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ADAPTATION OF THE SERVQUAL METHOD FOR TESTING THE QUALITY OF PASSENGER AIR SERVICES

Summary. The aim of the paper is to present the author's attempt to adapt the Servqual Method to study the quality attributes of passenger air services. This market is witnessing a growing dynamic of competition intensity and a distinctive trend consisting of focusing on improving the quality of the most important determinants in basic areas of this business. The method of comprehensive evaluation of this process and its consequences on the Polish market has so far not been scientifically researched. The paper attempts to fill this gap. The proposed solution consists in the introduction of a new, previously unused, research method to the system of analysis, assessment and measurement of the air services quality, which constitutes a specific contribution to the science.

Innovation of its application consists in a detailed reformatting of the Servqual Method and adaptation of both tested criteria and research areas to the nomenclature, specific requirements and conditions of this service sector. Using this method, it is possible to conduct a comprehensive range of tests taking into account the correctness, effectiveness of measurement, possibility of specifying the conclusions and recommendations as well as modernity of their implementation. The research questionnaire constructed by the author serves this purpose, in which the most important criteria and research areas of the discussed scope of services have been proposed.

1. INTRODUCTION

Attributes that increase the importance of services in the economy and social life lead to enhancement of quality, which is the main determinant of competitiveness and plays an increasingly important and often decisive role in the process of their supply and consumption. It creates the need to develop individual models of its research, corresponding to the specific requirements existing in a specific service industry and the search for the standardization of its measurement; although in some cases, this leads to the subjectivity of the obtained result. Determining the quality level verdict belongs only to the recipients, because they make the final decision on the purchase of the service based on their own experience. For this reason, the present study attempts to adapt the versatile Servqual model to measure the quality of services in passenger air transport. This is an intention to carry out research using the innovative method proposed by the author of the study.

2. JUSTIFICATION FOR THE CONCEPTUALITY OF TESTING THE QUALITY OF SERVICES

A growing role of service activity is observed in the development of modern economy, leading it to be increasingly referred to as "service civilization". Dynamic development of this sphere of services means that it currently goes beyond the traditional understanding of it as the third sector of economy,

apart from the growing range of agriculture as well as processing and industrial activities. However, it is still understood as a process that does not lead to the production of material goods. Nowadays, this sector is also characterized by growing share of services in the global economy [10, p. 155].

The ways of measuring and assessing the quality of services available in the literature indicate that this is a difficult task, because the quality attributes and relationships between them and tools used to carry out the measurements are subject to dynamic changes [15, pp. 61-72]. Many authors identify the quality of services rendered with the satisfaction felt by a customer. However, these are not the same concepts. This results in a lot of discussions in the literature upon the sphere of service management quality on the similarities and differences between quality and satisfaction [13, pp. 161 - 167].

Their effect is the creation of autonomous structures that allow conducting the study of the services quality in a specific field. This causes that more and more conceptual models of quality research appear in the literature, most often of a branch nature. Difficulty in carrying out this scope of research also results from the heterogeneity of measurement and defining the concept of services quality. This is confirmed by some authors pointing to the fact that the quality of services has a considerable range of differences in the perception of its essence in various service industries [3, pp. 166-168]. Quality requires a precise definition of its essence, because in the scientific dimension, it is subject to a constant process of studying its understanding. Plato has already stated that understanding of quality depends on the possessed knowledge, and with its widening, the possibility and precision of its definition increases. The awareness that quality expresses the degree of adaptation of the characteristic features of products and services to the requirements of the recipient causes that it undergoes the process of permanent improvement. It is impossible to define it completely, because apart from the philosophical aspect, it is a market term, which implies that within each service, one should improve the attributes of its market usability, satisfying the consumer and extending the specification of a favorable choice [9, pp. 16-23].

For the purpose of this study, the analysis of different definitions of quality would be of little use, because differences exhibited in them most often express the subjective perception of its features and specificity of the industry to which they relate. However, it is worth quoting definition developed by the International Organization for Standardization (ISO), according to which quality is a, degree to which a set of inherent characteristics fulfils requirements". It assumes the existence of the most important aspects of assessment, i.e. the entity that performs it (degree of implementation of the requirements) and the quality levels (e.g. worse, medium, better). In the case of testing the quality of services, regardless of the research subject, current socio-economic conditions should be taken into account, which in the recent period have been characterized by accelerated dynamics of changes, based on knowledge. There should also be considered such features as liquidity, new services and improvement of existing ones, innovations and consumer psychology [1, pp. 1-12].

When searching for a precise definition of the quality essence, the researchers have significantly approached the goal. In the opinion of many authors, the attempt to generalize these studies, while maintaining a certain level of standardization, is the use of the method to measure quality in various service segments. The concept of this model was presented in 1985 by American scientists A. Parasuraman, L. Berry and V. Zeithaml, which in 1988 was supplemented with the Likert Measuring Scale. The Servqual Method is an important analytical tool that identifies five gaps (differences) generated by variables that determine the perception of the quality of services offered. Its basic value is to determine the most important attributes of service quality and areas of its impact. It also allows identifying the reasons that reduce the level of service quality in relation to customer expectations and showing negative and positive effects that through the improvement process lead to the removal or correction of existing deficiencies [12, pp. 420-449].

3. ASSUMPTIONS OF THE SERVQUAL METHOD IN THE STUDY OF THE SERVICES QUALITY IN THE NEW INDUSTRY

Despite its versatility, the Servqual Method cannot be directly applied (without proper adaptation) to research in every field of services, because in this case, it should be adapted to the specifics of a given industry. Quality and reliability of their implementation depend on the reliability and accuracy

of adapting the method for testing in new service segments. Various approaches to the problem appearing in the literature show that it is possible to use the Servqual Method to carry out a proprietary and effective process of examining the quality of services in air transport. In passenger air services, the Servqual Method requires reformatting, i.e. logical selection of the most important quality attributes ensuring comprehensive performance of this scope of analysis and assessment. Such an objective was set in this paper, and the possibility of realizing the assumptions associated with it became the decisive motive for undertaking this research problem [12, pp. 420-450].

There is no question that the quality of air services is becoming the main determinant of gaining the dominance, expanding demand and gaining a competitive advantage in a given market. Nevertheless, there is no description of the comprehensive use of this method for research quality in this type of transportation in the available literature. In such a situation, implementation of the Servqual Method for the needs of this service industry, taking into account the expectations and requirements of the recipient, may constitute a specific contribution to both learning and practical use of the obtained results [17, pp. 67-85].

Seemingly, the method itself seems to be an uncomplicated research tool. However, to meet expectations, it must be transformed into an effective industry tool. This is necessary, because assessment of the quality of the consumed service is subject to the verification process in relation to the recipient's ideas, i.e. expected quality, creating perceived quality as a result of this process. It is the result of a detailed analysis of a wide range of qualitative attributes, which means that the final quality of the service is determined by the customer's perception [11, pp. 12-37]. Therefore, it is not surprising that, in the operational strategy of the air passenger service providers, quality plays a key role in generating the requirement to prioritize its standards and to demonstrate the reasons for generating good and less beneficial effects. Due to the framework of this paper, the process will be presented in a short form [16, pp. 227-230].

Recent striving for the unification of services activates the process of analyzing its quality towards the construction of a universal method of evaluation and understandable methodology of conducting this field of research. Analysis of the Servqual procedure shows that a significant range of expectations can only be met if it is correctly adapted. It results from the essence of this method, assuming the identification of discrepancies between the quality expected *ex ante* and the quality obtained *ex post*, expressing the resulting dissonance (gap) at the interface between the service provider and the recipient. The Servqual Method enables defects to be evident at all stages of preparation and service provision. The technique of its application consists in identifying four internal gaps and the fifth defining the customer's perception of the quality of service performed in relation to the offered quality. This gap determines the level of customer satisfaction, which means that it also expresses the degree of discrepancy in the assessment between the service provider and the service recipient [8, pp. 20-24].

Taking this into account, all the subsequent stages of applying this method should be embedded in the substantive realities of this service sector.

4. TESTING TECHNIQUE

Because basic information needed to conduct the quality tests using the Servqual Method originates from empirical sources, the first element of the research technique should be to construct an autonomous (for the aviation industry) scheme of carrying out the research and to prepare a questionnaire for the information sought, taking into account the specificity of this sector.

In this process, it is fundamental to correctly formulate questions, to which answers are expected. These questions will be asked to passengers who are currently traveling by air (at the airport). The main criterion for the selection of respondents was the number of flights they made with a representative low-cost airline (minimum three flights).

In order to obtain a uniform system and a comparable valuable information in this research system, a mechanism should be created for its technical service, consisting in the unambiguous cataloging of questions and system of obtaining and verifying the answers. In the opinion of people involved in this area of research (representatives of science and practitioners), this approach to examine the quality of

services in passenger air transport has a novelty feature and an unprecedented formula of complexity, and the reliability and accuracy of the results increases with the increase in the sample size.

The profile of the quality survey of passenger air services should be characterized by a predetermined area, strictly defined assessment criteria, which by some authors are referred to as “research claims” and an unambiguous scale of assessments, which in this method is the Likert Scale. A comprehensive approach to the analyzed research issues requires clarifying the scope of the research area and its division into specialized partial areas, which altogether form a substantially uniform and comprehensive structure of the study of the subject. Using the findings of the authors of Servqual Method, the entire area (process) of the provision of air services can be conventionally determined as the departure port, the flight to the appropriate destination and destination port. In each of these sections of the passenger service, certain services are implemented, which together make up the whole and correctness of the air transport process [7].

The order of conducting tests (order of the research course) has been subordinated to the requirements resulting from the Servqual Method, i.e. subsequent activities consisting in collecting, ordering, verifying data, and then making calculations and assessments, starting from partial quantities (criteria), through expanded research (areas), for synthetic measure (synthetic indicator of service quality).

Taking into account these assumptions in the Servqual Method, a typification was made, as a result of which the entire process of providing the passenger air services was divided into 5 main areas of research and quality assessment, which were given the following titles:

- **connection grid** - research criteria will be formulated within this research scope related to the degree of expansion of the connections network, flights frequency, distance of the residence place from the departure port and distance of the destination from the landing airport,
- **elements of the air transport service** - this area of research will include criteria related to issues associated with the quality and technique of both main and additional services, access to full information on transport costs (no hidden costs), constant contact between the carrier and passenger through the use of modern communication channels, convenience of departure and landing times, amount of leg room on the plane, as well as possibility of transporting the optimal luggage without additional charges and timeliness of flights,
- **crew** - in this area of research, the research criteria for professionalism in the field of passenger service, care of passengers traveling for the first time, minors and disabled persons, degree of identification of on-board employees with the airline, its brand and strategy, will be evaluated,
- **reliability** - this scope of research will be used to express opinions and concerns regarding safety in the air travel, technical condition of rolling stock and compliance with safety rules and standards in this type of transport,
- **services provided at the airport** - analysis of this research area will verify the effectiveness of the implementation of criteria for efficiency of the airport passenger service, ticket and luggage check, quality of infrastructure in terminals, necessary number of parking spaces, availability of parking spaces and costs.

It is not a closed structure; it can be supplemented and expanded, because it is necessary to take into account the dynamics of changes in this service sector, which may generate new determinants of quality shaping [1, pp. 1-12].

Diagnostic criteria regarding the selection of respondents may also change, which in this study should ensure an acceptable level of formulation of substantive assessments. For this reason, adults were selected with experience of using air transport and with an appropriate intellectual level.

Following general assumptions of the Servqual Method, effective testing of the level of passenger air services quality requires meeting basic requirement, i.e. a two-stage testing system. According to this assumption, each entity (most often a passenger) must express its opinion (assessment of acceptance gradation) regarding all criteria and areas specified in the research questionnaire, both before *ex ante* service (expected quality, image of quality attributes) and after its *ex post* implementation (degree of perception of the actual quality of the consumed service). This resource of empirical values is the foundation for establishing particular gaps, both partial, regarding individual criteria and research areas, and the entirety of air services [4, pp. 711-715].

The number and nature of specific quality assessment criteria assigned to particular research areas should enable assessment of the most important features of the service provided. Therefore, in order to obtain clarity of the research result, it should be referred to the most important attributes and determinants of the service. Authors of the method indicate that the required effect is obtained when using 22 criteria divided into particular research areas. This range of testing technique, including the use of the Likert Scale, is presented in Table 1.

Table 1

Questionnaire on the quality of the air service (expected and perceived)

Area and criteria for testing the quality of service	Likert Scale*						
	1	2	3	4	5	6	7
Connection grid (1-4)							
1. Carrier has an extensive network of connections							
2. Frequency of flights offered by the carrier is sufficient							
3. Distance to the place of residence from the airport, in which the take-off took place, is satisfactory							
4. Distance of the destination from the airport, in which the landing took place, is satisfactory							
Elements of the air transport service (5-11)							
5. Quality and speed of implementation of ordered additional services during the flight is satisfactory							
6. Passenger is informed about all costs (no hidden costs)							
7. Carrier offers convenient and modern communication channels (website, applications for smartphones, call center, field offices)							
8. Carrier offers convenient departure and landing times							
9. There is sufficient legroom on the plane used by the carrier							
10. Carrier ensures the transport of sufficient free luggage							
11. Take-off and landing are punctual							
Crew (12-15)							
12. Cabin crew demonstrate professionalism							
13. Staff shall look after the first time travelers with satisfaction							
14. Minors are surrounded by sufficient care from cabin crew							
15. Appearance of the staff can be fully equated with the airline							
Reliability (16-18)							
16. Plane travels without reservation							
17. Technical condition of the aircraft operated by the carrier does not raise any objections							
18. Take-off, flight and landing are carried out in accordance with the rules of maximum safety							
Services provided at the airport (19-22)							
19. Ticket and luggage service is efficient							
20. Terminal has an appropriate number of gastronomic and commercial outlets							
21. Number of parking spaces at the airport is satisfactory							
22. Cost of parking a car for the travel period is satisfactory							

* Interpretation of points in the Likert Scale: 1 - I totally disagree, 2 - I do not agree, 3 - I rather disagree, 4 - I have no opinion, 5 - I rather agree, 6 - I agree, 7 - I totally agree.

Study of passenger air services quality using such a questionnaire design is based on a point, subjective assessment of the level of satisfaction of the recipient's expected qualitative level of service. Their average value is a dimension reflecting the level of the service quality in relation to a given criterion [3, pp. 166-168].

Structure of results obtained as a result of these calculations allows to identify the difference (gap) that arises between the expected quality (the first stage of *ex ante* testing) and the perception of the service received (second *ex post* stage). Such a research technique requires special care to maintain contact with the customer during *ex post* phase [4, pp. 711-715].

5. THE USE OF THE SERVQUAL METHOD IN THE STUDY OF PASSENGER AIR SERVICESQUALITY

Criteria, adjusted to the quality testing in the service segment in question, should create a logical structure of elements that make up the overall quality assessment of the air service offered. This is the basic requirement that creates the foundation for applying this methodology in the study of the issue raised on the basis of the gap dimension, corresponding to the specificity of air transport.

For a better understanding of the process of identifying the gaps with a division into the sphere of their perception by service provider and the consumer, a graphic image of the service quality test model was presented using the Servqual Method (Fig. 1).

It is a versatile structure that allows to adapt and identify gaps in a chosen service industry. Using such a scheme in the implementation of air services research, the first gap can be defined as the difference between expectations of a passenger regarding the quality of certain features of the service and perception of these expectations by carriers and airports. This dependence is presented in a simplified way in Fig. 2.

The size of this gap indicates that managers of airlines and airports do not always have the right knowledge about what the passenger expects. The level of unconsciousness of customer expectations or misperceptions of these ideas, as well as wrongly set hierarchy of importance of particular attributes of the service, results in differences in their assessment. This most often results from the lack or incorrect communication between the offer provider and the recipient, as a result of which the hierarchy of the importance of features and expectations creates a discrepancy between the customer's expectations of the service and the management's perception of these expectations in relation to the quality of the service offered.

The second gap concerns discrepancies between the perception of services quality by the organizers of passenger air traffic (perception of the management of airlines and airports) related to the expectations of customers regarding expected quality, i.e. expected level of specific attributes of service quality, and translation of these expectations into specific standards in the designed quality of service (specification and standardization of service features). The essence of this gap is shown in Fig. 3.

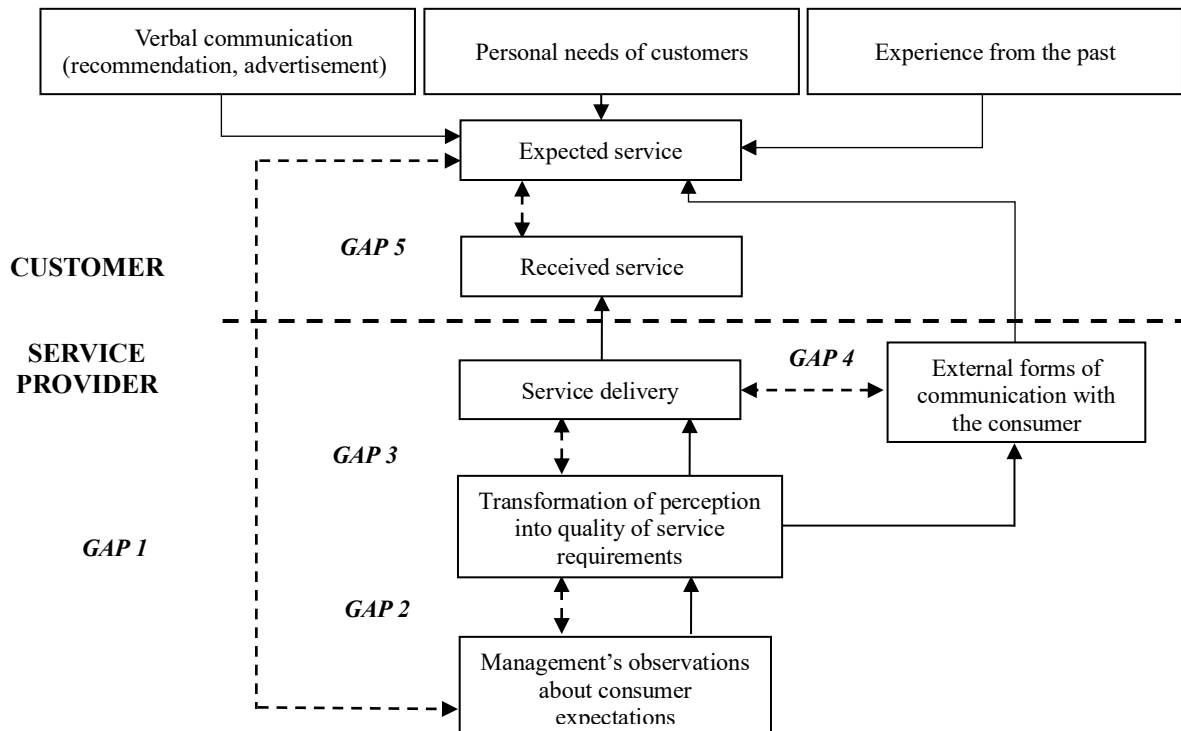


Fig. 1. Gaps in the service quality test using the Servqual Method

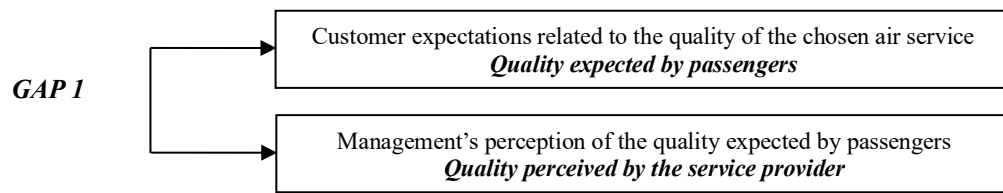


Fig. 2. Gap between the customer's expectations and the perception of these expectations by the service provider

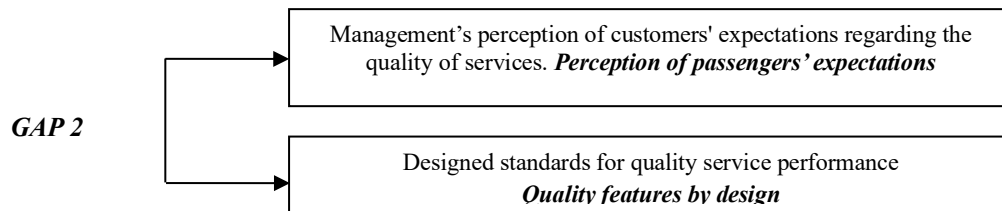


Fig. 3. Gap between the perception of recipient's expectations by service providers and designed quality of service

Air traffic organizers are trying to identify the needs of recipients as accurately as possible; however, for many reasons, they cannot precisely design certain services corresponding to the quality standards they expect (e.g. lack of knowledge, insufficient research, and high cost of implementation). Not always the airline's management can combine the expectations of passengers with their own understanding of the quality level of the service provided. Then a difference arises between the designed quality of service and the perception (assessment) of the quality expectations of travelers. Therefore, services do not meet the full range of passengers' needs. Offer providers, for various reasons, cannot, or do not endeavor to correctly read, which features of services are the most important for the customer and concentrate on their implementation. This is often due to limited knowledge, lack of in-depth research and low professionalism of some teams designing the service [14].

The third gap shows the difference between the service provider specified by airline offer provider, expected level of service quality, i.e. quality determined in the project based on specification and standardization of attributes, which in the opinion of the offer provider should satisfy the recipient's needs and generate a sense of satisfaction in the real consumption phase and the level of real satisfaction with quality service provided. This gap, expressing the difference between the designed quality of service characteristics and the quality of the service delivered to the market, is shown in the Fig. 4.

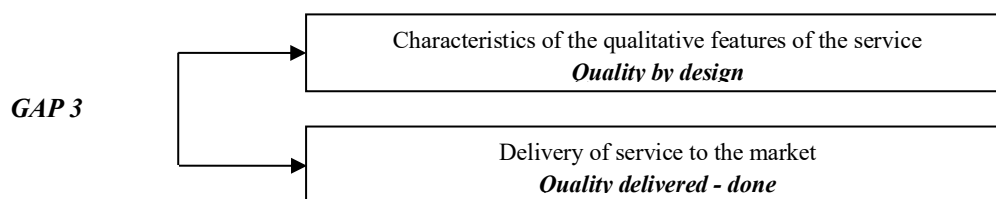


Fig. 4. Gap between designed and delivered characteristics of service quality

For each organization providing the air services, correct perception (reading the expectations) of qualitative customer service standards is the most important. If in practice the values of these standards are underestimated, this is most often the result of bad management of the airline, resulting in a reduced motivation of project teams to improve the quality of services. In order to meet competitors, the management must create a mechanism of active motivation, forcing constant attention to improve the quality. Each company builds its own standard of service quality, both in the sphere of design and implementation based on the belief that it offers the best designed air service. However, as a result of technical unreliability, human factor or incorrect calculation of expected benefits, there is a

reduction or loss of the assumed quality level, which results in its standard becoming inconsistent with the pattern accepted by the offer provider.

The fourth gap reflects the effectiveness of the implementation of external communication tasks between the air service provider and the customer. Its dimension concerns the discrepancy between service quality that the airline passenger imagined based on the information provided by the airline and marketing activities and the perception of actual quality of the service provided. In a simplified manner, the substance of this gap is depicted in Fig. 5.

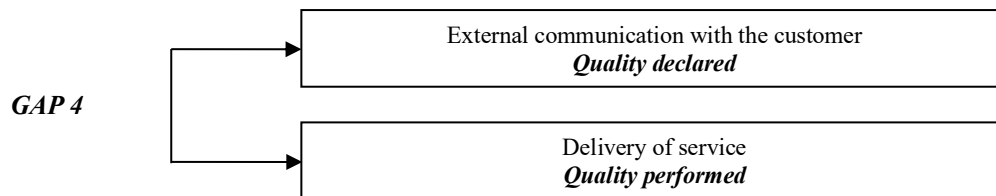


Fig. 5. Gap between declared and delivered quality.

External communication is the foundation of message regarding the recipient's perception of the volume of benefits related to the planned purchase of service. Customers assessing the value of the service chosen for their implementation are often based on advertising and other marketing messages, as well as opinions of family, friends and interpersonal information. It happens that the advertisement unduly arouses expectations regarding the level of service quality, which often leads to disappointment in the level of the service provided. In this situation, although in many cases the service is provided at a high level, the customer believes that it does not meet his/her expectations. In the case when the customer is dissatisfied, because he/she expected a higher quality of service from the selected air carrier with which he/she has previously cooperated, he/she most often changes the offer provider into a competing company [5, p. 133]. This fact demonstrates the lack of effective communication between the service provider and the customer, the consequence of which is a lower perception of its actual dimension. The way to neutralize this feeling is to provide the passenger with more information about the airline's actions and efforts to provide the customer with the expected level of service quality (which he/she himself/herself would not have seen). Often, the provision of this information raises the level of the quality assessment provided. This mechanism indicates that the effectiveness of using all external communication instruments has a significant impact on the expectations of passenger air transport customers with respect to the product [2, pp. 155-163].

The fifth gap can be defined as the final consumer assessment, which is the resultant and cumulative deviation resulting from the identification of discrepancies noted in the previous four gaps. It is a gap expressing the level of meeting the expectations of the recipient, i.e. difference between the expectation and perception of the quality of the service received. Its essence is a comprehensive assessment of expected and received benefits. The scheme of the fifth gap is shown in Fig. 6.

Negligence or errors, both at the design and service stage, result in gaps indicating its non-adaptation to the expectations of customers. An airline company that does not conduct in-depth and systematic surveys of travelers' preferences loses recognition in terms of current needs of recipients, misinterprets travelers' behavior, cannot appropriately correct negative deviations, and as a result, may also use unreliable marketing communication [6, pp. 121-139]. In consequence, this causes a misinterpretation of the reasons that cause adverse effects in the dimension of quality criteria, leading to deeper gaps. They are perceived by passengers as a result of poor implementation of the most important features determining the choice of a service or a competitive carrier.

Examination of gaps in the level of service quality shows the current level of acceptance of its value by a potential customer. It may also indicate that a service with improper quality parameters may or may not be delivered to the market. Lack of decisive reaction to such a signal can cause severe economic consequences, including significant outflow of customers and a decrease in the income of the service provider.

In this research system, there is the use of another element of the Servqual Method, i.e. the Rank Scale. Its function consists in the subjective division of 100 points by entities participating in the study between 5 separate areas of research. The assignment of these points allows to perceive the hierarchy of importance of particular areas in the entire provision of air services. On the contrary, the structure and substantive value of these values enables relatively accurate identification of the quality of service provision both in relation to individual criteria and the whole service provision in the area of research. This scope of research makes it possible to carry out the effective analysis, because the resource of empirical information allows to clarify the necessary activities of the service provider and to formulate conclusions and recommendations to improve the detailed quality attributes of the services offered.

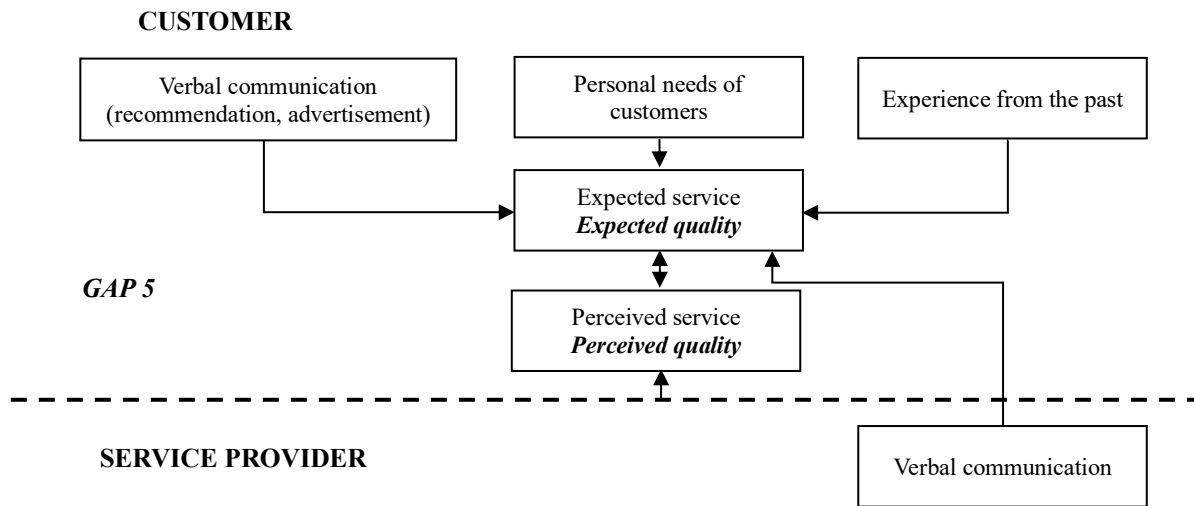


Fig. 6. Gap between the customer’s expectations and quality of the perceived service

Comprehensiveness and comparability of the obtained assessments is guaranteed by the identity of criteria used in both phases of the adopted research system, whereas an in-depth analysis of 22 identical criteria and 5 research areas enables not only assessing the mismatch of assessed quality attributes of the service provided to the customer’s expectations but also the basis for conducting research using certain mathematical formulas.

Average value of the assessments listed in the service quality survey for a specific test criterion is calculated according to the formula 1.

$$SQ_k = \frac{\sum_{k=1}^n SQ_{ki}}{n} \quad (1)$$

SQ_k –average Servqual score for the tested criterion, SQ_{ki} –Servq the influence of ualscore for the k -th passenger and the i -th criterion (question), n –number of respondents, k –number of the next passenger (respondent), i –number of the next criterion (question).

The determined values for individual quality criteria in *ex ante* and *ex post* variant allow for the calculation of gaps arisen in this respect. Their size is calculated according to the formula 2.

$$SQ_{ki} = SQP_{ki} - SQO_{ki} \quad (2)$$

SQ_{ki} –Servqual score for the k -th passenger and the i -th criterion (question), SQP_{ki} –perceived quality of a given service by the k -th passenger in the scope of the i -th criterion (question), SQO_{ki} –expected quality of a given service by the k -th passenger in the scope of the i -th criterion (question).

The obtained result should be interpreted as the degree of quality mismatch within the scope of the tested service criterion performed in relation to that expected by the passenger (*ex post* to *ex ante*). It is also possible to present result of these calculations in the form of a graph or diagram showing the value of a positive (+) or negative (-) deviation, i.e. the gap created during the verification process (Fig. 8). Numerical value of this gap is important for individual air carriers, because it allows to diagnose the size of deficiencies perceived by the recipients.

With these data, the average value for the research areas can be calculated based on the formula 3.

$$SQ_o = \frac{\sum_{k=1}^n SQ_{ki}}{c} \quad , \quad (3)$$

SQ_o – average Servqual score for the tested area, SQ_{ki} – Servqual score for the k -th passenger and the i -th criterion (question) in the study area, c – sum of criteria in the research area.

Obtained results in particular research areas constitute a range of important information, creating a broader picture of the occurrence of the largest negligence, and thus signaling in which of them priority corrective actions should be taken. Their diagnosis ends with the stage of service quality assessment based on the selection of specific criteria and research areas using the Likert Scale.

In order to refine the research, the Rank Scale described earlier was used.

Value of the average weight assigned to a given area of research determines its place in the hierarchy of validity in relation to the whole of the service. It is calculated on the basis of formula 4.

$$\hat{S}w_o = \sum_{k=1}^n \frac{Wk_o}{100} \quad , \quad (4)$$

$\hat{S}w_o$ – average weight for the studied area of Servqual, Wk_o – average number of points (weights) allocated to the research area according to the Rank Scale.

Difference between the value expected and perceived by passengers using services of a given carrier, demonstrated within this scope of research, makes it possible to supplement the dissonance dimension (gaps) in relation to the provision of benefits in individual research areas and the overall scope of offering. It is also a source of documented assessment allowing to determine in which areas the immediate and deepest changes are necessary, in which smaller or unnecessary ones, because the scope of services provided is similar to the expectations of recipients. Presented data constitute a significant value for all air traffic organizers, because they are a collection of empirical information showing the recipient's expectations regarding the quality of attributes offered in specific service provision areas.

The test can be completed by calculating the synthetic indicator of the quality level of the entire service performed by a particular air transport provider. This is the average value of results obtained (*ex ante* and *ex post*) of all the criteria specified in the questionnaire. Its dimension is shown in Fig. 7.

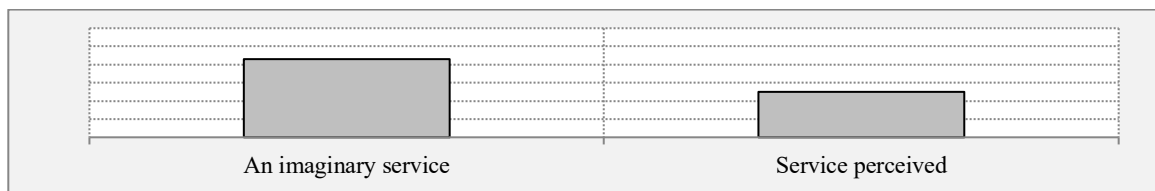


Fig. 7. Expected development of a synthetic level of quality indicator for the provision of all services *ex ante* and *ex post* by a specified air carrier

Despite its general meaning, this indicator is of great practical importance as it signals to what extent the quality of the entire offered services deviates from the consumer's expectations. Most often, the actual quality of service performed does not show a gross deviation from the imaginary quality, but the gaps revealed show some negligence that should be quickly eliminated.

An important complement is the presentation of the quality dimension results for individual criteria in the form of a diagram reflecting their gaps as the difference of *ex post* to *ex ante* variant.

The illustrative dimension scheme of these gaps is shown in Fig. 8.

In such a system, the study of passenger air services quality applying the Servqual Method becomes an effective tool for analysis and evaluation, creating both scientific and practical value. This method may become one of the most important instruments for examining the basic quality attributes that determine efficiency and competitive advantage in the market of passenger air services. It is innovative and can be used in any segment of this service sector.

6. SUMMARY

Dynamic development of services, both on local and global markets, has caused an increase in interest in the quality level of their supply as a key attribute of competitiveness. In the search for effective and efficient methods for measuring the quality of services, the growing use of the Servqual Method is observed. Versatility of the method resulted in an attempt to adapt it to study the quality of passenger air services as a method that comprehensively, current and efficiently calculates the mismatch of gap (quality) in air services provided to the preferences and expectations of the recipient and determine both the hierarchy of negligence and necessity to perform, including priority, the remedial actions. In the proposed research method, an extended assessment of the services quality in a given transport sector is achieved, under which consumer assessment (gap 5) is complemented and enriched by the evaluation of service providers (gaps 1-4). Dimension of individual gaps becomes the key information showing both the accepted level of satisfaction of the recipient and degree of dissatisfaction with the improper implementation of the attributes that determine the choice of the service and the offer provider. Similarly, data obtained as a result of the Rank Scale use, which allows to determine the hierarchy of service values importance, specified in a given research area in relation to other areas, have similar meaning. Mathematical formulas proposed in this method are of versatile nature, due to which they enable conducting analysis and comparative assessment as well as calculating the synthetic index of the qualitative provision of the entire aviation service.

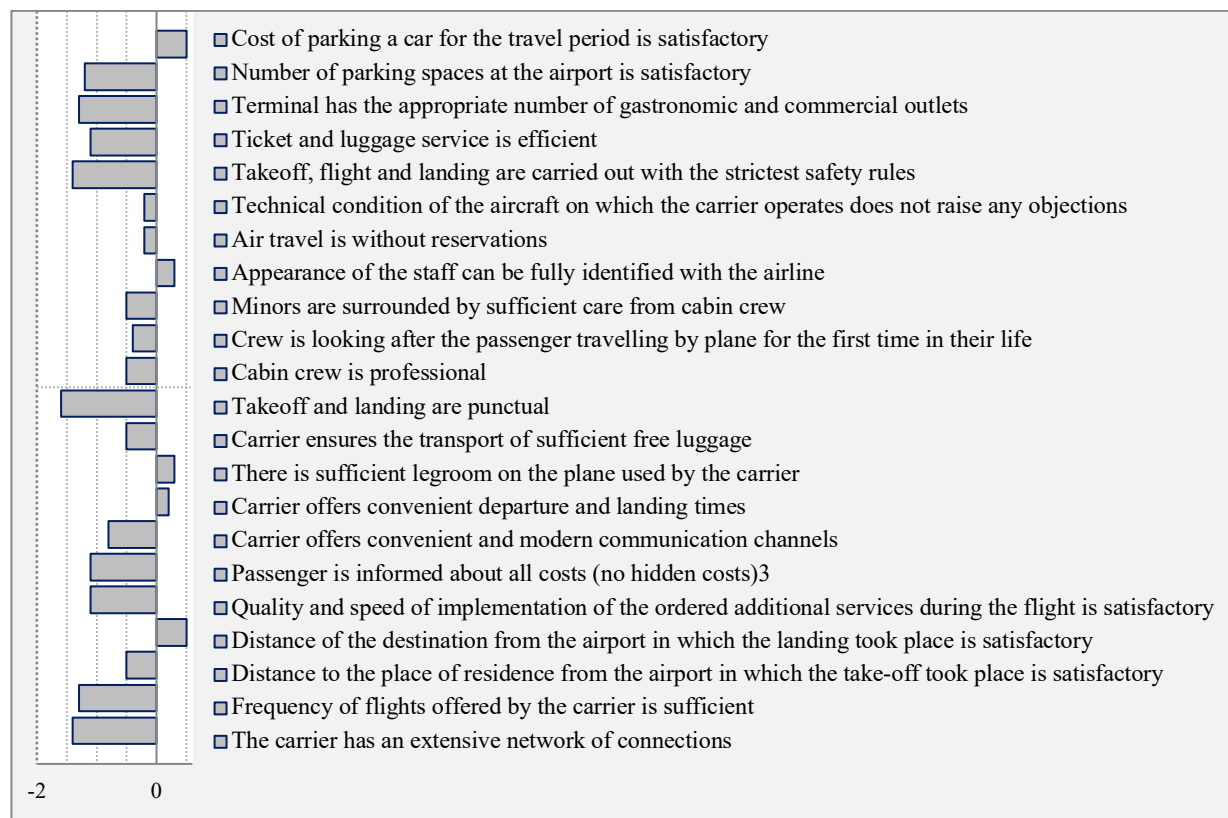


Fig. 8. Illustrative scheme of the dimension of gaps in individual research criteria

References

1. Chen, J.C. & Batchuluun, A. & Batnasan, J. *Services innovation impact to customer satisfaction and customer value enhancement in airport*. Asia University. Taichung, 2015.
2. Camilleri, M. Pricing and Revenue Management. In: *Travel marketing, tourism economics and the airline product: an introduction to theory and practice*. Edition 1. Chapter 9. Publisher: Springer Nature Switzerland AG Cham 2018. P. 180-191.
3. Goranczewski, B. & Puciato, D. Application of SERVQUAL questionnaire in the measurement of quality of hotel services. *Polish Journal of Sport and Tourism*. 2011. No. 18. P. 166-171.
4. Güllü, Ö. & Tekindal, M. & Tekindal, M.A. & Yazıcı, A.C. Evaluation of expected and perceived of quality of service with the SERVQUAL scale: The case of a private physical therapy and rehabilitation center. *Biomedical Research*. 2017. Vol. 28. No. 2. P. 711-715.
5. Hawlena, J. *Konkurencja na rynku lotniczych przewozów pasażerskich w warunkach globalizacji*. Wydawnictwo Naukowe UE. Katowice, 2012. [In Polish: *Competition on the market of passenger air transport in the conditions of globalization*. EU Scientific Publisher, Katowice 2012].
6. Hawlena, J. *Rynek niskokosztowych przewozów lotniczych a rozwój sektora turystyki*. Instytut Naukowo-Wydawniczy „SPATIUM”. Radom, 2012. [In Polish: *The market of low-cost air transport and development of the tourism sector*. "SPATIUM" Scientific-Publishing Institute. Radom, 2012].
7. *International Air Transport Association, Airlines Financial Monitor, April – May 2019*, IATA 2019.
8. Keller, K. Understanding and responding to new forms of competition. *European Journal of Marketing*. 2019. Vol. 53. No. 1. P. 20-24.
9. Lotko, M. & Paździor, M. & Nowak, M. & Wojtowicz, Ł. *Pomiar jakości usług. Wybrane zastosowania metody Servqual*. Instytut Naukowo-Wydawniczy „SPATIUM”. Radom, 2017. [In Polish: *Measuring the quality of services. Selected applications of the Servqual Method*. "SPATIUM" Scientific-Publishing Institute. Radom, 2017].
10. Marciszewska, E. & Hoszman, A. Joint ventures on the air transport market – a new dimension of cooperation. *Research Journal of the University of Gdańsk. Transport Economics and Logistics*. 2018. Vol. 80. P. 149-158.
11. Parasuraman, A. & Zeithaml, V. & Berry, L.L. SERVQUAL: A multiple item scale for measuring consumer perceptions of service quality. *Journal of Retailing*. 1988. Vol. 64. No. 1. P. 12-40.
12. Parasuraman, A.P. & Berry, L.L. & Zeithaml, V.A. Refinement and reassessment of the SERVQUAL scale. *Journal of Retailing*. 1991. Vol. 67. No. 4. P. 42-450.
13. Roldugin, V.I. & Kayumov, R. Innovative approach to the analysis of enterprise's competitive capacity. *Advances in Economics and Business*. 2018. Vol. 6. No. 3. P. 161-167.
14. Saxon, S. *Taking on airlines' toughest challenges*. Mc Kinsey & Company. January, 2019.
15. Śładkowski, A. & Cieśla, M. & Krupa, B. Evaluation of transport processes quality with Servqual and TUL methods. *Scientific Journal on Transport and Logistics*. 2018. Vol. 9. No. 2. P. 61-72.
16. Stverkova, H. Using SERVQUAL: A framework for determining and prioritizing critical factors in delivering quality services for the mobile operator. 2015. Vol. 3. No. 6. P. 225-231.
17. Zeithaml, V.A. Service quality, profitability and the economic worth of customers: What we know and what we need to learn. *Journal of the Academy of Marketing Science*. 2000. Vol. 28. No. 1. P. 67-85.