
Fuel consumption, million gallons	3579	3596	3611	3644	–0,5	–0,4	–0,9
Average cost of jet fuel including taxes, dollars/gallon	1,71	1,41	1,72	2,91	21,3	–18,0	–40,9
Full-time personnel at end of the period	103 100	101 500	98 900	94 000	1,6	2,6	5,2
Summary data of the main and regional companies of American Airlines Group Inc.							
Passenger turnover, million passenger-miles	226 346	223 477	223 010	217 870	1,3	0,2	2,4
Maximum passenger turnover, million seat-miles	276 493	273 410	268 736	265 657	1,1	1,7	1,2
The rate of seat occupancy, %	81,9	81,7	83	82	0,2*	(1,3) *	1*
Profitability, cent/passenger-mile	15,96	15,47	15,92	17,04	3,2	–2,8	–6,6
Profitability of passenger transportation to maximum seat-mile, cent	13,07	12,65	13,21	13,97	3,3	–4,2	–5,4
Profitability of passenger transportation to maximum seat-kilometer, cent	8,12	7,86	8,21	8,68	3,9	–3,6	–5,0
Cost of seat-mile, cent	15,27	14,7	15,25	16,06	0,6	0,2	–1,0
Airplanes by the end of the period	1545	1536	1533	1549	0,1	0,6	–0,2
Fuel consumption, million gallons	4352	4347	4323	4332	21,8	–17,4	–40,9
Average cost of jet fuel including taxes, dollars/gallon	1,73	1,42	1,72	2,91	3,5	3,2	4,6
Full-time personnel at end of the period	126 600	122 300	118 500	113 300	1,2	–0,2	2,0

* Increase (decrease) by years indicated in paragraphs

Table 8
The main financial and economic results of American Airlines Group Inc. in 2014-2017

Indicator	2017	2016	2015	2014
Revenues from air transportation				
Mainline passengers	29 238	27 909	29 037	30 802
Regional passengers	6895	6670	6475	6322
Freights	800	700	760	875
Other revenues	5262	4884	4666	4677
Total operating revenues	42 195	40 163	40 938	42 676
Operating costs:				
Aviation fuel and related taxes	6128	5071	6226	10592
Wages and benefits	11 804	10 881	9514	8499
Expenditures on regional companies	6572	6009	5952	6477
Maintenance, materials and repairs	1959	1834	1889	2051
Other fees for rent and boarding	1806	1772	1731	1727
Aircraft rental	1197	1203	1250	1250
The costs of realization of goods	1477	1323	1394	1544
Depreciation and amortization	1702	1525	1364	1301
Special expenditures, network	712	709	1051	783
Other operational costs	4806	4532	4378	4186
Total operational costs	38 163	34 859	34 749	38 410
Operational result (revenues – expenditures)	4032	5304	6189	4266
Non-production income and expenditures				
Interest income	215	104	49	32
Interest expenses, net	–988	–906	–796	–847
Other expenses, net	–15	–59	–774	–183
Non-production results (income - expenses)	–788	–861	–1521	–998
Result before income tax	3244	4443	4668	3268
Income tax	1322	1662	–3452	320
Net result	1922	2781	8120	2948

to service routes between North America and Europe, with Virgin Atlantic Airways for non-stop flights between the United Kingdom and North America; with Virgin Australia Airlines and its affiliated carriers to service transit routes between North America and Australia, New Zealand, and AeroMexico for cross-border flights between the USA and Mexico. A joint venture with Korean Airlines was also established to operate on trans-Pacific routes between the United States and some Asian countries. However, the company has not yet received the necessary regulatory approvals in Korea. Commercial cooperation has been established with partners within geographic coverage, including the sharing of revenues, profits, or losses on joint routes, as well as joint sales, coordinated pricing, transportation network planning, etc.

Fig. 1. Changes in the income of American Aairlines GroupInc. in 2014-2017

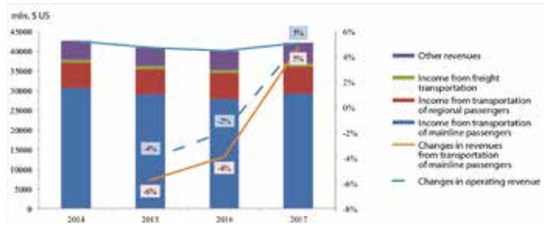
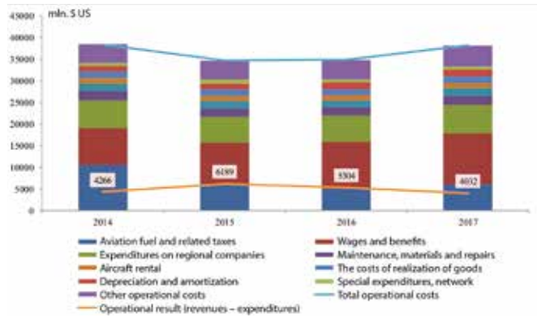


Fig. 2. Changes in operating costs and profits of American Airlines Group Inc. in 2014–2017



Delta has signed agreements with regional carriers that serve passengers in small and medium-sized cities. In 2017 approximately 16% of all Delta passenger traffic was provided by regional air carriers.

There are agreements with the following companies: ExpressJet Airlines, SkyWest Airlines, RepublicAirline, Compass Airlines, GoJetAirlines, Trans States Holdings, and EndeavorAirInc., which is a subsidiary of Delta.

The existing agreements define the mechanisms for purchasing the capacities from regional companies on flights operated under the Delta airline code. Delta AirLines Inc. has the right to receive all revenues associated with these flights. In turn, the agreements determine that Delta pays to regional airlines the amounts calculated on the basis of the costs of the performed flights taking into account the current market conditions. The agreement related to the purchasing of carriage capacities are long-term, usually with the initial terms of at least 10 years, which makes it possible to extend the original terms.

Aircraft fleet. Tables 9 and 10 show the fleet of aircraft and the commitments regarding the supply of aircraft as of December 31, 2017. Table 11 shows the fleet of aircraft operated by regional carriers on behalf of Delta. In 2018 the airline plans to spend about 4,5 billion dollars on the purchase of new aircraft B-737-900ER, A321-200 and A350-900, to make advance payments for A330-900neo and CS100B, as well as on the modernization of passenger compartments of regionally operated aircraft.

Ground Objects. DeltaAirLinesInc. mainly rents a large aircraft maintenance base, various computer rooms, cargo warehouses and training facilities, most of the offices are located at or near the Atlanta airport on the land leased from the city of Atlanta.

Table 9
American Airlines. Estimated costs of seat-kilometer by types of aircraft

Type of aircraft	Year	Fuel consumption, g / seat-km	Payment to flight personnel	Jet fuel	Rent of aircraft	Other costs	Maintenance and repair	Wear and depreciation of flight equipment	Direct flight expenses	Airport costs	Passenger service	Sales and reservations	Other production and administrative costs	Total indirect costs
737–800	2015	24,2	0,9	1,3	0,36	0,1	0,8	0,3	3,8	1,0	0,8	0,5	2,8	5,1
737–800	2016	24,3	1,0	1,1	0,38	0,0	0,9	0,4	3,8	1,1	0,9	0,5	3,0	5,6
737–800	2017	24,4	1,1	1,3	0,34	0,0	1,0-	0,3	4,2	1,9	1,0	0,5	1,4	4,7
757–200	2015	27,5	0,9	1,5	0,35	0,1	0,9	0,3	4,0	0,9	0,6	0,3	2,8	4,6
757–200	2016	27,6	1,0	1,2	0,32	0,0	0,9	0,3	3,8	0,9	0,6	0,3	3,0	4,9
757–200	2017	28,5	1,1	1,5	0,34	0,0	1,0	0,3	4,4	1,6	0,7	0,3	1,4	4,0
767–300/300ER	2015	29,4	0,9	1,6	0,37	0,1	0,9	0,3	4,2	0,7	0,3	0,2	2,8	4,0
767–300/300ER	2016	29,1	1,0	1,3	0,38	0,1	0,9	0,4	4,0	0,9	0,4	0,2	3,0	4,5
767–300/300ER	2017	30,2	1,1	1,6	0,34	0,0	1,0	0,3	4,5	1,6	0,4	0,12	1,4	3,6
777-200ER/200LR	2015	33,06	0,9	1,9	0,37	0,1	0,9	0,3	4,4	0,6	0,2	0,1	2,8	3,7
777-200ER/200LR	2016	36,0	1,2	1,7	0,43	0,1	1,0	0,4	4,7	0,7	0,2	0,1	3,0	4,1
777-200ER/200LR	2017	31,6	1,1	1,7	0,34	0,1	1,0	0,3	4,6	1,1	0,2	0,1	1,4	2,9
777–300/300ER	2015	30,4	0,9	1,7	0,36	0,1	0,9	0,3	4,2	0,6	0,2	0,1	2,8	3,7
777–300/300ER	2016	32,1	1,0	1,5	0,38	0,1	0,9	0,4	4,2	0,6	0,2	0,1	3,0	3,9
777–300/300ER	2017	30,7	1,2	1,7	0,34	0,1	1,0	0,3	4,6	0,9	0,2	0,1	1,4	2,6
A330–300	2015	26,6	0,9	1,3	0,27	0,1	0,9	0,2	3,7	0,6	0,3	0,1	2,8	3,8
A330–300	2016	26,2	0,9	1,2	0,20	0,0	0,9	0,2	3,4	0,6	0,3	0,1	3,0	4,1
A330–300	2017	26,8	1,1	1,4	0,34	0,0	1,0	0,3	4.3	1,2	0,4	0,2	1,4	3,2
A330–100/200	2015	27,2	0,9	1,4	0,28	0,1	0,9	0,2	3,8	1,3	1,1	0,6	2,8	5,7
A330–100/200	2016	27,3	0,9	1,2	0,21	0,0	0,9	0,2	3,4	1,4	1,1	0,6	3,0	6,1
A330–100/200	2017	27,7	1,2	1,5	0,34	0,0	1,0	0,3	4,4	2,5	1,2	0,6	1,4	5,7
A330–200	2015	27,2	0,9	1,4	0,27	0,1	0,9	0,2	3,7	0,6	0,3	0,1	2,8	3,8
A330–200	2016	26,9	0,9	1,2	0,20	0,0	0,9	0,2	3,4	0,8	0,3	0,2	3,0	4,3
A330–200	2017	28,9	1,1	1,6	0,34	0,0	1,0	0,3	4,4	1,9	0,5	0,3	1,4	4,1
A319	2015	31,1	0,9	1,6	0,31	0,1	0,9	0,2	4,1	1,6	1,2	0,6	2,8	6,2
A319	2016	31,2	1,0	1,4	0,26	0,0	0,9	0,2	3,8	1,7	1,3	0,6	3,0	6,7
A319	2017	31,3	1,1	1,7	0,34	0,1	1,0	0,3	4,6	3,0	1,3	0,7	1,4	6,3
A321	2015	25,3	0,9	1,3	0,31	0,1	0,9	0,2	3,7	1,0	0,8	0,5	2,8	5,1
A321	2016	24,6	1,0	1,1	0,27	0,0	0,9	0,2	3,5	1,0	0,9	0,4	3,0	5,4
A321	2017	24,5	1,1	1,3	0,34	0,0	0,9	0,2	4,2	1,7	0,9	0,4	1,4	4,5
B787-800Dreamliner	2015	25,6	0,8	1,3	0,35	0,1	0,7	0,3	3,6	0,5	0,2	0,1	2,8	3,6
B787-800Dreamliner	1016	27,3	1,0	1,3	0,39	0,0	0,9	0,4	4,0	0,5	0,2	0,1	3,0	3,8
B787-800Dreamliner	2017	26,4	1,1	1,4	0,34	0,0	1,0	0,3	4,3	0,8	0,2	0,1	1,4	2,5
B787-900Dreamliner	2017	22,9	1,1	1,2	0,34	0,0	1,0	0,3	4,1	0,7	0,2	0,1	1,4	2,4

At airports the company leases ticket counters, passenger lounges (exits), work areas and other terminal space. Delta has entered into agreements on the use of airfields, the use of runways, taxiways and other structures. The landing fee is usually calculated based on the number of landings and the weight of the aircraft.

The leasing contracts are usually valid from one year to 30 years or more. They provide for periodic adjustments in rental rates, landing fees, etc. The tariffs for operational maintenance of aircraft and air transportation are established on contractual basis.

The results of operations are largely affected by fluctuations in the price of aviation fuel (Table 12).

The subsidiaries Delta, Monroe and MIPC own and operate the Trainer refinery, pipelines and terminals. The refinery produces jet fuel, gasoline, diesel and other petroleum products and supplies jet fuel to Delta. In its reports Delta AirLines Inc. states that the supply of non-reactive fuel from the operation of the refinery contributed to the reduction in the market price of jet fuel.

In 2017 6,0 billion dollars or 19,2%, of total operating expenses were spent on aviation fuel and related taxes.

The largest decline in fuel prices was observed in 2015 compared to 2014 (44%), in 2016 the fall in prices of jet fuel slowed down and stopped in 2017. The basic financial and statistical data of Delta AirLines, Inc. are given in Table 13 and figure 3.

The analysis of operating expenses of Delta AirLines is presented in Table. 14. As of December 31, 2017 approximately 87000 employees worked full time. 19 % of them were members of trade unions.

In 2017 wages amounted to 30% of costs. In 2015–2016 wages and related expenses increased due to an increase in pilot payment rates (by 18%) as a result of a new contract ratified

Таблица 9
Delta AirLines Inc. Эксплуатационный парк воздушных судов и обязательства по поставкам

Type of aircraft	Current Fleet *					Commitments		
	Property	Fin. Leasing	Rent	Total	Average age, years	Purchase	Leasing	Options
B-717–200	3	13	75	91	16,3	—	—	—
B-737–700	10	—	—	10	8,9	—	—	—
B-737–800	73	4	—	77	16,3	—	—	—
B-737-900ER	52	—	37	89	2,3	41	—	—
B-757–200	88	9	3	100	20,4	—	—	—
B-757–300	16	—	—	16	14,9	—	—	—
B-767–300	2	—	—	2	24,5	—	—	—
B-767-300ER	55	2	—	57	21,7	—	—	—
B-767-400ER	21	—	—	21	17	—	—	—
B-777-200ER	8	—	—	8	18,1	—	—	—
B-777-200LR	10	—	—	10	8,8	—	—	—
A319–100	55	—	2	57	15,8	—	—	—
A320–200	55	3	4	62	22,4	—	—	—
A321–200	14	—	20	34	0.8	93	—	—
A321-200neo	—	—	—	—	—	100	—	100
A330–200	11	—	—	11	12,8	—	—	—
A330–300	28	—	3	31	9	—	—	—
A330-900neo	—	—	—	—	—	25	—	—
A350–900	6	—	—	6	0.2	19	—	—
CS100	—	—	—	—	—	75	—	50
MD-88	92	17	—	109	27,5	—	—	—
MD-90	65	—	—	65	20,9	—	—	—
Total	664	48	144	856	16,7	353	—	150

* With the exception of aircraft operated by regional carriers on behalf of Delta.

in December 2016, and an increase in payment rates for other categories of employees (by 14,5%) in December 2015. The increase in wages and related expenses in 2017 is primarily caused by an increase in the number of employees eligible for remuneration.

The increase in expenses for regional carriers is due to the increase in aircraft maintenance, which is partially offset by lower fuel costs.

Annualized depreciation costs increased due to investments in new modifications of the aircraft A330-300, B-737-900ER and CRJ-900 and modification of the interiors of the aircraft in operation.

Maintenance costs are borne in two ways: as they arise or, if stipulated by contracts, based on payments for completed flight hours. The payments under financial leasing agreements are reflected in the costs through the item "depreciation deductions" (the Russian Federation legally approved the item of financial leasing expenses directly attributable to transportation costs).

Operating costs for the leasing of aircraft, which are recorded on a straight-line basis over the lease term, amounted to 1,3 billion dollars in 2016 and 2017 and 1,2 billion dollars in 2015.

Advertising expenses were 284, 277 and 230 million dollars for 2017, 2016 and 2015, respectively.

Analysis of financial indicators. In 2017 earnings before taxes amounted to 5700 million dollars, a decrease of 935 million dollars compared with the previous year mainly due to higher prices of fuel, labor costs, related costs and depreciation costs, which were partially offset by an increase in operating income. Revenues before taxes were adjusted by 101 million dollars taking into account special items (Table 15) and amounted to 5,5 billion dollars.

The operating income increased by 1,6 billion dollars, or 4,0%. Per mile revenues increased by 2,1% compared with 2016. Revenues per passenger for one seat-mile (PRASM) increased due to high tariffs on domestic transportation, the dissemination of special fares, business in the Atlantic region, and high rates in the Caribbean, Central America, Brazil and Mexico.

In 2016 operating expenses decreased by 215 million dollars while consolidated operating costs per seat-mile fell by 2,6% to 13 cents mainly due to lower fuel prices. With the increase in fuel prices in 2017 total operating expenses grew by 2,4 billion dollars while consolidated operating costs per seat-mile (CASM) increased by 6,4% compared with 2016 to 13,81 cents mainly due to higher costs of fuel, wages, related costs and costs

Table 10
Delta's commitment to acquire aircraft, units

Type of aircraft	2018	2019	2020	After 2020	Total
A321–200	31	32	27	3	93
A321-200neo	—	—	16	84	100
A330-900neo	—	—	4	21	25
A350–900	5	2	2	10	19
B-737-900ER	23	18	—	—	41
CS100	15	25	16	19	75
Total	74	77	65	137	353

of depreciation. The increase in depreciation costs is caused, primarily, by the deliveries of new aircraft including B-737-900ER, A321 – 200, A330–300 and A350–900, as well as due to the planned decommissioning of the fleet of MD-88 and two B-767-300ER.

Table 16 shows the results of calculations of the cost of seat-kilometer by types of aircraft of Delta AirLines Inc. in 2015–2017.

In 2017 the passenger-kilometer profitability increased by 1% from 15,9 to 16,0 cent per passenger-mile while due to the growth in seat utilization the seat-mile profitability increased by 2,2% to 13,7 cents. The cost of a seat-mile, adjusted for other expenses not related to operating activities, was 13,2 cents per seat-mile, which is 5,7% more than in 2016. The increase in expenses in 2017 is not offset by the growth in revenues. Therefore, although the airline maintains a positive operating profit, the profitability of air transportation is decreasing.

In 2015–2017 the cost per seat-kilometer corresponding to the average transportation distance was evaluated according to

Table 11
The fleet of aircraft operated by regional carriers on behalf of Delta, units

Carrier	CRJ-200	CRJ-700	CRJ-900	Embraer 170	Embraer 175	Total
Endeavor Air, Inc.*	50	—	93	—	—	143
ExpressJet Airlines, Inc.**	—	33	16	—	—	49
SkyWest Airlines, Inc.	86	27	36	—	18	167
Compass Airlines, LLC	—	—	—	—	36	36
Republic Airline, Inc.	—	—	—	20	16	36
GoJet Airlines, LLC	—	22	7	—	—	29
Total	136	82	152	20	70	460

* EndeavorAir, Inc. is a subsidiary of Delta.
** During 2017 Delta and ExpressJetAirlinesInc agreed to terminate their relations by the end of 2018.

the types of aircraft operated by Delta AirLines:

- for aircraft of the types 737–700/800/900, 757–200/300, A319/320/321 and distances up to 200 km – from 9,9 to 14 cents;
- for aircraft of the types 737–800/900, 757–200/300, 767–300/400, A330–200/300 and ranges from 2000 to 6000 km – from 6,7 to 8,5 cents;
- for aircraft of the types 767–400, 777–200, 747–400, A330–200/300 and distances more than 6000 km – 5,8–7,4 cents.

United Airlines Inc.

United Airlines Inc. is a subsidiary of United Continental Holdings Inc. The operating income and operating expenses of United Airlines Inc. account for almost 100% of the revenue and operating expenses of United Airlines Inc.

Table 12.
DeltaAirLines, Inc. Fuel consumption and the costs of its use

Indicator	2015	2016	2017
Consumption, million gallons [1]	3988	4016	4032
Cost, million dollars.[1,2]	7579	5985	6756
Average price per gallon, dollars [1,2]	1,9	1,49	1,68
The share of total expenses,%, %	23	18,3	19,2

[1] Including operations of regional carriers operating under the contracts of sale.
[2] Including the impact of fuel hedging and performance of refining segment.

Table 13
Basic financial and statistical data of DeltaAirLines, Inc., 2012-2016

Indicator	2012	2013	2014	2015	2016	2017	Increase / decline,%				
							2013/2012	2014/2013	2015/2014	2016/2015	2017/2016
Passenger turnover, million passenger-miles	192 974	194 988	202 925	209 625	213 098	217 712	1	4	3	2	2
Seat turnover, million seat-miles	230 415	232740	239 676	246 764	251 867	254 325	1	3	3	2	1
Revenues from passenger transportation, mln. dollars	31 754	32 942	34 954	34 782	33 777	34 819	4	6	0	3	3
Revenues from cargo transportation, mln. dollars	990	937	934	813	668	729	–5	–0,3	–13	–18	9
Other income, million dollars	3926	3894	4474	5109	5194	5696	–1	15	14	2	10
Total operating income, million dollars	36 670	37 773	40 362	40 704	39 639	41 244	3	7	1	–3	4
Operating expenses, million dollars	34 268	33 981	38 156	32 902	32 687	35 130	–1	12	–14	–1	7
Profitability of passenger-mile, cent	16,5	16,89	17,2	16,6	15,9	16	3	2	–4	–4	1
Profitability of seat-mile, cent	13,8	14,2	14,6	14,1	13,4	13,7	3	3	–3	–5	2
Cost of seat-mile, cent	15,0	14,8	15,9	13,3	13,0	13,8	–1	8	16	–3	6
Passenger load factor,%	83,8	83,8	84,7	84,9	84,6	85,6	0	1,1	0,2	–0,4	1
Fuel consumption, million gallons	3769	3828	3893	3988	4016	4032	2	2	2	1	0
Specific fuel consumption, g/seat-mile	16,26	16,45	16,24	16,16	15,94	15,85	1	–1	–1	–1	–1
Average price per gallon of fuel, dollars	3,3	3,0	3,5	1,9	1,5	1,68	–8	16	–45	–22	12
Staff at the end of the period, persons	73 561	77 755	79 655	82 949	83 756	86 564	6	2	4	1	3

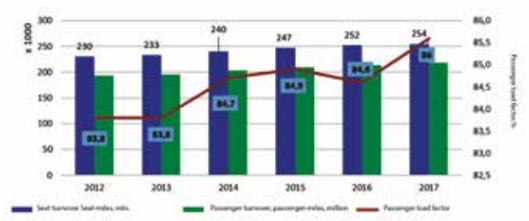


Fig. 3 Analysis of operational data of DeltaAirLines, Inc. for 2012–2016.
The data are given in the metric measurement system:
a – analysis of passenger and seat turnover; b – analysis of personnel wages; c – analysis of fuel costs; d – analysis of profitability and costs; e – analysis of profit to seat-km

Table 14
Operating expenses of DeltaAirLines, Inc. million dollars

Indicator	Year ended on December 31				Increase/decrease					
					Absolute			Relative, %		
	2014	2015	2016	2017	2015–2014	2016–2015	2017–2016	2015/2014	2016/2015	2017/2016
Wages and related expenses	8120	8776	10 034	10 436	656	1258	402	8	14	4
Aviation fuel and related taxes	11668	6544	5133	5733	–5124	–1411	600	–44	–22	12
Expenses of regional carriers	5237	4241	4311	4503	–996	70	192	–19	2	4
Contractual services	1828	1848	1991	2235	20	143	244	1	8	12
Depreciation and amortization	1749	1835	1902	2184	86	67	282	5	4	15
Materials for repair and maintenance of aircraft	1771	1848	1823	1992	77	–25	169	4	–1	9
Passenger fees and other selling expenses	1700	1672	1710	1787	–28	38	77	–2	2	5
Boarding fees and rental payments at airports	1442	1493	1490	1528	51	–3	38	4	–0,2	3
Profit sharing	1085	1490	1115	1067	405	–375	–48	37	–25	–4
Passenger service	810	872	907	1065	62	35	158	8	4	17
Rental of aicraft	233	250	285	351	17	35	66	7	14	23
Restructuring and other	716	35	—	—	–681	—	—	–95	—	—
Other	1797	1998	1986	2249	201	–12	263	11	–0,6	13
Total operating costs	38 156	32 902	32 687	35 130	–5254	–180	2443	–14	–0,7	7

Table 15
Special revenuese and expenses (recalculation at market prices)

Indicator	2012	2013	2014	2015	2016	2017
Adjustments and calculations by MTM *	27	276	–2346	1301	450	259
Restructuring and other	–452	–424	–716	–35	—	—
Losses from repayment of debts	–118	—	–268	—	—	—
MTM Investment Adjustments	—	—	–134	26	115	–8
Tax Exemption (**)	—	7989	—	—	—	–150
Total income (loss)	–543	7841	–3464	1292	565	101

* Revaluation based on the current level of market prices (mark to market).
** State benefits

Table 17
UnitedAirlinesInc. Fuel consumption and the costs of its use

Indicator	Jet fuel consumption, million gallons	Jet fuel consumption, million dollars	Average price per gallon, dollar	Average price of 1 ton, dollar	Share of total expenses,%
2014	3905	11675	2,99	997	32
2015	3886	7522	1,94	647	23
2016	3904	5813	1,49	497	18
2017	3978	6913	1,74	580	20

United Airlines Inc. is one of the largest airlines in the USA and in the world. According to the results of 2017, its services were used by 148 million passengers, the passenger turnover was 311,318 billion passenger-km and total revenues –37,736 billion dollars.

In 2002 United Airlines Inc. declared bankruptcy, the reason for which was its inability to pay almost 1 billion dollars of debt. In 2005 the company obtained finances – 3 billion dollars and presented a recovery plan after the state of bankruptcy. After that merger negotiations were held with Continental Airlines. In May 2010 the company UAL, which owned the United Airlines Inc., officially announced the purchase of Continental Airlines for 3,17 billion dollars. The transaction took place in the form of an exchange of shares. Since 2011 the airline operates under a single valid certificate from the United States Federal Aviation Administration.

Together with subsidiary carriers operating under the trademark of United Express (Republic, Champlain Enterprises, Commut Air, ExpressJet, GoJet, Mesa, SkyWest, Air Wisconsin and Trans States), United Airlines Inc. serves an unprecedented

Table 18
United Airlines Inc. The main company's long-haul fleet

Type of aircraft	Total	Ownership	Rent	Standard configuration of seats	Average age, years
777-300ER	14	14	—	366	0,7
777-200ER	55	40	15	267–269	17,8
777–200	19	19	—	364	20,5
787–9	21	21	—	252	2,1
787–8	12	12	—	219	4,5
767-400ER	16	14	2	242	16,3
767-300ER	35	22	13	183–214	22,5
757–300	21	9	12	213	15,3
757–200	56	50	6	142–169	21,7
737-900ER	136	136	—	179	5
737–900	12	8	4	179	16,3
737–800	141	77	64	154–166	13,8
737–700	40	20	20	118–126	18,8
A320–200	99	66	33	150	19,3
A319–100	67	50	17	128	16,7
Total	744	558	186	—	14,3

Table 16
Estimated costs of seat-kilometer by type of aircraft of DeltaAirLinesInc. in 2015–2017

Type of aircraft	Year	Fuel consumption, g / seat-km	Remuneration of flight personnel	Aviation fuel	Rental of aircraft	Other flight expenses	Maintenance	Depreciation and amortization of flight equipment	Direct (flight costs)	Airport expenses	Passenger services	Sales and reservations	Other production and administrative expenses	Total indirect costs
737–700	2015	30,6	1,4	2,0	0,2	0,015	1,0	0,7	**5,2**	2,6	1,0	0,8	2,2	**6,7**
737–700	2016	30,9	1,6	1,5	0,1	0,006	1,0	0,7	**5,0**	2,7	1,1	0,8	2,2	**6,8**
737–700	2017	30,6	1,8	1,6	0,1	0,005	1,2	0,8	**5,6**	6,1	1,6	1,1	2,2	**11,1**
737–800	2015	23,9	1,0	1,5	0,1	0,011	0,7	0,5	**3,8**	1,3	0,6	0,5	2,2	**4,5**
737–800	2016	24,0	1,1	1,2	0,1	0,004	0,8	0,5	**3,7**	1,4	0,7	0,5	2,2	**4,6**
737–800	2017	23,9	1,2	1,3	0,1	0,004	0,9	0,6	**4,1**	2,9	0,9	0,6	2,2	**6,7**
737–900	2015	16,7	0,6	1,1	0,1	0,002	0,5	0,3	**2,6**	1,3	0,6	0,5	2,2	**4,6**
737–900	2016	22,1	1,0	1,1	0,1	0,004	0,7	0,4	**3,3**	1,5	0,7	0,5	2,2	**4,9**
737–900	2017	22,1	1,1	1,2	0,1	0,004	0,8	0,5	**3,7**	3,2	1,1	0,7	2,2	**7,2**
757–200	2015	26,5	0,9	1,7	0,1	0,009	0,7	0,4	**3,8**	1,8	0,7	0,5	2,2	**5,2**
757–200	2016	25,2	1,0	1,3	0,1	0,004	0,6	0,4	**3,4**	1,6	0,7	0,5	2,2	**4,9**
757–200	2017	25,0	1,1	1,3	0,1	0,003	0,7	0,5	**3,7**	3,5	0,9	0,6	2,2	**7,3**
757–300	2015	22,3	0,6	1,4	0,1	0,007	0,5	0,3	**3,0**	1,4	0,6	0,5	2,2	**4,7**
757–300	2016	22,0	0,7	1,1	0,1	0,003	0,5	0,3	**2,8**	1,4	0,7	0,5	2,2	**4,7**
757–300	2017	22,0	0,8	1,2	0,1	0,003	0,6	0,4	**3,1**	3,4	1,0	0,7	2,2	**7,3**
767–400	2015	27,4	0,7	1,8	0,1	0,006	0,4	0,3	**3,3**	0,8	0,2	0,1	2,2	**3,3**
767–400	2016	27,4	0,9	1,5	0,1	0,002	0,5	0,3	**3,3**	1,9	0,3	0,2	2,2	**4,7**
767–300	2015	28,1	0,8	1,8	0,1	0,007	0,5	0,3	**3,5**	0,9	0,2	0,2	2,2	**3,5**
767–300	2016	28,2	0,9	1,4	0,1	0,003	0,5	0,3	**3,2**	0,9	0,3	0,2	2,2	**3,5**
767–300	2017	28,6	1,0	1,5	0,1	0,003	0,6	0,4	**3,6**	1,8	0,3	0,2	2,2	**4,6**
777–200	2015	30,2	0,7	1,9	0,1	0,005	0,4	0,2	**3,3**	0,6	0,1	0,1	2,2	**3,0**
777–200	2016	29,9	0,8	1,5	0,1	0,002	0,4	0,2	**2,9**	0,7	0,2	0,1	2,2	**3,1**
777–200	2017	29,6	0,9	1,6	0,0	0,002	0,4	0,3	**3,2**	1,6	0,2	0,2	2,2	**4,2**
747–400	2015	34,7	0,5	2,2	0,0	0,003	0,3	0,2	**3,2**	0,7	0,2	0,1	2,2	**3,2**
747–400	2016	35,0	0,6	1,7	0,0	0,002	0,3	0,2	**2,8**	0,6	0,1	0,1	2,2	**3,0**
747–400	2017	35,1	0,7	1,9	0,0	0,001	0,3	0,2	**3,1**	1,7	0,2	0,2	2,2	**4,2**
A330–300	2015	25,6	0,6	1,6	0,1	0,006	0,4	0,2	**2,9**	0,7	0,2	0,1	2,2	**3,2**
A330–300	2016	25,5	0,7	1,3	0,1	0,002	0,4	0,2	**2,6**	0,8	0,2	0,2	2,2	**3,3**
A330–300	2017	25,3	0,7	1,3	0,0	0,002	0,4	0,3	**2,9**	1,8	0,4	0,2	2,2	**4,6**
A330–200	2015	30,5	0,9	2,0	0,1	0,007	0,5	0,3	**3,7**	0,6	0,1	0,1	2,2	**3,1**
A330–200	2016	30,9	1,0	1,5	0,1	0,003	0,5	0,3	**3,3**	0,7	0,2	0,1	2,2	**3,2**
A330–200	2017	30,7	1,1	1,6	0,1	0,002	0,5	0,4	**3,7**	1,8	0,3	0,2	2,2	**4,4**
A320	2015	28,0	1,1	1,8	0,1	0,012	0,8	0,5	**4,4**	2,0	0,9	0,7	2,2	**5,8**
A320	2016	27,3	1,3	1,4	0,1	0,005	0,8	0,5	**4,1**	2,0	0,9	0,7	2,2	**5,8**
A320	2017	26,5	1,3	1,4	0,1	0,004	0,9	0,6	**4,4**	4,0	1,2	0,9	2,2	**8,3**
A319	2015	33,6	1,7	2,2	0,2	0,023	1,5	1,0	**6,6**	2,7	1,1	0,9	2,2	**6,8**
A319	2016	31,4	1,6	1,6	0,1	0,006	1,0	0,6	**4,9**	2,2	1,0	0,7	2,2	**6,1**
A319	2017	30,1	1,6	1,6	0,1	0,005	1,1	0,8	**5,2**	4,4	1,3	0,9	2,2	**8,9**
A321	2016	26,9	1,4	1,4	0,1	0,005	0,7	0,5	**4,1**	3,5	1,8	1,3	2,2	**8,8**
A321	2017	25,9	1,3	1,4	0,1	0,004	0,8	0,6	**4,1**	6,9	2,3	1,6	2,2	**13,0**

* Wages, materials, spare parts.

Table 19
UnitedAirlinesInc. The fleet of regional carriers

Type of aircraft	Total	Ownership	Rent	Regional aircraft operators	Regional operators	Number of planes	Standard configuration of seats
EmbraerE175	152	54	—	98	SkyWest:	65	76
					Mesa:	59	
					Republic:	28	
Embraer170	38	—	—	38	Republic:	38	70
CRJ700	65	—	—	65	SkyWest:	20	70
					GoJet:	25	
					Mesa:	20	
CRJ200	85	—	—	85	SkyWest:	55	50
					AirWisconsin:	30	
ERJ145 (XR/LR/ER)	168	29	139	—	ExpressJet:	110	50
					TransStates:	36	
					CommutAir:	22	
Q200*	7	—	-	7	CommutAir:	7	37
EmbraerERJ135*	3	—	3	—	ExpressJet:	3	37
Total regional aircraft	518	83	142	293		518	
Total fleet of aircraft	1262	641	328	293			

* In January 2018 a joint service of aircraft of the type Q200 and ERJ 135 was put into operation.

according to its size network – the entire territory of the United States, Asia, Australia, Europe and the Middle East.

United Airlines Inc. operates flights from Newark, Chicago, Denver, Houston, Los Angeles, Guam, San Francisco and Washington airports.

Airline United Airlines Inc. and its regional carriers operate more than 4500 flights a day to 338 destination airports on five continents. The main company manages tariffs, prices, revenues, miles calculation, loyalty programs, etc.

United Airlines Inc. is a member of the Star Alliance, the global integrated airline network and the largest airline alliance in the world. As of January 1, 2018 the Star Alliance airlines served 1300 airports in 191 countries with 18400 daily flights.

In addition to United Airlines Inc. the alliance includes: Adria Airways, Aegean Airlines, Air Canada, Air China, Air India, Air New Zealand, All Nippon Airways, Asiana Airlines, Austrian Airlines, Avianca, Avianca Brasil, Brussels Airlines, Copa Airlines, Croatia Airlines, EgyptAir, Ethiopian Airlines, EVA Air, LOT Polish Airlines, Lufthansa, SAS, Shenzhen Airlines, Singapore Airlines, South African Airways, SWISS, TAP Air Portugal, THAI Airways International and Turkish Airlines.

United Airlines Inc. также организовала трансатлантические совместные предприятия с Air Canada, Lufthansa, ANA и Air New Zealand.

Regional companies. United Airlines Inc. concludes agreements with the above-listed regional companies about the purchasing of capacities, the peculiarity of which is the provision of a certain number of regional aircraft with a capacity of up to 76 seats, the conclusion of pilot contracts, the performance of flights according to the flight schedules of United Airlines Inc.

United Airlines Inc. pays to regional carriers the agreed (controlled) expenses for the performed flights and incentive amounts. The controlled expenses are paid at specific rates of regional carriers' operating expenses, for example, the cost of crews, maintenance and ownership of aircraft are determined by multiplying the static values of the costs for aircraft types by the corresponding flight hours. In accordance with agreements on the purchasing of capacities, the cost of jet fuel, take-off and landing charges, and other expenses directly incurred by regional carriers are compensated by United Airlines Inc. with fixed amounts.

Aviation fuel. Table 17 shows the consumption of jet fuel during 2014–2017. As of December 31, 2017 United Airlines inc. did not have contracts on fuel hedging.

As of December 31, 2017 United Airlines Inc., including its subsidiaries, had about 89800 employees. Approximately 80% of United Airlines Inc. employees were members of various US trade union organizations.

As of December 31, 2017 the combined fleet of the company (the aircraft of the main company and aircraft of regional carriers) totaled 1262 planes (Tables 18, 19). The main airline owned 558 aircraft, or 75%.

As of December 31, 2017 United Airlines Inc. had firm obligations to acquire Boeing and Airbus aircraft (Table 20).

Table 21 shows the planned United Airlines Inc. capital expenditures on the purchase of aircraft, spare engines, aircraft upgrades and other aircraft-related capital expenditures as of December 31, 2017.

Table 20.1
United Airlines Inc. Obligations to acquire aircraft in 2018-2027

Type of aircraft	Number
Airbus A350	45
Boeing 737 MAX	161
Boeing 777-300ER	4
Boeing 787	18
Total	228

In 2018, 13 aircraft were delivered, including:

- 7 aircraft 737 Max 9 × 49 million dollars. = 343 million dollars.
- 3 aircraft 777-300 × 143 million dollars = 430 million dollars.
- 3 aircraft $ 787–9 × $ 133.9 million = $ 402 million; totaling $ 1,2 billion.

The market valuation of the received new aircraft corresponding to the specified types is indicated.

Until the end of 2018 three aircraft of the type 737 Max 9, one of the type 777-300 and three of the type 787-9 will be delivered.

United Airlines Inc. rents infrastructure facilities: equipment and premises of airports, hangars, terminals and buildings. The main rental facilities are located at the airports of San Francisco, Washington Dulles, Chicago, Los Angeles, Denver, Newark, Houston, Cleveland and Guam.

The financial and economic indicators of United Airlines Inc. in 2014-2017 are presented in Table 22

Table 21
United Airlines Inc. Obligations to acquire aircraft, billion dollars

Year	Obligations
2018	3,2
2019	2,9
2020	2,1
2021	2,4
2022	1,8
After 2022	9,8
Total	22,2

UAL's net profit in 2017 was 2,1 billion dollars.

Compared with 2016: passenger transportation increased by 3,4%; the total revenues increased by 3,23%; passenger revenues per available seat-mile (PRASM) decreased by 0,4%; the cost of a seat-mile increased by 2,76%; the cost of aviation fuel in 2017 increased mainly due to the increase in fuel prices (by 16,8%).

During 2017, UAL delivered new aircraft: three Boeings 787-9, four Boeings 737-800, 12 Boeings 777-300ER, 24 new Embraer E175 and two used A320 and six A319.

The changes in revenues by region in 2017 compared to 2015–2016 are shown in Table. 23. The main contribution to the growth of revenues was made by domestic flights in the USA and Canada.

Table 23
UnitedAirlinesInc. Changes in revenues by regions of passenger transportation in 2017

Region	2015	2016	2017	2016 to 2015	2017 to 2016
Domestic (USA and Canada)	21931	22202	23131	271	929
Pacific Ocean	5498	4959	4898	–539	–61
Atlantic Ocean	7068	6157	6285	–911	128
Latin America	3367	3238	3422	–129	184
Total	37864	36556	37736	–1308	1180

Operating expenses. Table 24 shows the company's operating expenses in 2014–2017. Compared to 2016, in 2017 wages and related expenses increased by 770 million dollars or by 7,5% mainly due to higher rates of payment and expenses for benefits arising from collective agreements concluded in 2016. The costs of aviation fuel increased by 1,1 billion dollars or by 18,9% mainly due to the rising fuel prices and increased carriage capacities by 3,5%. Airport expenses increased by 75 million dollars or 3,5% in 2017 compared to the period of the previous year due to higher rates of rent and landing. The costs of acquiring regional capacities increased by 35 million dollars or 1,6% due to an increase in annual rates of payments and profitability.

At the same time the regional potential decreased by 3,8%. Depreciation increased by 172 million dollras or 8,7%, mainly due to an increase in the fleet of new planes, modernization of aircraft and an increase in information infrastructure. The costs of materials for aircraft maintenance and repairs by outside organizations increased by 107 million dollars or 6,1% due to

Рис. 4. Изменения себестоимости перевозок по дальности перевозок по авиакомпаниям:
a – American Airlines Inc.; b – Delta AirLines Inc.; c – United AirLines Inc.

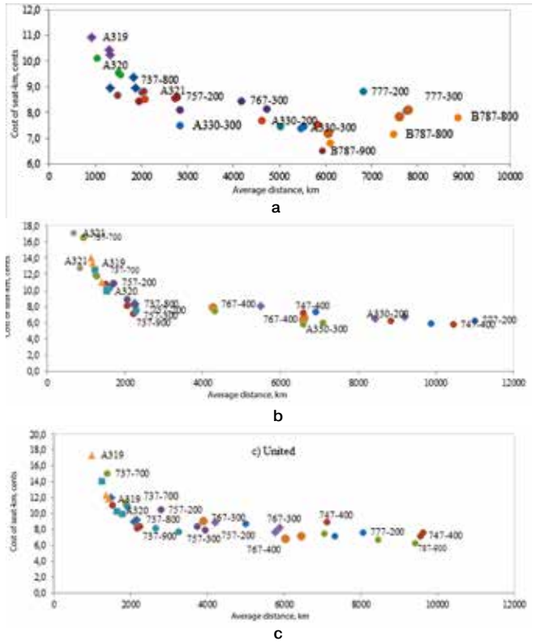


Table 22
UnitedAirlinesInc. Selected financial data for 2014-2017

Indicator	The value of indicators for the period 2012–2017						Changes in 2016-2017	
	2012	2013	2014	2015	2016	2017	2016/2015	2017/2016
The main destinations								
Transportation of passengers, million	93,6	91,3	91,5	96,3	101,0	108,0	4,86	6,94
Passenger-miles, billion	179,4	178,6	179	183,6	186,2	193,4	1,38	3,90
Seat-miles, billion	216,3	213	214,1	220,0	224,7	234,6	2,14	4,40
Freight ton-miles, billion	2,5	2,2	2,5	2,614	2,805	3,316	7,31	18,22
Seat occupancy rate	0,829	0,838	0,836	0,835	0,829	0,825	–0,006	–0,004
Revenues from passenger transportation, billion dollars	25,808	25,987	26,785	26,333	25,414	26,552	–3,49*	4,48
Revenues from passenger transportation per seat- mile, cent	11,9	12,2	12,5	11,97	11,31	11,32	–5,51	0,09
Gross revenues per seat-mile, cent	13,9	14,5	14,8	14,19	13,5	13,51	–4,86	0,07
Total revenues per passenger-mile (profitability), cent	14,4	14,6	15	14,34	13,65	13,73	–4,81	0,59
Cost of a seat-mile, cent	14,1	14,3	14	12,42	12,22	12,59	–1,61	3,03
Average price of a gallon of fuel, thousand dollars	3,27	3,12	2,98	1,96	1,49	1,72	–23,98	15,44
Fuel consumption, million gallons	3275	3204	3183	3216	3261	3357	1,40	2,94
Average nonstop range, miles	1895	1934	1958	1922	1859	1806	–3,28	–2,85
Average daily flying time, hours	10:38	10:28	10:26	10:24	10:06	10:27	–2,88	3,47
Summary data								
Transportation of passengers, million	140,4	139,2	138	140	143	148	2,00	3,42
Passenger-miles, billion	205,5	205,2	205,6	209	210	216	0,81	2,83
Seat-miles, billion	248,9	245,4	246	250	254	262	1,43	3,47
Seat occupancy rate	82,6	83,6	83,6	0,834	0,829	0,824	–0,005	–0,005
Operating income, total, billion dollars.	37,152	38,279	38,901	37,864	36,556	37,736	–3,45 a)	3,23
Income from passenger transportation, billion dollars	32,583	33,122	33,762	32,765	31,457	32,404	–3,99	3,01
Income from freight transportation, billion dollars	1,018	0,882	0,938	0,937	0,876	1,035	–6,51	18,15
Other income, billion dollars.	3,551	4,275	4,101	4,142	4,223	4,297	1,96	1,75
Operating expenses, billion dollars	37,113	3,703	36,528	32,696	32,215	34,236	–1,47	6,27
Operating result, million dollars	39	1249	2373	5168	4341	3500	–16,00	–19,37
Net income, million dollars	–723	571	1132	7301	2264	2149	–68,99	–5,08
PRASM (Passenger revenue per available seat-mile), cent	13,09	13,5	13,72	13,11	12,4	12,35	–5,42	–0,40
Total revenues per seat-mile, cent	14,9	15,6	15,8	15,15	14,42	14,38	–4,82	–0,28
Total revenues per passenger-mile (profitability), cent	15,9	16,1	16,4	15,72	14,96	14,98	–4,83	0,13
Cost of a seat-mile, cent	14,91	15,09	14,85	13,08	12,7	13,05	–2,91	2,76
Average price of a gallon of fuel, thousand dollars	3,27	3,13	2,99	1,94	1,49	1,74	–23,20	16,78
Fuel consumption, million gallons	4016	3947	3909	3886	3904	3978	0,46	1,90
Average nonstop range, mile	1429	1445	1480	1487	1473	1460	–0,94	–0,88

* Increase (decrease) by year is indicated in items

Table 24
United Airlines Inc. The analysis of operating expenses in 2014-2017

Indicator	2014	2015	2016	2017	Increase (decrease)			
					absolute, million dollars		relative, %	
					2016/2015	2017/2016	2016/2015	2017/2016
Wages and related expenses	8935	9713	10275	11045	562	770	5,8	7,5
Fuel costs	11675	7522	5813	6913	–1709	1100	–22,7	18,9
Landing fees, rentals and other expenses at airports	2274	2203	2165	2240	–38	75	–1,7	3,5
Payment for the capacities of regional carriers	2344	2290	2197	2232	–93	35	–4,1	1,6
Depreciation and amortization	1679	1819	1977	2149	158	172	8,7	8,7
Repair and maintenance of aircraft	1779	1651	1749	1856	98	107	5,9	6,1
Distribution costs (Sales network)	1373	1342	1303	1349	–39	46	–2,9	3,5
Rent of aircraft	883	754	680	621	–74	–59	–9,8	–8,7
Special expenses	443	326	638	176	312	–462	95,7	–72,4
Other operating expenses	5143	5078	5421	5667	343	246	6,8	4,5
Total	36528	32698	32218	34238	–480	2020	–1,5	6,3

an increase in the number of repairs of planes and engines and additional repair of wireless equipment (for entertainment).

The leasing of planes decreased by 59 million dollars or 8,7% due to the acquisition of aircraft and lower rental rates. Other operating expenses increased by 236 million dollars or 4,4% due to the increased costs of onboard catering, marketing and technologies related to customer service, as well the increase in freight transportation,

At the end of 2017 operating expenses increased by 2,02 billion dollars, the revenues increased by 1,18 billion, the operating result decreased from 4341 million dollars in 2016 to 3500 million dollars in 2017 or by 19,4%.

Table 25 shows the results of calculations of the cost per seat-kilometer by types of aircraft of United AirLines Inc. in 2015–2017. The share of direct costs amounted on average to 45%.In 2017 the financial results of United AirLines Inc. were affected mainly by the increase in the volumes of traffic and revenues. The revenues from passenger transportation increased by 1,180 billion dollars or by 4,1%, while the profitability of the seat-mile fell by 0,4%, due to lower profitability of regional flights. (According to the calculation, the average tariff for regional lines decreased from 150 to 138 dollars per one flight).

The cost of the seat-mile increased by 2,76%. The cost per seat-kilometer of long-haul aircraft operated by United AirLines Inc varies:

• for A319, A320, A321, 737–800 and 757–200 at a distance of up to 2000 km – from 10 to 17 cents;

Table 25
The cost per seat-kilometer for AmericanAirlinesInc. (AAL), DeltaAirLines Inc. (DAL) and UnitedAirLines Inc. (UAL) on average in 2015–2017

Type of aircraft	Direct flight costs			Indirect costs			Total			Average range, km		
	UAL	AAL	DAL	UAL	AAL	DAL	UAL	AAL	DAL	UAL	AAL	DAL
737–700	5,3	—	5,1	6,0	—	6,7	11,3	—	11,9	1873	—	1259
737–800	3,9	3,8	3,7	5,3	5,3	4,6	9,2	9,1	8,3	2122	1156	2240
737–900	3,1	—	3,0	5,2	—	4,8	8,3	—	7,7	2184	—	2126
747–400	4,0	—	3,0	3,5	—	3,1	7,5	—	6,1	9577	—	9629
757–200	3,9	3,9	3,6	4,4	4,7	5,0	8,2	8,6	8,6	3819	1712	2144
757–300	3,3	—	2,9	4,7	—	4,7	8,0	—	7,6	2949	—	2272
767–300	4,1	4,1	3,3	3,9	4,2	3,5	8,0	8,3	6,8	5826	2758	5341
767–400	3,2	—	3,1	3,7	—	3,3	6,9	—	6,4	6256	—	6604
777–200	3,7	4,6	3,1	3,7	3,9	3,1	7,4	8,4	6,2	7675	4515	10 430
777–300	—	4,2	—	—	3,8	—	—	8,0	—	—	4793	–
787–800	3,4	3,8	—	3,8	3,7	—	7,2	7,5	—	7057	5071	–
787–900	3,1	—	—	3,5	—	—	6,6	—	—	8919	—	–
A319	4,8	3,9	5,7	7,3	6,4	6,5	12,1	10,3	12,2	1384	818	1289
A320	4,1	3,6	4,2	6,1	5,9	5,8	10,2	9,5	10,0	1701	946	1510
A321	—	3,6	4,1	—	5,2	8,8	—	8,8	12,9	—	1258	818
A330–200	—	3,6	3,5	—	4,0	3,1	—	7,6	6,6	—	3239	8815
A330–300	—	3,5	2,8	—	3,9	3,3	—	7,5	6,0	—	3411	6822
Grand total	3,8	3,9	3,6	4,7	4,7	4,6	8,5	8,5	8,2	4718	2698	4510

Table 25
Estimated cost per seat-kilometer for UnitedAirLines, Inc. by type of aircraft in 2015-2017

Type of aircraft	Year	Fuel consumption, g / seat-km	Wages of flight personnel	Jet fuel	Rent of aircraft	Other flight costs	Maintenance	Depreciation and amortization of flight equipment	Direct flight expenses	Airport expenses	Passenger services	Sales and reservations	Other production and administrative costs	Total indirect costs
737–700	2015	29,2	1,3	1,9	0,6	0,1	1,3	0,3	5,5	2,2	0,9	0,4	2,4	6,0
737–700	2016	29,4	1,4	1,4	0,6	0,1	1,2	0,3	5,1	2,3	0,9	0,5	2,4	6,0
737–700	2017	29,6	1,6	1,7	0,9	0,0	1,5	0,4	6,0	3,9	1,8	0,9	2,5	9,1
737–800	2015	24,0	0,9	1,5	0,4	0,1	0,8	0,3	4,0	1,7	0,8	0,4	2,4	5,3
737–800	2016	23,7	1,0	1,2	0,4	0,1	0,9	0,3	3,7	1,7	0,8	0,4	2,4	5,3
737–800	2017	23,4	1,1	1,3	0,5	0,0	0,9	0,3	4,1	3,0	1,6	0,9	2,5	7,9
757–200	2015	27,8	0,8	1,8	0,1	0,1	0,9	0,4	4,0	1,3	0,4	0,2	2,4	4,4
757–200	2016	28,5	0,9	1,4	0,1	0,0	0,9	0,4	3,7	1,3	0,4	0,2	2,4	4,3
757–200	2017	28,7	1,0	1,6	0,1	0,0	1,3	0,4	4,4	2,2	0,9	0,5	2,5	6,1
757–300	2015	24,9	0,6	1,6	0,2	0,1	0,5	0,3	3,3	1,3	0,5	0,3	2,4	4,4
757–300	2016	25,7	0,7	1,2	0,0	0,1	0,9	0,4	3,3	1,6	0,6	0,3	2,4	4,9
757–300	2017	26,2	0,8	1,4	0,0	0,1	1,0	0,4	3,7	2,7	1,3	0,7	2,5	7,2
767–400	2015	27,6	0,7	1,7	0,1	0,0	0,5	0,3	3,3	0,9	0,2	0,1	2,4	3,7
767–400	2016	27,6	0,8	1,3	0,1	0,0	0,5	0,3	3,0	1,0	0,2	0,1	2,4	3,8
767–400	2017	27,3	0,9	1,5	0,1	0,0	1,0	0,4	3,9	1,8	0,5	0,3	2,5	5,0
767–300	2015	31,7	0,9	2,0	0,2	0,1	0,8	0,4	4,3	1,1	0,2	0,1	2,4	3,9
767–300	2016	31,4	1,0	1,5	0,1	0,0	0,8	0,4	3,8	1,1	0,3	0,1	2,4	3,9
767–300	2017	30,7	1,1	1,7	0,1	0,0	0,5	0,4	3,8	1,9	0,5	0,3	2,5	5,0
777–200	2015	30,0	0,7	1,9	0,1	0,1	0,8	0,4	4,0	0,9	0,2	0,1	2,4	3,7
777–200	2016	29,9	0,8	1,4	0,1	0,0	0,7	0,4	3,5	1,0	0,2	0,1	2,4	3,7
777–200	2017	29,5	0,8	1,6	0,1	0,0	0,8	0,5	3,9	1,7	0,5	0,2	2,5	4,9
737–900	2015	22,4	0,8	1,4	0,0	0,1	0,6	0,3	3,3	1,6	0,7	0,4	2,4	5,2
737–900	2016	22,5	0,9	1,1	0,0	0,1	0,6	0,3	3,0	1,6	0,8	0,4	2,4	5,2
737–900	2017	22,5	1,0	1,2	0,0	0,0	0,6	0,3	3,2	2,9	1,7	0,9	2,5	7,9
747–400	2015	33,3	0,6	2,1	0,1	0,1	0,7	0,6	4,2	0,8	0,2	0,1	2,4	3,5
747–400	2016	33,4	0,7	1,6	0,1	0,0	0,6	0,8	3,8	0,8	0,2	0,1	2,4	3,4
747–400	2017	33,7	0,7	1,8	0,1	0,0	0,8	1,1	4,6	1,4	0,3	0,2	2,5	4,3
787–800	2015	26,4	1,0	1,7	0,0	0,1	0,5	0,4	3,6	1,0	0,2	0,1	2,4	3,8
787–800	2016	26,7	1,1	1,3	0,0	0,0	0,4	0,4	3,2	1,1	0,2	0,1	2,4	3,8
787–800	2017	26,6	1,2	1,5	0,0	0,0	0,5	0,5	3,7	1,8	0,4	0,2	2,5	5,0
787–900	2015	24,9	0,9	1,5	0,0	0,1	0,3	0,5	3,3	0,8	0,2	0,1	2,4	3,6
787–900	2016	24,9	1,0	1,2	0,0	0,0	0,3	0,4	2,9	0,8	0,2	0,1	2,4	3,4
787–900	2017	24,9	1,1	1,4	0,0	0,0	0,5	0,4	3,4	1,2	0,3	0,2	2,5	4,2
A320	2015	25,6	1,0	1,6	0,3	0,1	0,8	0,3	4,1	2,1	0,9	0,5	2,4	5,9
A320	2016	25,9	1,2	1,2	0,3	0,1	1,0	0,3	4,1	2,3	1,0	0,5	2,4	6,2
A320	2017	25,9	1,3	1,4	0,3	0,1	1,4	0,3	4,8	3,8	2,0	1,1	2,5	9,4
A319	2015	29,3	1,2	1,8	0,1	0,1	1,0	0,5	4,8	2,9	1,1	0,6	2,4	7,1
A319	2016	29,3	1,4	1,4	0,1	0,1	1,3	0,6	4,9	3,2	1,3	0,7	2,4	7,5
A319	2017	29,3	1,6	1,6	0,1	0,1	1,7	0,6	5,7	5,4	2,5	1,3	2,5	11,6

*Wages, materials, spare parts.

• for 757–200/300, 767–400 and 747–400 at distances of 2100–6000 km – from 7,7 to 9 cents;

• for 777–200, 747–400 and 787–900 at a distance of over 6000 km – from 6,4 to 9 cents.

Figure 4 shows the estimated cost of seat-kilometer depending on the range of passenger transportation by types of long-haul aircraft for American Airlines Inc., Delta AirLines Inc. and United AirLines Inc.

Table 25 shows the results of comparison of the cost of transportation by type of aircraft for American Airlines Inc., Delta AirLines Inc. and United AirLines Inc. in 2015–2017. The cost per seat kilometer is compared separately for direct flight costs and indirect costs.

Delta AirLines Inc. has the lowest costs.

CONCLUSIONS

The operating result was influenced mainly by the reduction in the cost of jet fuel in 2014. The reduction in the cost of transportation in 2015–2016 was restrained by the growth of wage costs, costs associated with the acquisition of new aircraft and costs associated with reorganizations.

Since 2017 the cost of transportation has increased due to the rising costs of more expensive jet fuel and the maintenance of the aircraft fleet. The rates of payment for transportation capacities of regional operators, airport and rental payments, and other production costs have also increased.

The reduction of costs made it possible for US companies not to increase tariffs for passenger transportation in 2015–2016. In 2017 the profitability of passenger transportation on domestic flights within the United States and Canada, as well as international flights to Europe and Latin America, increased.

Compared to 2015 the cost of seat-kilometer decreased in 2016: for American Airlines Inc. – by 7,7%; DeltaAirLinesInc. – by 16,6%; United AirLines Inc. – by 14,4%. The rate of revenues for seat kilometers also decreased, but the decline was 1,5–2,0 times smaller. As a result of the fact that revenues exceeded expenditures in the period from 2014 to 2016 the operating profits increased in comparison with the previous period.

In 2017 an increase in transportation costs was not offset by an increase in profitability, which led to the reduction in profitability compared with 2016.

The comparison of statistics of 2017 and 2016 showed that for American Airlines Inc. the cost of seat-km increased by 7%, the total profitability of seat-km increased by 4%, profitability decreased from 13,0 to 9,6%; for DeltaAirLinesInc. the cost of seat-km increased by 6%, the total profitability of seat-km increased by 2,6%, profitability decreased from 17,5 to 14,8%; for United AirLines Inc., the cost of seat-kilometer increased by 2,76%, the total profitability of seat-km decreased by 0,28%, and profitability decreased from 11,9 to 9,3%.

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