IZVORNI ZNANSTVENI RAD

ORIGINAL SCIENTIFIC PAPER
UDC/UDK 656.072.4:656.71
JEL classification: L93

Darko PREBEŽAC*
Josip MIKULIĆ**
Petra JURKOVIĆ***

PERCEPCIJE PUTNIKA O PERFORMANSAMA USLUGA ZRAČNIH LUKA – TRODIMENZIONALNA ANALIZA VAŽNOSTI I PERFORMANSI

PASSENGER PERCEPTIONS OF AIRPORT SERVICE PERFORMANCE – A THREE-DIMENSIONAL IMPORTANCE-PERFORMANCE ANALYSIS

SAŽETAK: Za turiste koji putuju zračnim prijevozom zračne luke u pravilu predstavljaju mjesto na kojem se stvara njihova prva i posljednja impresija o destinaciji. Stoga zračne luke nisu samo važan element turističke infrastrukture koja omogućava turističke tokove, nego i značajan element turističkog doživljaja koji pridonosi stvaranju zadovoljstva/nezadovoljstva turista. Cilj ovog rada je predstavljanje novog analitičkog okvira strateškog određivanja prioriteta u poboljšanju kvalitete usluga zračnih luka. Valjanost metodološkog okvira testirana je empirijskim istraživanjem na uzorku od 1017 putnika u jednoj od najvećih hrvatskih zračnih luka primjenom tehnike anketnog ispitivanja. Najznačajnije prednosti predloženog analitičkog okvira su (i) rješavanje nekih nedostataka tradicionalnog pristupa analizi važnosti i performansi, te (ii) uvažavanje možebitnih asimetričnih efekata u stvaranju zadovoljstvo korisnika.

KLJUČNE RIJEČI: performanse usluga zračnih luka, analiza važnosti i performansi, analiza kazni i nagrada

SUMMARY: For tourists travelling by air, airports typically represent the places where their first and last impression of a destination is formed. Airports are thus not only an important element of the tourism infrastructure that facilitates tourism flows, but also an important element of the tourism experience that contributes to the creation of tourist satisfaction/dissatisfaction. In light of this, the aim of this study is to introduce a new analytical framework for prioritizing airport passenger services in quality improvement strategies. The managerial value of the framework is demonstrated in an empirical study which involved a survey of 1017 airline passengers at a major Croatian international airport. The main advantages of the proposed framework are that (a) it solves several shortcomings of traditional importance-performance analysis and (b) it accounts for possible asymmetric effects in customer satisfaction.

KEYWORDS: airport service performance, importance-performance analysis, penalty-reward analysis

* Professor Darko Prebežac, Faculty of Economics & Business, Department of Tourism, Kennedy Square 6, Zagreb, E-mail:dprebežac@efzg.hr

** Dr.sc. Josip Mikulić, Faculty of Economics & Business, Department of Tourism, Kennedy Square 6, Zagreb, E-mail:jmikulic@efzg.hr

*** Petra Jurković, B.Sc., Faculty of Economics & Business, Department of Tourism, Kennedy Square 6, Zagreb, Hrvatska, E-mail:pjurkovic@efzg.hr

1. UVOD

Za turiste koji putuju zračnim prijevozom zračne luke u pravilu predstavljaju mjesto stvaranja prve i posljednje impresije o destinaciji. U tom kontekstu zračne luke nisu samo važan element turističke infrastrukture koja omogućuje turističke tokove, nego i važan element turističkog doživljaja koji pridonosi stvaranju zadovoljstva/nezadovoljstva turista. Kako zračne luke posluju u sve manje reguliranom poslovnom okruženju izložene su i sve snažnijoj konkurenciji u privlačenju zračnih prijevoznika i putnika. Stoga, pružanje usluga visoke kvalitete, koje zadovoljavaju potrebe i želje korisnika, postaje strateški cilj tržišno orijentiranog menadžmenta u zračnim lukama, jer predstavlja preduvjetu aktiviranje *uslužno-profitnog lanca* (Kamakura et al., 2002.).

Menadžeri u zračnoj luci, koji namjeravaju podići razinu sveukupnog zadovoljstva korisnika (SZ), suočeni su s dvije važne zadaće. Na jednoj strani moraju identificirati elemente usluge koji predstavljaju ključne izvore zadovoljstva i nezadovoljstva korisnika (ZK/N) te za te potrebe provode ispitivanja korisnika usluga kako bi dobili uvid u područja dobrih i loših performansi usluga zračnih luka. Na drugoj strani, zbog ograničenja budžeta menadžeri moraju odrediti prioritete poboljšanja elemenata usluge na način koji će učinkovito djelovati na podizanje razine SZ. Da bi se to postiglo elementima usluge se u pravilu pridružuju različiti ponderi ovisno o njihovoj važnosti za korisnika.

Često primjenjivan istraživački alat za određivanje prioriteta na opisani način je analiza važnosti i performansi (AVP) (Martilla i James, 1977.). Međutim, unatoč velikom broju AVP-studija koje su objavljene u međunarodnim recenziranim časopisima, među istraživačima još uvijek ne postoji konsenzus oko nekoliko konceptualnih pita-

1. INTRODUCTION

For tourists travelling by air, airports typically represent the places where their first and last impression of a destination is formed. In this regard, airports are not only an important element of the tourism infrastructure that facilitates tourism flows, but also an important element of the tourism experience that contributes to the creation of tourist satisfaction/dissatisfaction. Moreover, contemporary airports operate in an increasingly deregulated business environment as they face fierce competition in attracting both airlines and passengers. As a consequence, providing high quality services that meet the needs and desires of customers becomes a strategic objective for the market-oriented airport management, as this is a precondition for activating the *service-profit chain* (Kamakura et al., 2002).

Airport managers who aim to increase the level of overall satisfaction (OS) are confronted with two main tasks. On the one hand, they need to identify those service elements that represent sources of customer satisfaction and dissatisfaction (CS/D). In this regard, customer surveys are frequently conducted to get insight into areas of poor and good airport service performance. On the other hand, given budget constraints, airport managers also need to prioritize service elements for improvement in a way that effectively and efficiently increases the level of OS. For this purpose, the various service elements are typically assigned different weights based on their importance for the customer.

A commonly used research tool used to prioritize service elements in the way described is the importance-performance analysis (IPA) (Martilla and James, 1977). Despite dozens of IPA studies published in international peer-reviewed journals, there is, however, no consensus among researchers with regard to several conceptual aspects of IPA. As a consequence, several, methodologically

nja vezanih uz AVP. Kao posljedica toga u literaturi je prisutno nekoliko metodološki vrlo različitih varijanti AVP. Stoga se u idućem poglavlju najprije daje kratak pregled ove tehnike i raspravlja se o glavnom konceptualnom problemu analize, t. j. operacionalizaciji važnosti. Temeljem rasprave, menadžerima se predlaže poboljšani AVP okvir koji im može poslužiti kao snažan dijagnostički alat u donošenju odluka o prioritetima poboljšanja usluga zračnih luka.

2. ANALIZA VAŽNOSTI I PERFORMANSI

U klasičnoj AVP za konstruiranje dvodimenzionalne matrica koriste se ocjene važnosti i performansi. Dobivena matrica se potom dijeli na četiri kvadranta i to najčešće korištenjem aritmetičke sredine svih ocjena važnosti i performansi kao granične vrijednosti. Ovisno o položaju elemenata u matrici moguće su i različite implikacije na upravljanje elementima usluge (vidi Prikaz 1).

quite distinct, IPA variants have emerged in the literature. The following section of this paper thus provides a brief overview of the technique, along with a brief discussion of the technique's main conceptual problem, i.e. the assessment of importance weights. Based on the discussion, an improved IPA framework is introduced which provides airport managers with a powerful diagnostic tool in decision-making about improvement-priorities of airport services.

2. IMPORTANCE-PERFORMANCE ANALYSIS

In a typical IPA, scores of the importance and performance of the analyzed service elements are used to construct a two-dimensional grid. The grid is then divided into four quadrants, most frequently by using grand means of performance and importance scores as thresholds. Depending on the elements' positionings across the grid, several managerial implications with regard to the service elements can be inferred (see Fig. 1).

Prikaz 1: Klasična analiza važnosti i performansi

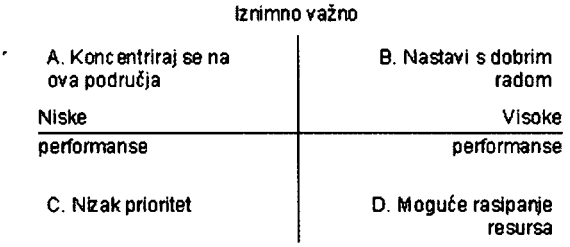
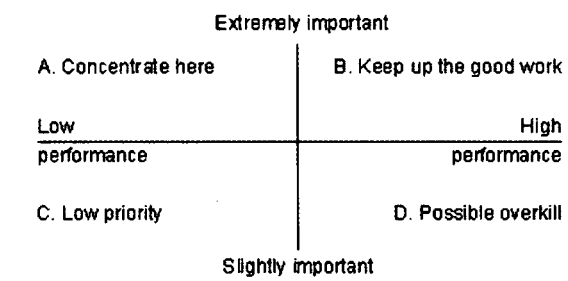


Figure 1: Typical importance-performance analysis



Upravljačka vrijednost AVP za menadžere dokumentirana je u velikom broju studija koje su primjenjivale ovu tehniku za određivanje prioriteta u poboljšanju raznih usluga iz područja: (i) turizma i ugostiteljstva (npr. Zhang i Chow, 2004.); (ii) zračnog prijevoza (npr. Chen i Chang, 2005.); (iii) zdravstvene zaštite (npr. Abalo et al., 2006.); te (iv) bankarstva (npr. Joseph et al., 2005). Međutim, unatoč tome što je ova tehnika prvi puta predstavljena prije više od 30 godina, operacionalizacija važnosti u AVP još uvijek ostaje nedovoljno nerazriješeno pitanje, pa brojni autori dovode u pitanje i pouzdanost i valjanost AVP rezultata (npr. Oh, 2001.).

2.1. Operacionalizacija važnosti u AVP

Načelno postoje dvije osnovne vrste mjera važnosti atributa (VA) koje se primjenjuju u AVP: mjere eksplicitne VA, i mjere implicitne VA. Mjere eksplicitne VA dobivaju se direktno od korisnika, najčešće primjenom ljestvica za direktno ocjenjivanje, rangiranje ili ljestvicama s konstantnim zbrojem. Eksplicitna VA stoga se naziva i verbaliziranom važnošću. Mjere implicitne VA dobivaju su indirektno, naj češće regresijom performansi na razini atributa (nezavisna varijabla) i globalnom ocjenom performansi (zavisna varijabla - npr. sveukupno zadovoljstvo). Implicitna VA stoga se naziva i statistički deriviranom VA. Kako nekoliko studija nije uspjelo potvrditi nomološku i konvergentnu valjanost između eksplicitnih i implicitnih mjera VA (npr. Barlas, 2003.; Wiley et al., 1977.), u literaturi se još uvijek raspravlja o najprikladnijim mjerama VA (npr. Aigbedo i Parameswaran, 2004.). Međutim, pregledom AVP literature stječe se dojam da su istraživači previdjeli značajne rasprave o mjerenju VA u općoj literaturi iz marketinga/menadžmenta. Tako postoji uvriježeni stav da je VA multidimenzionalni koncept, te da

The managerial value of IPA is well documented in a large number of studies which have employed the technique to prioritize improvements in a variety of services, including: (i) tourism and hospitality (e.g. Zhang and Chow, 2004); (ii) air transportation (e.g. Chen and Chang, 2005); (iii) health care (e.g. Abalo et al., 2006); and (iv) banking (e.g. Joseph et al., 2005). However, although the technique was introduced more than 30 years ago, the assessment of importance weights to be used in IPA still remains a not completely clarified issue, which is why several authors question the validity and reliability of IPA results (e.g. Oh, 2001).

2.1. The assessment of importance-weights in IPA

Basically, there are two distinct types of measures of attribute importance (AI) which are used in IPA: explicit AI measures and implicit AI measures. Explicit AI measures, on the one hand, are obtained directly from the customer, most usually by means of direct rating-, ranking- or constant-sum scales. Explicit AI thus is also referred to as self-stated importance. On the other hand, implicit AI measures are obtained indirectly, most usually by regressing attribute-level performance against a global measure of performance (e.g. overall satisfaction). Implicit AI thus is also referred to as statistically-derived AI. Since several studies failed to confirm nomological and convergent validity between explicit and implicit measures of AI (e.g. Barlas, 2003; Wiley et al., 1977), the question about the most suitable AI measure to be used in IPA is still being discussed in the literature (e.g. Aigbedo and Parameswaran, 2004). However, when reviewing the IPA literature, it appears as if researchers overlook a considerable debate on the measurement of AI which is going on in the marketing/management literature. Such it is widely accepted that AI is a *multidimensional* concept and that different importance measures assess its different dimensions

različite mjere VA mjere razli čite dimenzije ovog koncepta (Jaccard et al., 1986.; Myers i Alpert, 1968., 1977.). Kako bi se odredila najprikladnija mjera VA u AVP potrebno je odrediti što se točno mjeri pojedinim mjerama koje se koriste u AVP - tj., sa direktnim ocjenama važnosti te sa statistički deriviranim ocjenama važnosti, najčešće regresijskim koeficijentima. Prema Van Ittersum et al. (2007.), koji su napravili meta-pregled valjanosti mjerenja VA, direktnim ocjenama VA mjeri se *relevantnost* atributa, dok se statistički deriviranim mjerama mjeri *determinantnost* atributa. Relevantnost se može opisati kao važnost atributa uslužne konfiguracije percipirana od strane korisnika na osnovu postojećih industrijskih normi i standarda. U tom pogledu relevantnost je slična stavu. Determinantnost predstavlja važnost atribute u *evaluaciji i izboru korisnika* (Myers i Alpert, 1977.), koja"... se u pravilu računa na temelju razlika u vrednovanju različitih razina (performansa) atributa" (Van Ittersum et al., 2007., str.1180). U usporedbi s relevantnošću atributa kao relativno stabilnim konceptom, determinantnost je dinamičan koncept koji ovisi o razini performanasa atribute (PA). Zbog ovih konceptualnih razlika hipotetski je moguće da relevantni atributi nisu jako determinantni, te *vice versa*. Stoga se postavlja pitanje koju mjeru VA koristiti u AVP? Odgovor je obje mjere. S obzirom da relevantnost i determinantnost predstavljaju dvije konceptualno različite dimenzije VA, korištenje isključivo jedne vrste mjere VA moglo bi rezultirati suboptimalnim ili čak štetnim preporukama za određivanja prioriteta elemenata usluge. Tako bi se moglo dogoditi da neki atributi koji su percipirani jako važnima (tj. imaju visoku razinu relevantnosti), u biti nemaju veliki utjecaj u evaluaciji i/ili izboru usluge (tj. nemaju ekvivalentno visoku razinu determinantnosti), te obrnuto. Stoga autori ove studije predlažu da se u AVP doda i treća dimenzija integriranjem relevantnosti (tj. eksplicitne važnosti) i determinantnosti (tj. implicitne važ-

(Jaccard et al., 1986; Myers and Alpert, 1968, 1977). Consequently, in order to decide upon the most suitable AI measure for IPA, there is a need to specify what exactly is being assessed with the measures that are typically used in IPA—i.e., with direct importance ratings and statistically derived importance weights, most usually multiple regression coefficients. According to Van Ittersum et al. (2007), who conducted a meta-review on the validity of AI measurement, direct ratings assess the *relevance* of attributes, whereas statistically derived weights assess the *determinance* of attributes. Relevance, on the one hand, could be described as the customer-perceived importance of an attribute in a service-configuration based on existing industry norms and standards. In this regard, relevance is similar to an attitude. On the other hand, determinance represents an attribute's *importance in judgment and choice* (Myers and Alpert, 1977), which "...is generally calculated based on the difference in (valuation of) different attribute levels" (Van Ittersum et al., 2007, p.1180). Accordingly, compared to relevance, which is a relatively stable concept, determinance is a dynamic concept which is dependent on the level of attribute-performance (AP). Moreover, as a consequence of these conceptual differences it is hypothetically possible that highly relevant attributes are not very determinant, and vice versa. So, which type of AI should be used in IPA? The answer is, both. Since relevance and determinance represent two conceptually different dimensions of AI, the use of only one type of AI could result in suboptimal or even misleading recommendations regarding the prioritization of service elements. Such it may happen that some attributes, which are perceived highly important by customers (i.e. which have a high level of relevance), in fact do not have a large impact on judgment and/or choice (i.e. have a high level of determinance), and the other way round. The authors of this study therefore suggest adding a third dimension to IPA, by integrating both determinance (i.e. implicit

nosti), jer bi ovakav pristup zasigurno smanjio rizik pogrešne alokacije resursa u aktivnostima poboljšanja kvalitete usluga.

2.2. Proširena analiza važnosti i performansi

Na temelju specifikacije onoga što se točno mjeri direktnim ocjenama (relevantnost) i statistički deriviranim mjerama VA (determinantnost), autori ove studije predlažu prošireni okvir AVP koji integrira obje vrste mjera VA. Stoga će se proširena AVP zvati trodimenzionalna AVP (3D-IPA). Me đutim, kako bi trodimenzionalni prikaz rezultata mogao biti nepregledan, u provođenju analize će biti konstruirana dvodimenzionalna matrica uz pomoć ocjena relevantnosti i determinantnosti elemenata usluge. Svi elementi koji imaju iznadprosječne performanse bit će u matrici označeni plusom (+), a elementi s ispodprosječnim performansama minusom (-) (Prikaz 2).

AI) and relevance (i.e. explicit AI) into the analysis, because such an approach would be certain to decrease therisk of resource misallocations in service improvement strategies.

2.2. Extended importance-performance analysis

Following the specification of what exactly is being measured with direct importance ratings (relevance) and statistically derived importance weights (determinance), the authors of this study propose an extended IPA framework that integrates both types of AI measures. The extended IPA will consequently be referred to as three-dimensional IPA (3D-IPA). Since, however, a 3D representation of results could be confusing, a two-dimensional grid will be constructed using scores of relevance and determinance of service elements, whereas service elements with a performance level below average (i.e. below the grand mean of performance scores) will be marked with a minus (-), and service elements with a performance-level above average will be marked with a plus (+) (Fig. 2).

Prikaz 2: Trodimenzionalna analiza važnosti i performansi

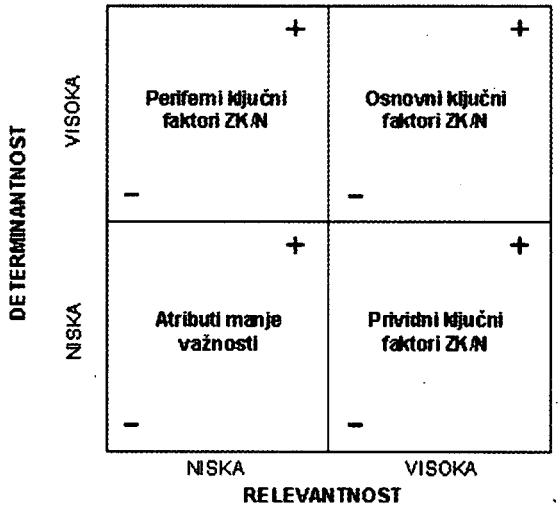
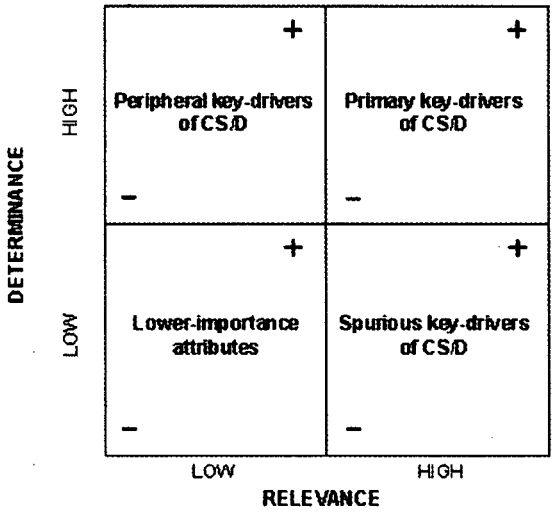


Figure 2: Three-dimensional IPA grid



Usporedbom relevantnosti i determinantnosti 3D-AVP otkriva četiri temeljne kategorije elemenata usluge:

- *Prividni ključni faktori ZK/N (visoka relevantnost/niska determinantnost):* Putnik ove elemente usluge percipira jako važnima i očekuje određenu razinu performansi u skladu s industrijskim standardima, ali oni nemaju velik utjecaj na njegov izbor i/ili zadovoljstvo. Elemente usluga iz ove kategorije sva konkurentska poduzeća na nekom tržištu u pravilu pružaju na zadovoljavajućim razinama. Stoga bi menadžeri trebali pratiti inovacije u ovim područjima, s obzirom da bi one mogle rezultirati konkurentskim prednostima.
- *Osnovni ključni faktori ZK/N (visoka relevantnosti/visoka determinantnost):* Elemente usluge iz ove skupine putnici percipiraju jako važnim, i oni imaju snažan utjecaj na njegov izbor i/ili zadovoljstvo, te bi im menadžment trebao dodijeliti najviši opći prioritet u aktivnostima poboljšanja kvalitete. Ovi elementi usluge

By comparing relevance and determinance of service elements, the 3D-IPA reveals four distinct categories of service elements:

- *Spurious key-drivers of CS/D (high relevance/low determinance)*The passenger perceives these service elements highly important and expects a certain performance-level according to industry standards. However, these service elements have no great influence on choice and/or satisfaction outcome. The elements in this category are usually provided by all competitors in a market at a satisfactory level, which is why managers should track innovations regarding them, as these could result in a competitive advantage.
- *Elemental key-drivers of CS/D (high relevance/high determinance):* Service elements in this category are perceived highly important by passengers, and have a strong influence on choice and/or satisfaction outcome. The management should therefore assign this category highest

u pravilu čine jezgru proizvoda. Kako bi ostvarili konkurentsku prednost menadžment bi se primarno trebao koncentrirati na ovu kategoriju faktora.

- *Periferni ključni faktori ZK/N (niska relevantnost/visoka determinantnost):* Za razliku od prethodne dvije kategorije, elementi usluga iz ove kategorije imaju nisku razinu relevantnosti, jer ih putnici ne smatraju esencijalnima u konzumiranju osnovne usluge, međutim, oni ipak imaju snažan utjecaj na izbor i/ili zadovoljstvo putnika. Ovi elementi usluge u pravilu čine proširenu uslugu. Menadžeri koji traže prilike za diferencijaciju od konkurencije trebali bi se fokusirati na ovu kategoriju faktora.
- *Elementi niže važnosti (niska relevantnost/niska determinantnost):* Elemente usluge iz ove kategorije putnici ne percipiraju važnim, niti oni imaju značajniji utjecaj na njegov izbor i/ili zadovoljstvo. U usporedbi s prethodne tri kategorije faktora trebali bi imat niži opći prioritet u aktivnostima unapređenja kvalitete usluge.

S obzirom da determinantnost elementa usluge ovisi o razini njegovih performansi, autori ove studije nadalje predlažu korištenje analize kazni i nagrada (AKN) u kombinaciji s AVP, kako bi se ustanovilo da li su potencijali stvaranja nezadovoljstva (PSN) pojedinih elemenata usluge manji, veći ili podjednaki njihovim potencijalima stvaranja zadovoljstva (PSZ). AKN je primjenjivana u nekoliko studija koje su istraživale asimetrične efekte formiranja ZK (npr. Brandt, 1987.; Matzler et al., 2004.; Mikulić i Prebežac, 2008.; 2010.). Informacije o asimetričnim efektima mogu biti korisne menadžerima kada su dva ili više elemenata usluge blizu u 3D-AVP-matrici, i kada je razina njihovih

priority in improvement strategies. These service elements usually form the core service. In order to achieve a competitive advantage, the management should primarily concentrate on this category.

- *Peripheral key-drivers of CS/D (low relevance/high determinance):* In contrast to the first two element-categories, elements in this category have a low level of relevance, because passengers do not consider them essential for providing the basic service, but they have nevertheless a large influence on choice and/or satisfaction outcome. These elements usually form the augmented service. Managers, who are looking for opportunities to differentiate themselves from their competitors, should focus on this category.
- *Lower-importance elements (low relevance/low determinance)*Service elements in this category are not perceived very important by passengers, and they do not have a strong influence on choice and/or satisfaction outcome. This category of service elements should be assigned lower priority than the other three categories in improvement strategies.

Since the determinance of a service element is dependent on its level of performance, the authors of this study further suggest using the 3D-IPA in combination with a penalty-reward contrast analysis (PRCA), in order to explore whether the dissatisfaction-generating potential (DGP) of the analyzed service elements is larger, smaller or equal to their satisfaction-generating potential (SGP). The PRCA has been used in several studies to explore such asymmetric effects in CS (e.g. Brandt, 1987; Matzler et al., 2004; Mikulić and Prebežac, 2008; 2010). Information about asymmetric effects becomes an interesting issue for managers when two or more

performansi slična. U takvim slučajevima elementi usluge za koje vrijedi PSN>PSZ (tj. stvaratelji nezadovoljstva) trebali bi imati viši prioritet od elemenata za koje vrijedi PSZ>PSN (tj. stvaratelji zadovoljstva) kada je njihova razina performansi niska, dok bi stvaratelji zadovoljstva trebali imati viši prioritet od stvaratelja nezadovoljstva kada je njihova razina performansi visoka. Shodno tome prioriteti elemenata usluge se određuju u dva koraka. U provom koraku primjenjuje se 3D-AVP za određivanje općih prioriteta poboljšanja, a u drugom koraku se primjenjuje AKN za definiranje detaljnijih prioriteta, ukoliko je to potrebno.

3. EMPIRIJSKA STUDIJA

Podaci koji su korišteni u ovoj studiji prikupljeni su periodičnim ispitivanjem zadovoljstva korisnika u jednoj od većih hrvatskih zračnih luka u jesen 2008. godine. Ispitivanje su provodili profesionalni istraživači tržišta angažirani od strane uprave zračne luke. Provedeno je osobno ispitivanje putnika primjenom standardiziranog upitnika za vrijeme čekanja na let u prostoru međunarodnog odlaska zračne luke. Instrument istraživanja je obuhvaćao osam elemenata usluge koji su identificirani kao značajni izvori ZK/N u pred-testiranju anketnog upitnika. Elementi usluge su: (1) 'Jednostavnost snalaženja', (2) 'Dostupnost informacija o letovima', (3) 'Efikasnost check-in postupka', (4) 'Ponuda restorana i kafića', (5) 'Mogućnosti kupovine', (6) 'Razina komfora zgrade', (7) 'Ljubaznost osoblja zračne luke' te (8) 'Ponuda letova iz zračne luke'. Performanse atributa te sveukupno zadovoljstvo (SZ) putnika uslugama zračne luke mjereno je ljestvicama za direktno ocjenjivanje od 1 ('Vrlo nisko') do 5 ('Vrlo visoko'). Relevantnost atributa (tj. percipirana važnost) također je operacionalizirana ljestvicama za direktno ocjenjivanje od 1 ('Malo važno') do 5 ('Izuzetno važno'). Ukupno 1017 kompletno popunjenih i iskoristivih upitnika korišteno je u analizi ove studije.

service elements are located nearby in the 3D-IPA, and when performance-levels of these elements are similar. In such cases, service elements with a larger DGP than SGP (i.e. dissatisfiers) should, as a rule-of-thumb, have higher priority than elements with a SGP exceeding its DGP (i.e. satisfiers) when performance is low, whereas satisfiers should have higher priority than dissatisfiers when performance is high. Consequently, service elements should be prioritized for improvement in two steps. In a first step, 3D-IPA should be used to infer general priority-levels, whereas the PRCA should be used in a second step to refine the prioritization, if necessary.

3. EMPIRICAL STUDY

The data used in this study were collected as part of a periodic customer satisfaction survey at a major Croatian international airport during fall 2008. The survey was conducted by professional market researchers entitled by the airport authority. Passengers were surveyed in face-to-face interviews by means of a standardized questionnaire while waiting in the international department lounge of the airport. The survey instrument encompassed eight service elements which were found to be significant sources of CS/D in the questionnaire pretest stage. The service elements were: (1) 'Ease of way-finding', (2) 'Availability of flight information', (3) 'Check-in efficiency', (4) 'Dining/drinking possibilities', (5) 'Shopping possibilities', (6) 'Comfort level of the building', (7) 'Courtesy of airport staff' and (8) 'Airport flight schedule'. Service attribute-performance and overall satisfaction (OS) with the passenger services offered by the airport were measured with rating scales from 1 ('very low') to 5 ('very high'). Attribute-relevance (i.e. customer-perceived importance) was also measured with direct rating scales from 1 ('little importance') to 5 ('very important'). In total, 1017 fully completed and usable questionnaires provided the data for this study.

3.1. Analiza i rezultati

U prvom su koraku računati pokazatelji determinantnosti, relevantnosti i performansa elemenata usluge. Aritmetičke sredine su kalkulirane da bi se dobili pokazatelji performanasa i relevantnosti elemenata, dok su pokazatelji determinantnosti elemenata dobiveni višestrukom regresijskom analizom u kojoj su performanse elemenata specificirane kao nezavisne varijable, a SZ uslugama zračne luke kao zavisna varijabla (Tablica 1).

3.1. Analysis and results

In the first step, scores of determinance, relevance and performance of the analyzed service elements were calculated. Arithmetic means were calculated to obtain indicators of element-performance and element-relevance, whereas indicators of element-determinance were obtained through a multiple regression analysis with element-performance scores as predictors, and OS with the airport services as the criterion variable (Table 1).

Tablica 1: Relevantnost, determinantnost i performanse usluga putnicima u zračnim lukama

Table 1: Scores of relevance, determinance and performance of airport passenger services

Element usluge *Service element*	Relevantnost *Relevance*	Determinantnost *Determinance*	Performanse *Performance*
1. Jednostavnost snalaženja *1. Ease of way-finding*	4.51	0.056*	4.37
2. Dostupnost informacija o letovima *2. Availability of flight information*	4.23	0.038 ns	4.26
3. Efikasnost check-in postupka *3. Check-in efficiency*	4.50	0.135***	4.32
4. Ponuda restorana i kafića *4. Dining/drinking possibilities*	3.58	0.117**	3.18
5. Mogućnosti kupovine *5. Shopping possibilities*	3.63	0.124***	3.49
6. Razina komfora zgrade *6. Comfort level of the building*	4.47	0.150***	3.85
7. Ljubaznost osoblja zračne luke *7. Courtesy of airport staff*	4.64	0.146***	4.17
8. Ponuda letova iz zračne luke *8. Airport flight schedule*	4.40	0.132***	3.89
Aritmetičke sredine svih ocjena *Grand means*	4.25	0.111	3.94

Napomene: ***p<0.001; **p<0.01; *p<0.1; ns = nije signifikantno; pokazatelji determinantnosti su nestandardizirani regresijski koeficijenti; R^2=0.582.

Notes: ***p<0.001; **p<0.01; *p<0.1; ns = not significant; determinance scores are unstandardized regression coefficients; R^2=0.582.

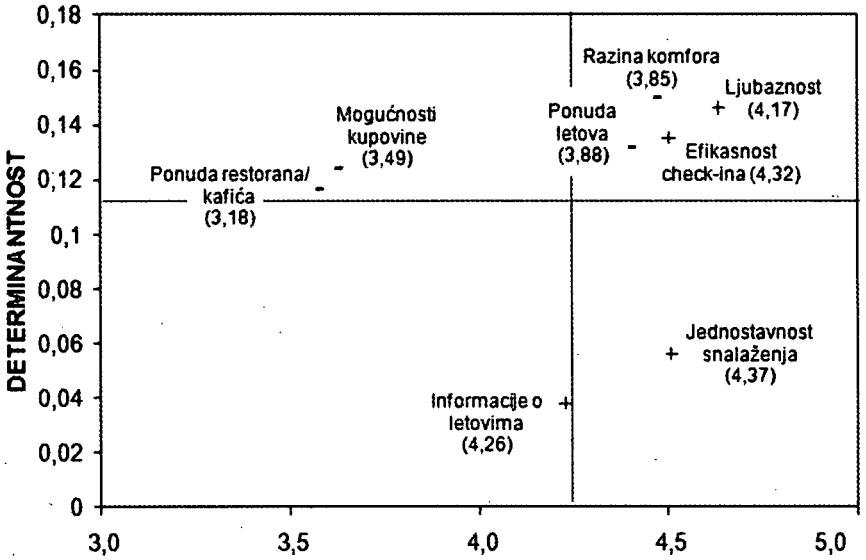
3.1.1. Trodimenzionalna analiza važnosti i performanasa

U konstruiranju 3D-AVP pokazatelji relevantnosti označeni su na horizontalnoj osi, a pokazatelji determinantnosti na vertikalnoj osi. Matrica je potom podijeljena na četiri kvadranta korištenjem aritmetičke sredine svih pokazatelja relevantnosti (R_{GM}=4.25) i svih pokazatelja determinantnosti (D_{GM}=0.111). Nadalje, elementi usluge s ispodprosječnim performansama (tj. s performansama manjima od aritmetičke sredina svih ocjena performanasa; P_{gm}=3.94) označeni su minusom (-), a elementi s iznadprosječnim performansama (tj. s performansama iznad aritmetičke sredine svih ocjena performanasa) označeni su plusom (+) (Prikaz 3).

3.1.1. Three-dimensional importance-performance analysis

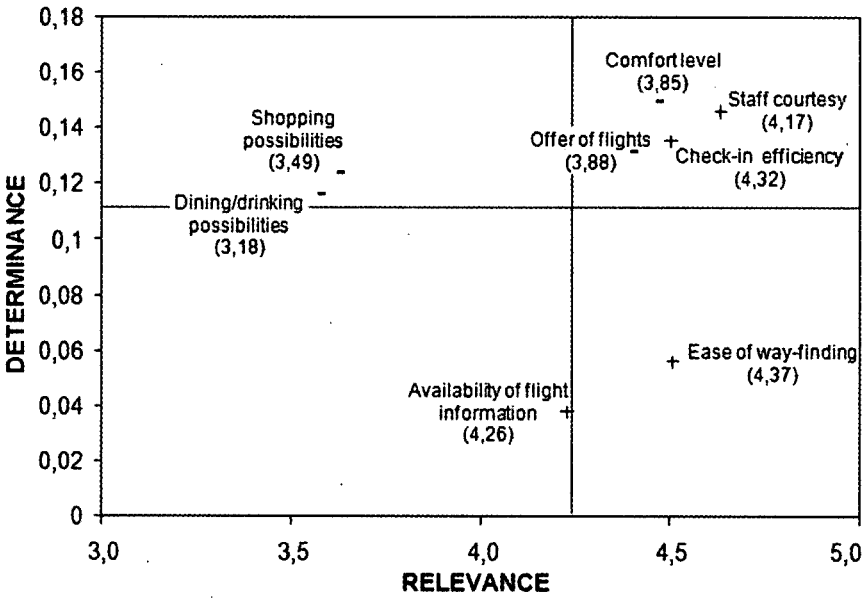
The 3D-IPA grid was constructed by depicting relevance-scores along the horizontal axis, and determinance-scores along the vertical axes. To divide the grid into four quadrants, grand means of relevance-scores (R_{GM}=4.25) and determinance-scores (D_{GM}=0.111) were used. Moreover, service elements with a performance-level below average (i.e. below the grand mean of attribute-performance scores; P_{gm}=3.94) were marked with a minus (-), and elements with a performance-level above average performance were marked with a plus (+) (Fig. 3).

Prikaz 3: Rezultati 3D-AVP za usluge putnicima u zračnim lukama



Napomene: Performanse atributa su prikazane u zagradi. Atributi označeni sa + imaju iznadprosječne performanse, a atributi označeni sa – imaju ispodprosječne performanse.

Figure 3: 3D-IPA results for airport passenger services



Notes: Attribute-performance scores are shown in brackets. Attributes marked with a + perform above average, attributes marked with a - perform below average.

3D-AVP otkriva da je (1) 'Jednostavnost snalaženja' *prividni ključni faktor zadovoljstva*. Ovaj element putnici percipiraju iznimno važnim (R_1=4.51), međutim, on ima tek manji utjecaj na SZ (b_1=0.056). Kako je razina performansi relativno visoka (P_1=4.37), ovaj element ne zahtjeva posebnu pozornost menadžera.

Nadalje, (3) 'Efikasnost check-in postupka, (6) 'Razina komfora zgrade, (7) 'Ljubaznost osoblja zračne luke' te (8) 'Ponuda letova iz zračne luke' kategorizirani su kao osnovni ključni faktori ZK/N. Putnici percipiraju ova četiri elementa jako važnim (R_3=4.50, R_6=4.47, R_7=4.64 and R_8=4.40), i oni uistinu imaju snažan utjecaj na razinu SZ (D_3=0.135, D_6=0.150, D_7=0.146 and D_8=0.132). Budući da dva elementa imaju ispodprosječne performanse - tj. (6) 'Razina komfora zgrade' (P_6=3.85) i (8) 'Ponuda letova iz zračne luke' (P_8=3.89), menadžment zračne luke bi im trebao

The 3D-IPA reveals that 'ease of way-finding' is a *spurious key-driver of CS/D*. This element is considered highly important by passengers (R_1=4.51), but it has only a minor influence on OS (b_1=0.056). As its performance-level is relatively high (P_1=4.37), it does not necessitate any particular managerial action.

Furthermore, (3) 'Check-in efficiency', (6) 'Comfort level of the building', (7) 'Courtesy of the airport staff' and (8) 'Airport flight schedule' are categorized as *elemental key-drivers of CS/D*. Passengers perceive these four service elements highly important (R_3=4.50, R_6=4.47, R_7=4.64 and R_8=4.40, respectively), and they indeed strongly influence the level of OS (D_3=0.135, D_6=0.150, D_7=0.146 and D_8=0.132, respectively). Since two of these elements perform below average—i.e., (6) 'Comfort level of the building' (P_6=3.85) and (8) 'Airport flight schedule' (P_8=3.89), the airport management should as-

dodijeliti najviši prioritet u aktivnostima unapređenja kvalitete.

Nadalje, (4) 'Ponuda restorana i kafića' te (5) 'Mogućnosti kupovine' su kategorizirani kao *periferni ključni faktori ZK/N*. Ove elemente putnici percipiraju relativno manje važnim (R_4=3.58 i R_5=3.63), ali oni unatoč tome imaju snažan utjecaj na razinu SZ (D_4=0.117 i D_5=0.124). Budući da obdva elementa imaju ispodprosječne performanse (P_5=3.49 i P_4=3.18), menadžment zračne luke bi trebao razmotriti poboljšanje ovih elemenata odmah nakon unapređenja kvalitete (6) 'Razine komfora zgrade' te (8) 'Ponude letova iz zračne luke'.

Element (2) 'Dostupnost informacija o letovima' kategoriziran je kao *element manje važnosti*, ali se nalazi blizu granice prema prividnim ključnim faktorima SZ/N, zbog čega ga ne bi trebalo smatrati potpuno nevažnim. Kako je razina performansi ovog elementa visoka (P_2=4.26), on ne bi trebao iziskivati posebnu pozornost menadžera.

3.1.2. Analiza kazni i nagrada

U idućem koraku je provedena AKN radi istraživanja asimetričnih efekata između razine percipiranih performansi elemenata usluge i utjecaja elemenata usluge na SZ putnika. Za svaki element kreirana su dva seta binarnih varijabli. Prvi set nastao je kodiranjem samo najnižih ocjena performansi kao '1' (P=1), dok su sve ostale ocjene kodirane kao '0' (P=2, 3, 4, i 5). Ovaj set je korišten za mjerenje utjecaja elemenata usluge na SZ u slučaju vrlo niske razine percipiranih performansi. Analogno, drugi set je kreiran kodiranjem samo najviših ocjena performansi kao '1' (P=5), dok su sve ostale ocjene kodirane kao'0' (P=1, 2, 3, i 4). Ovaj set je korišten za mjerenje utjecaja elemenata usluge na SZ u slučaju vrlo visoko razine percipiranih performansi. Ova dva seta binarnih varijabli korištena su za svaki element usluge kao nezavisna varijabla, a ocjena SZ kao zavisna varijabla, da bi potom bila provedena

sign these two elements highest priority in improvement strategies.

Moreover, (4) 'Dining/drinking possibilities' and (5) 'Shopping possibilities' are categorized as *peripheral key-drivers of CS/D*. These elements are perceived relatively less important by passengers (R_4=3.58 and R_5=3.63, respectively), but they in fact have a strong influence on the level of OS (D_4=0.117 and D_5=0.124, respectively). Since both elements perform below average (P_5=3.49 and P_4=3.18, respectively), the airport management should consider improving them right after (6) 'Comfort level of the building' and (8) 'Airport flight schedule'.

Element (2) 'Availability of flight information' falls into the category of *lower-importance elements*, but it is located close to the border towards spurious key-drivers of CS/D. It should therefore not be considered completely unimportant. However, its performance-level is high (P_2=4.26), and thus it does not necessitate any action.

3.1.2. Penalty-reward contrast analysis

In the next step a PRCA was conducted to test for asymmetric effects in the relationship between perceived performance of the service elements and the elements' impact on passenger OS. For each service element, two sets of dummy variables were created. The first set was created by coding only lowest ratings of performance-perceptions as '1' (P=1), whereas all other ratings were coded as '0' (P=2, 3, 4, and 5). This set was used to measure the impact of service elements on OS in cases of very low performance-perceptions. The second set was created by coding highest performance ratings as '1' (P=5), whereas all other ratings were coded as '0' (P=1, 2, 3, and 4). This set was used to measure the impact of the elements on OS in cases of very high performance-perceptions. A multiple regression analysis was then conducted using the two sets of dummy variables as predictors, and OS as

višestruka regresijska analiza. Za svaki element usluge dobivena su dva regresijska koeficijenta. Prvi koeficijent kvantificira utjecaj elementa na SZ u slučaju vrlo niske percepcije performansi (koeficijent kazne), a drugi koeficijent kvantificira utjecaj elementa na SZ u slučaju vrlo visokih percepcija performansi (koeficijent nagrade) (Tablica 2).

the criterion variable. For each service element, two regression coefficients were obtained. The first coefficient indicates an element's impact on OS in cases of very low performance-perceptions (penalty coefficient), whereas the second coefficient indicates an element's impact on OS in cases of very high performance-perceptions (reward coefficient) (Table 2).

Tablica 2: Rezultati AKN

Table 2: PRCA results

Element usluge *Service element*	Koeficijent kazne *Penalty coefficient*	Koeficijent nagrade *Reward coefficient*
1. Jednostavnost snalaženja *1. Ease of way-finding*	-0,062*	$0,028^{ns}$
2. Dostupnost informacija o letovima *2. Availability of flight information*	-0,040*	$0,028^{ns}$
3. Efikasnost check-in postupka *3. Check-in efficiency*	-0,109**	$0,113^{**}$
4. Ponuda restorana i kafića *4. Dining/drinking possibilities*	-0,104**	$0,102^{*}$
5. Mogućnosti kupovine *5. Shopping possibilities*	-0,118**	$0,120^{**}$
6. Razina komfora zgrade *6. Comfort level of the building.*	-0,125**	$0,137^{***}$
7. Ljubaznost osoblja zračne luke *7. Courtesy of airport staff*	-0,092**	$0,171^{***}$
8. Ponuda letova iz zračne luke *8. Airport flight schedule*	-0,070*	$0,076^{**}$

Napomene: ***p<0.001; **p<0.01; *p<0.1; ns= nije signifikantno; R^2=0.453.

Notes: ***p<0.001; **p<0.01; *p<0.1; ns= not significant; R^2=0.453.

Usporedba koeficijenata kazni (KK) sa koeficijentima nagrada (KN) otkriva da je odnos performansi i determinantnosti otprilike simetričan za pet elemenata usluge (KN $\approx$ KK) - tj. za (3) 'Efikasnost check-in postupka' (KN_3=0.113, KK_3=-0.109), (4) 'Ponudu restorana i kafića' (KN_4=0.102, KK_4=-0.104), (5) 'Mogućnosti kupovine' (KN_5=0.120, KK_5=-0.118), (6) 'Razinu komfora zgrade' (KN_6=0.137, KK_6=-0.125)

A comparison of reward-coefficients (RC) with penalty-coefficients (PC) reveals that the performance-determinance relationship is approximately symmetric for five of the analyzed attributes (RC $\approx$ PC)—i.e., for (3) 'Check-in efficiency' (RC_3=0.113, PC_3=-0.109), (4) 'Dining/drinking possibilities' (RC_4=0.102, PC_4=-0.104), (5) 'Shopping possibilities' (RC_5=0.120, PC_5=-0.118), (6) 'Comfort level of the building'

te (8) 'Ponudu letova iz zračne luke' (KN_8=0.076, KK_8=-0.070). Pozitivan utjecaj ovih elemenata na SZ u slučaju vrlo visoko percipiranih performansi je otprilike jednak njihovom negativnom utjecaju u slučaju vrlo nisko percipiranih performansi. Međutim, AKN otkriva značajne asimetrije kod tri elementa usluge. S jedne strane, (1) 'Jednostavnost snalaženja' (KN_1=0.028, KK_1=-0.062) te (2) 'Dostupnost informacija o letovima' (KN_2=0.028, KK_2=-0.040) su elementi usluge sa značajno većim utjecajem na SZ kada su percipirane performanse niske, nego kada su visoke. Stoga se ova dva elementa mogu nazvati stvarateljima nezadovoljstva. Međutim, kako su razine njihovih performansi relativno visoke (P_1=4.37 i P_2=4.26), ova dva elementa ne iziskuju posebnu intervenciju od strane menadžmenta. S druge strane, (7) 'Ljubaznost osoblja zračne luke' jest element usluge sa značajno jačim utjecajem na SZ kada su percipirane performanse visoke nego kada su niske (KN_7=0.161, KK_7=-0.092). Stoga se ovaj element može nazvati stvarateljem zadovoljstva. Razina performansi ovog elementa je relativno visoka (P_7=4.17), međutim, kako se radi o visoko determinantnom elementu sa pozitivno asimetričnim utjecajem na SZ, on još uvijek ima neiskorištene potencijale za povećanje razine SZ. Da bi povisili razinu SZ menadžment zračne luke bi trebao razmotriti unapređenje performansi i ovog elementa, nakon rješavanja problema s performansama četiri najkritičnija elementa usluge koji su identificirani kroz 3D-AVP (tj. (8) 'Ponuda letova iz zračne luke', (6) 'Razina komfora zgrade', (5) 'Mogućnosti kupovine' te (4) 'Ponuda restorana i kafića').

4. ZAKLJUČAK

Menadžeri zračnih luka koji koriste mjere važnosti pri određivanju prioriteta elemenata usluge u aktivnostima unapređenja kvalitete, trebali bi biti svjesni da mjere

(RC_6=0.137, PC_6=-0.125) and (8) 'Airport flight schedule (RC_8=0.076, PC_8=-0.070). The positive impact of these service elements on OS in case of very high performance-perceptions is aproximately as large as their negative impact on OS in case of very low performance-perceptions. However, the analysis also revealed significant asymmetries for three attributes. On the one hand, (1) 'Ease of way-finding' (RC_1=0.028, PC_1=-0.062) and (2) 'Availability of flight-information' (RC_2=0.028, PC_2=-0.040) are service elements witha significantly larger impact on OS when perceived performance is poor, than when it is very high. These two service elements could thus be referred to as dissatisfiers. However, since their performance-level is relatively high (P_1=4.37 and P_2=4.26, respectively), they do not necessitate immediate action. On the other hand, (7) 'Staff courtesy' is a service element with a significantly larger impact on OS when perceived performance is very high, than when it is very low (RC_7=0.161, PC_7=-0.092). This attribute could be referred to as a satisfier. The performance-level of this attribute is high (P_7=4.17), but since it is a highly determinant attribute, it has still a great portion of unused potential to increase the level of OS. Therefore, after having resolved the performance-problems of the four most critical service elements identified through 3D-IPA (i.e. (8) 'Airport flight schedule', (6) 'Comfort level of the building', (5) 'Shopping possibilities' and (4) 'Dining/drinking possibilities'), the management should also consider improving the performance-level of (7) 'Courtesy of airport staff', in order to increase the level of OS.

4. CONCLUSION

Airport managers who use measures of importance in prioritizing service elements for improvement should be aware that explicit measures (e.g. direct importance rat-

eksplicitne važnosti (npr. direktne ocjene važnosti) i mjere implicitne važnosti (npr. koeficijenti dobiveni regresijom između performansi atributa usluge i globalne mjere performansi usluge) ne mjere isti koncept. Kao posljedica toga, oslanjanje na samo jednu vrstu mjere može rezultirati suboptimalnim ili čak štetnim implikacijama za upravljanje kvalitetom.

Autori ove studije stoga predlažu kombiniranje mjera eksplicitne i implicitne važnosti u donošenju odluka, jer bi takav pristup smanjio rizik pogrešnih procjena u alokaciji resursa u aktivnostima unapređenja kvalitete usluga. Određivanje prioriteta trebalo bi se odvijati u dva koraka. Prvi korak, *trodimenzionalna analiza važnosti i performansi* (3D-AVP), može poslužiti za izvođenje općih prioriteta poboljšanja elemenata usluge temeljem relevantnosti, determinantnosti i performansa elemenata usluge. Drugi korak, *analiza kazni i nagrada* (AKN), može pružiti uvid u asimetrične efekte u odnosu između percipiranih performansi elemenata usluge i utjecaja elemenata usluge na sveukupno zadovoljstvo putnika. Rezultati AKN mogu se koristiti za doradu prioriteta dobivenih na osnovu 3D-AVP, ukoliko je to potrebno.

Iako je primjenjivost i korisnost kombinacije 3D-AVP i AKN demonstrirana na slučaju zadovoljstva putnika uslugama zračne luke, predloženi se analitički okvir može primijeniti i u istraživanju drugih usluga iz područja turizma i ugostiteljstva. Međutim, nije moguće generalizirati individualne nalaze ove studije na druge zračne luke ili druge usluge.

ings) and implicit measures (e.g. coefficients obtained by regressing attribute-performance data against a global performance measure) do not assess the same concept. Consequently, relying only on one type of importance measure could result in suboptimal or even misleading managerial implications.

The authors of this study therefore suggest combining both implicit and explicit importance measures in decision-making, as this reduces the risk of possible resource misallocations in service improvement strategies. Moreover, it is suggested prioritizing service elements for improvement in two steps. In a first step, a three-dimensional importance-performance analysis (3D-IPA) should be used to obtain a general prioritization of service elements, based on the relevance, determinance and performance of service elements. In a second step, a penalty-reward contrast analysis (PRCA) should be used to gain insight into asymmetric effects in the relationship between perceived performance of service elements and the elements' impact on overall satisfaction. Results from the PRCA could then be used to refine the prioritization obtained through the 3D-IPA, if necessary.

Although the applicability and usefulness of a combination of 3D-IPA and PRCA has been demonstrated in a case study of passenger satisfaction with airport services, the analytical framework could also be applied to other services related to tourism and hospitality. It is, however, not possible to generalize the individual findings of this case study to other airports, or to other business sectors.

LITERATURA - REFERENCES

1. Aigbedo, H., Parameswaran, R., 2004. Importance-performance analysis for improving quality of campus food service. International Journal of Quality & Reliability Management 21(8), 876-896.
2. Barlas, S., 2003. When choices give in to temptations: explaining disagreement among importance measures. Organizational Behavior and Human Decision Processes 91(2), 310-21.

3. Brandt, R.D., 1987. A procedure for identifying value-enhancing service components using customer satisfaction survey data. In: Suprenant, C.F., (Ed.), Add value to your service: The key to success. Chicago: American Marketing Association, pp. 61-64.
4. Chen, F.Y., Chang, Y.H., 2005. Examining airline service quality from a process perspective. Journal of Air Transport Management 11, 79-87.
5. Hawes, J.M., Rao, C.P., 1985. Using importance–performance analysis to develop health care marketing strategies. Journal of Health Care Marketing 5(4), 19-25.
6. Jaccard, J., Brinberg, D., Ackerman, L.J., 1986. Assessing attribute importance: A comparison of six methods. Journal of Consumer Research 12, 463-468.
7. Joseph, M., Allbright, D., Stone, G., Sekhon, Y., Tinson, J., 2005. Importance-performance analysis of UK and US bank customer perceptions of service delivery technologies. International Journal of Financial Services Management 1(1), 66-88.
8. Kamakura, W.A., Mittal, V., de Rosa, F., Mazzon, J.A., 2002. Assessing the service profit chain. Marketing Science 21(3), 294-317.
9. Martilla, J.A., James, J.C., 1977. Importance-performance analysis. Journal of Marketing 41(1), 77-99.
10. Matzler, K., Bailom, F., Hinterhuber, H.H., Renzl, B., Pichler, J., 2004. The asymmetric relationship between attribute-level performance and overall customer satisfaction: a reconsideration of the importance-performance analysis. Industrial Marketing Management 33, 271-277.
11. Mikulić, J., Prebežac, D., 2008. Prioritizing improvement of service attributes using impact range-performance analysis and impact-asymmetry analysis. Managing Service Quality 18(6), 559-576.
12. Mikulić, J., Prebežac, D., "Evaluating Hotel Animation Programs at Mediterranean Sun and Sea Resorts: An Impact-Asymmetry Analysis", Tourism Management (2010), doi:10.1016/j.tourman.2010.05.026.
13. Myers, J.H., Alpert M.I., 1968. Determinant buying attitudes: meaning and measurement. Journal of Marketing, 32, 13-20.
14. Myers, J.H., Alpert M.I., 1977. Semantic confusion in attitude research: salience vs. importance vs. determinance. Advances in Consumer Research, 4, 106-110.
15. Oh, H., 2001. Revisiting importance–performance analysis. Tourism Management 22, 617-627.
16. Van Ittersum, K., Pennings, J.M.E., Wansink, B., van Trijp, H.C.M., 2007. The validity of attribute-importance measurement: A review. Journal of Business Research 60, 1177-1190.
17. Wiley, J.B., MacLachlan, D.L., Moinpour, R., 1977. Comparison of stated and inferred parameter values in additive models: an illustration of a paradigm. Advances in Consumer Research 4, 98-105.
18. Zhang, H.Q., Chow, I., 2004. Application of importance-performance model in tour guides' performance: evidence from mainland Chinese outbound visitors in Hong Kong. Tourism Management 25, 81-91.

Primljeno: 13. rujna 2010. /
Submitted: 13 September 2010

Prihvaćeno: 10. studenog 2010. /
Accepted: 10 November 2010