The Operational Performance and Quality Aspects of Passenger Check-in Process at Regional Airports

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The authors deal with the airport check-in process and its operational performance and quality aspects. The topics are current due to the increase of the air traffic volume at regional airports caused mostly by low cost airlines. The demand for air transportation was caused by economic, social and political changes in Europe. The paper examines the performance of selected regional airports in Central Europe. The influence of increasing number of passengers in the technology and organization of passenger check-in process is also included. Authors deal with the impacts of these technological changes to operational and quality performance indicators. The paper published the findings of field research carried out at the selected regional airports in the Czech Republic of Passenger Check-in Process at Regional Airports.
Keywords: check-in process, airport, operational performance, quality.

1. INTRODUCTION

One of the most effective ways to gain a considerable amount of information on human performance and error is the way of the formalized reporting carried out by people from air traffic.

The authors deal with the airport check-in process and its operational performance and quality aspects. The topics are current due to the increase of the air traffic volume at regional airports caused mostly by low cost airlines. The demand for air transportation was caused by economic, social and political changes in Europe. Air transport is undergoing significant changes caused by the legislative and political reasons during recent periods. The liberalization brought the emergence of low-cost carriers. (Shaw, 2007) The political changes in Central and Eastern Europe (the fall of communism, the abolition of the Iron Curtain, the entry of these countries into the European Union, the entrance to Schengen space) had changed the former status quo. These changes on the one hand allow increased mobility of people, and on the other hand contribute to the economic growth of these countries and increase the wealth of people. (Doganis, 2010) In some countries, such as Poland, these changes allow massive travelling abroad to work. The result of

these circumstances is the increase in demand for air transport. Social changes have also contributed to the abolition of restrictions on the development of regional airports. In the past the development of main airports was preferred and the development of regional airports was often slow. This situation contributed to disinterest of flag carriers, which preferred flying from major airports. Flights from regional airports were understood mainly as connecting flights to the capital. Thus, they used consistently HUB and SPOKE philosophy. The pressures on the development of regional airports was attributed to the onset of low-cost carriers, and their philosophy of point-to-point connection and flying from secondary airports. (Jarach, 2005)

The paper examines the performance of selected regional airports in Central Europe. Examples are obtained using secondary and content analysis, particular data are given from the Czech Republic and Poland. The influence of increasing number of passengers in the technology and organization of passengers' check-in process is also included. The authors, based on experience, field research, and secondary analysis evaluated check-in process at the airports. Authors deal with the impacts of these technological changes to operational and quality performance indicators.

The paper published the findings of field research carried out at the selected regional airports in the Czech Republic.

2. THE OPERATIONAL PERFORMANCE AND QUALITY

Performance is a simple word which in economy or industry indicates the entity's ability to achieve certain results comparable, on the basis of certain established criteria, with the results of other units. These results are somewhat on the principle understood as the results which can be expressed in positive terms. Performance is also considered as the ability to achieve such results for a certain period of time. Business performance encounters one fundamental problem and that is how to measure, how to objectify. In addition, of course, performance can be seen from different angles and perspectives, and therefore this word will have different content for a company's owner, another for employees, another for a competitor, another for a company manager. (Kislingerová, 2013)

For all needs, in order to measure the performance appropriate procedures and methods are developed that are more or less confidently and accurately measure the ratios and relation. Relation between quality and performance is an important indicator because quality is evaluated by customers, their respective expectations. How to assess the quality of customer service? On the one hand a customer has an idea of his/her expectation towards services. Customer expectations are generated by many factors. It may be material equipment service, place of business, catalogues and brochures, positive experiences of our friends and colleagues, references from other (reputable) customers, our past experience, exposure and reputation of the operator are very important promises of the service provider, but also our specific needs. Customer expectations are crucial for quality assessment, and each service provider should take it into account. Rating the quality of customer service is based on a comparison of expectations with performance of the service. A satisfied customer is loyal and will keep coming back; the company will do the advertising and goodwill. (Blecharz, 2011) This is associated with performance. The company can be powerful if it makes profit, in essence, if it has satisfied customers.

Academic Dictionary of Foreign Words defines quality as "the sum of utility properties of the product or service, a summary of typical, usually positive qualities." ISO 9000's definition of quality is "degree to which a set of inherent characteristics fulfils requirement".

3. THE PERFORMANCE INDICATORS AND KPIs

The performance is a characteristic that describes the way or a respective course, which are researched, subject to perform an action on the basis of similarity with the reference method execution (during) this activity. The interpretation of this characteristic implies the ability to compare test and reference phenomenon from the perspective of determining criterion scale.[1]
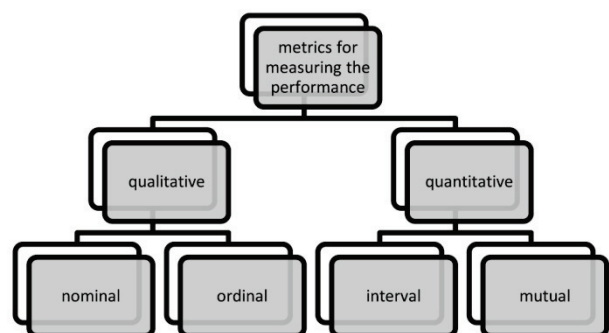

Fig. 1 The typology of specific variables to measure performance (Wágner, 2009, p. 17)

KPIs represent a set of measures focusing on those aspects of organizational performance that are the most critical for the current and future success of an organization (Parameter, 2007). KPIs are used to measure the most important aspects of an airport and may have different structure and units. Sometimes they do not say anything by themselves and sometimes they need to be compared to historical data or to equivalent measures for other airports.

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[1] WÁGNER, Jaroslav. Měření výkonnosti. Grada.
SBN: 978-80-247-6739-0. 17s.

Table 1. Initial selection of KPI´s (Grandberg, 2013)

Activity Area	KPIs	Activity Area	KPIs
Airport Operations	1. Turnaround times in the apron/gate area 2. Arrival Inbound efficiency 3. Departure Outbound efficiency 4. Temporal distribution of demand by time-of-day 5. Total traffic in terms of aircraft movements 6. Runway occupancy times by type of aircraft 7. Taxiing times from runways to apron/gates and vice-versa 8. Baggage delivery time 9. Number of runways and taxiways simultaneously in use	Airport Environmental Issues	1. Energy consumption 2. Number of contamination events 3. Waste recycling (tons) 4. Area affected by aircraft noise 5. Number of breaches of noise limits 6. Share of journeys that use public transport
		Airport Safety and Security	1. Number of aircraft safety incidents 2. Number of incidents at security checkpoints 3. Time between shut-down and reopening in case of security breach 4. Time it takes to business operations to begin in case of evacuation 5. Taken time and grade of destruction when returning to normality
Airport Economy	1. Income per passenger 2. Traffic income per passenger 3. Non-aeronautical income per passenger 4. Staff cost per passenger 5. Revenue per expenditure ratio 6. Commercial income per square meter of floorspace 7. Expenditure per passenger 8. Contribution per WLU	Airport Customer Service	1. Check-in waiting and processing times 2. Security control waiting and processing times 3. Amount and duration of delays 4. Quality of signage/ease to find the way 5. Baggage waiting time.

Leg: WLU – work load unit

It is necessary to note, however, that quality "expectations versus design" may not be so simple. A customer does often not assess only output service or product, but also evaluates the implementation of the service - or the process.

4. KPIs AT THE AIRPORT

An airport is an area where simultaneously a number of activities take place, in which more actors from different areas of activity have been engaged. Airports can be divided into two basic parts - the airport (airside) and the ground (landside). Airside as a part of an airport includes a runway system, including equipment, ramp departure and arrival waiting area. Ground segment the landside includes infrastructure on arrival at an airport (area outside the airport terminal and parking), public part of a terminal region of passengers, baggage and cargo and mail. Check-in process involves a trade check and security check. The process of influencing the perception of the quality of airport services passengers should include also non-aviation services, i.e. shops, restaurants and other services for passengers. Stakeholders affected by airport infrastructure are its users (customers) i.e.

passengers, airlines, shipping companies, business partners to an airport. Another group of actors involved in the administration or application of the legislative framework for engaging in aviation is management, owning or supervising and regulating authorities. The stakeholders may include entities outside the airport as residents living near airports, municipalities, etc.

Newly-induced demand for air transport has led to a dramatic increase in the number of passengers. Infrastructure, and particularly air terminals were not prepared for such traffic. Airports were in many cases the former military bases and have not been projected for a strong civil service. The examples of such airports are Ostrava, Brno, Katowice and Wroclaw. The airport had to deal with outdated airport infrastructure (runway lighting systems, radio navigation) and unsatisfactory terminals with lagging systems including security checks.

Table 2. Performance by handled passengers of selected airports in Central Europe

Y/PAX	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
OSR	197 439	216 259	265 864	300 735	332 266	353 737	307 130	279 973	273 563	288 454
BRQ	171 200	171 888	315 672	393 686	415 276	506 174	440 850	396 589	557 952	534 968
KTW	257 991	622 612	1 092 385	1 458 411	1 995 914	2 426 942	2 364 613	2 403 253	2 544 124	2 550 848
WRO	284 334	351 850	465 528	865 933	1 280 511	1 486 442	1 365 456	1 654 439	1 657 472	1 996 552

Source: authors, according to airport annual reports

The table shows the performance of airports and massive emergence of low-cost carriers on the Polish market. Greater potential of the Polish market is supported by greater mobility of Polish people. The performance of the Brno Airport shows onset of Ryanair in 2006 and growth of performance in the following years. The performance of the Ostrava Airport shows the absence of low cost airlines operation. Although Ryanair starts flying from Ostrava this summer, it will be difficult to massively boost the performance of the airport due to competition from Katowice and Brno.

Among the management-oriented KPIs we may include financial and operational indicators such as:
- cost per passenger,
- number of take-offs and landings per runway,
- minimum connection times,
- revenue per landing.

Among the KPIs monitored by external entities (local residents and municipalities) we could include:
- number of aircraft exceeding the noise limits,
- emission per takeoff or landing,
- ratio of passengers using public transports.
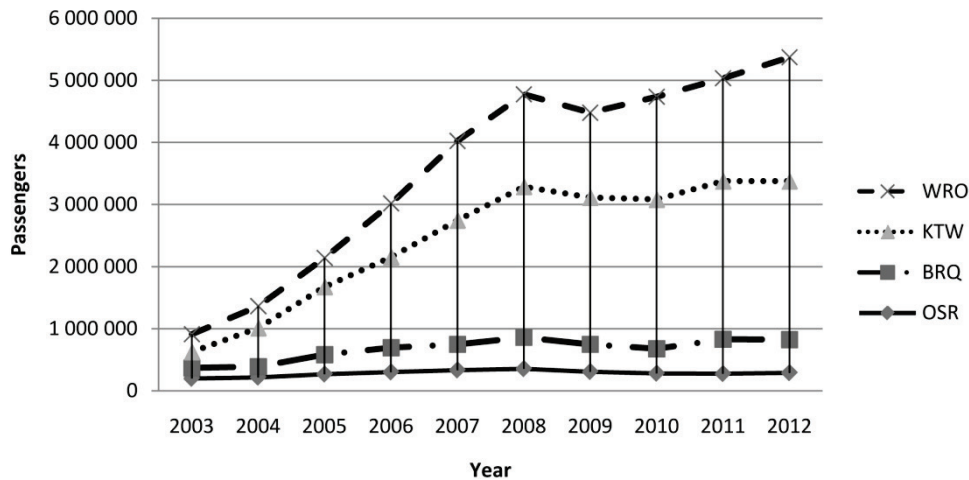
Graph 1. The performance of selected airports in Central Europe

Graph 1 shows in a more understandable way the difference in the number of passengers at the monitored airports. It is possible to notice signs of the 2007 crisis from the graph at the selected airports.

Passenger-oriented KPIs include:
- percentage of delayed departed flights,
- transfer times,
- time of check-in,
- baggage check-in (delay and the number of losses),
- percentage of delayed arrivals,
- time of immigration and security check.

At airports different KPIs can be used, in order of importance and prospects, which are judged by different groups of stakeholders. KPIs can be affected by controllable and uncontrollable factors (e.g. weather). For purposes of comparison it is necessary to adjust the KPIs in order to optimize the controllable factors.

5. CHECK-IN PROCESS

Generally the check-in process at airports enables passengers to check in luggage onto a plane and to obtain a boarding pass. The airline provides facilities for passengers to check in their luggage, except their hand luggage. This may be done by airline-employed staff at check-in counters at airports or through a handling agent arrangement

or by a self-service kiosk. The luggage is weighed and labelled by a bag tag, and fed into a baggage handling system. The luggage goes into the aircraft's cargo space. The check-in staff then issue a boarding pass for each passenger.

There is an increasing trend towards more modern checking-in processes, whereby passengers can bypass or reduce the time in queues at the check-in counters. This may require passengers checking in online before arriving at the airport or using an airline's self-service check-in kiosks at the airport. Some airports have check-in process where passengers can check in their bags to an airline representative before entering the terminal and then proceed directly to the security check.

6. KPIs IN THE PROCESS OF PASSENGERS HANDLING

Check-in process at the airport in a wide perspective involves the movement of passengers from their arrival at the airport, the entrance to the airport terminal, baggage and passenger security check, customs and passport control, guiding passengers to the departure waiting room, checking at the exit of the terminal and boarding.

- Easy passage through the airport
- Passport control

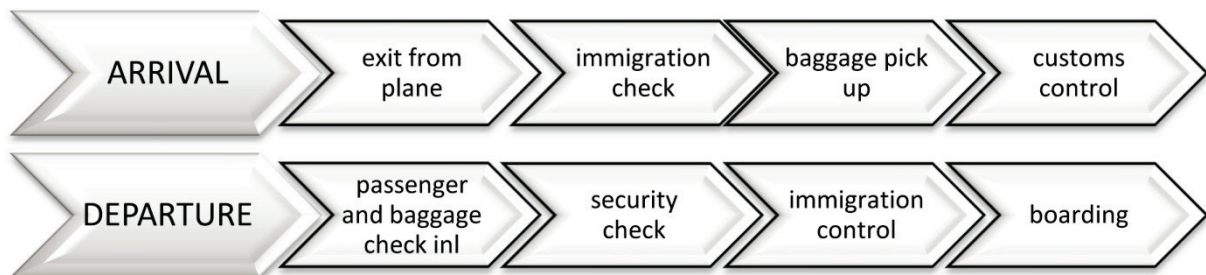| ARRIVAL | exit from plane | immigration check | baggage pick up | customs control |
| DEPARTURE | passenger and baggage check inl | security check | immigration control | boarding |

Fig. 2. Chart of a check-in process

The above diagram is a general sequence of processes and may vary according to technological and check-in processes at individual airports or the character of flights (domestic or international flight).

The best airport by ACI (Airports Council International) focuses on improving the following areas:
- Cleanliness of airport terminal
- Overall satisfaction with the airport
- Courtesy, friendliness of check-in staff
- Courtesy, friendliness of airport staff
- The atmosphere at the airport
- Availability of washrooms and toilets
- Performance of check-in staff
- Feeling safe at the airport

7. KPIs AND CHECK- IN PROCESS

Based on field research technological and organizational factors in the handling process were identified, which display significant influence to departure check-in process, as it is shown in the following figure (fig. 3.).

luggage. The process is also easier and faster because airports do not issue boarding passes. Most of passengers now go straight to the security check and into the departure lounge. Now the control of cabin baggage (number, weight, size) is more strict. The rules for carry-on luggage are still the same. Differences are also among the

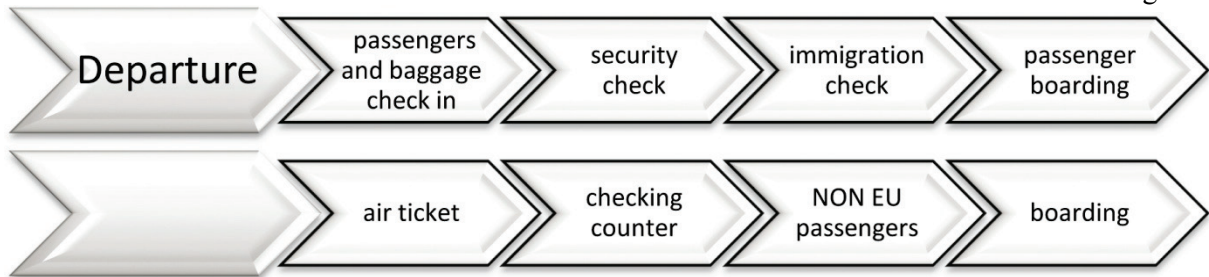| Departure	passengers and baggage check in	security check	immigration check	passenger boarding
	air ticket	checking counter	NON EU passengers	boarding

Fig. 3. KPIs for departure check-in process

Computerization also leads to significant savings in labour costs. The current trend is to maximize the provision of selected routine services through the Internet and penalize the customers by other fees if they require service through the airport or airlines personnel. The airport check-in can be used as an example. Low fares can be achieved, inter alia, by the use of Internet booking and online ticket sales without intermediaries. These activities have led to a significant reduction of costs such as the abolition of printed tickets, cancelling of sales agencies (saving commission costs). Some airlines (mostly low-cost carriers) provide clearance over the Internet for free. Conversely the fee for airport check-in is typically 5 to 15 EUR, depending on the time of ticket purchase and handling time. Passengers who

passengers (boarding). In the past, passengers received check-called Sequence Number, which determined when they got on the plane. Now passengers who purchase "Priority Boarding" enter first. Experience shows that if experienced passengers, flying with only hand baggage and complying with all the dimensions, weight and time rules, flies really cheap and the airport has less work with him/her. Check-in now does not take up much space for check-in counters as before. On the other hand, increased activities have registered in the area in front of the security check (the point where boarding passes, passports and hand luggage are controlled).

The check-in process upon arrival includes a similar area (fig. 4.).

Arrival	exit from plane	immigration check	baggage pick up	customs check

Fig. 4. KPIs for arrival check-in process

choose to check in online must print their own boarding passes and present them at the boarding counter together with the travel documents. Internet check-in is usually possible to be made from a few days up to an hour before the scheduled departure. Another example of the use of modern information technologies is handling of own luggage (self checking).

At a time when there was no Internet check-in, all passengers had to come to check-in counter, regardless of whether they had checked baggage or not. Currently, when the Internet is able to work with 100% check-ins, only 30% of the total number of passengers come to the counter with

There is less checked baggage than in the past. Loading and unloading is accelerated, all bags are loaded in one cargo department. The movement of handling equipment is reduced.

8. CONCLUSION

Air transport reflects modern trends in the global economy, technological changes and changes in business processes. An important phenomenon in the aviation market are low cost airlines. Applying their business model, cost reduction and low prices have been enabled by the use of the Internet in the sales process and computerization of check-in process. Sales and

marketing approach to charging airport handling services, especially payment for checked baggage, motivates passengers to reduce the baggage and travel with hand luggage only. These trends change passengers' behaviour and induce the needs to change procedures and technologies of passenger and baggage handling. These changes, on the one hand, simplify the process of check-in and handling of checked baggage due to their reduction. On the other hand, it increases the demand on the safety of passengers due to the larger cabin luggage, and their number and also the need to identify the passenger before the security check. The changes in the departure process also place greater demands on knowledge of laws, rules, experience and skills of handling employees.

Unlike low-cost airlines, a charter flight means 100 % check-in at the counter, more baggage, inexperienced travellers, a lot of families - problems with seating on the plane. On the other hand, compared to regular flights (especially in the UK) there is minimum trouble with passport (valid passports and forgotten documents). Less problems is noticed due to charter weight limit for checked baggage - charter carriers against low-cost carriers allow pooling of luggage. The Brno Airport experience shows that with the advent of low-cost carriers to operate scheduled flights the airport, atmosphere changes. There are more arriving foreigners and more welcoming people, more taxis, more customers at the airport compared with charters. These changes also bring higher standards of knowledge of laws, rules, experiences and skills for airport staff.

REFERENCES

[1] BLECHARZ, Pavel; ŠTVERKOVÁ, Hana. *Product Quality and Customer Benefit. International Symposium on Applied Economics, Business and Development, ISAEBD 2011.* Part 1. Berlin: SPRINGER-VERLAG BERLIN, 2011, Volume 208, 382 - 388 p. ISBN: 978-3-642-23022-6.

[2] DOGANIS, Rigas. *Flying Off Course IV: Airline Economics and Marketing, 323p,* New York 2010. ISBN 0-415-44737-2.

[3] GRANBERG, Tobias Andersson; MUNOZ, Ander Oquillas. *Developing key performance indicators for airports.* [online] 2013 [cit. 15. 8. 2013] Available on www: http://www.enri.go.jp/eiwac/2013/pdf/Viewgraph/EN-026_Andersson.pdf

[4] JARACH, David. *Airport Marketing: Strategies to Cope with the New Millennium Environment, 137p,* Aldershot 2005. ISBN 0-7546-4085-X.

[5] KISLINGEROVÁ, Eva. *Jak měřit výkonnost.* [online] 2013 [cit. 10. 8. 2013] Available on www http://www.businessinfo.cz/cs/clanky/jak-merit-vykonnost-podniku-casech-krize-2817.html#!&chapter=2

[6] SHAW, Stephen, *Airline Marketing and Management.* Farnham: ASHGATE PUBLISHING 2007. 323p. ISBN 978-0-7546-4820-8.

[7] WÁGNER, Jaroslav. *Měření výkonnosti. Jak měřit, vyhodnocovat a využívat informace o podnikové výkonnosti.* Praha: GRADA, 2009. 256 s. ISBN 978-80-247-2924-4.

[8] Brno Airport Annual Report 2003-2013

[9] Katowice Airport Annual Report 2003-2013

[10] Ostrava Airport Annual Report 2003-2013

[11] Wroclaw Airport Annual Report 2003-2013

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