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**INTERNATIONAL MAY CONFERENCE ON
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BUSINESS STRATEGY IN THE DIGITAL ECONOMY

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Abstract: The problem of researching into the importance of business strategy becomes particularly prominent in the conditions of the digital economy, as an economy that functions primarily through digital technology. The digital economy has influenced the creation of the digital transformation strategy concept, which consequently influenced changes in shaping the organizational structure. The main purpose of the paper is to indicate the impact that digital transformation has on the process of formulating new corporate strategic directions. Bearing this in mind, the goal of the paper is to highlight potential strategic directions of digital business transformation in the conditions of the penetration of digital technologies. The basic assumption of the paper is that a further path of digital transformation is directed towards the construction of digital platforms created through the mutual collaboration of networked stakeholders on joint creation and delivery values, although existing companies in digital transformation usually start from market penetration, through the strategy of developing digital products and the strategy of developing digital markets.

Keywords: digital economy, digital technology, corporate strategy, organizational structure

POSLOVNA STRATEGIJA U DIGITALNOJ EKONOMIJI

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Apstrakt: Problematika istraživanja značaja poslovne strategije postaje posebno izražena u uslovima digitalne ekonomije, kao ekonomija koja funkcioniše prvenstveno putem digitalne tehnologije. Digitalna ekonomija je uticala na stvaranje koncepta strategije digitalne transformacije poslovanja, koja je posledično uticala na promene u oblikovanju organizacione strukture. Osnovna svrha rada jeste da ukaže na uticaj koji digitalna transformacija poslovanja ima na proces formulisanja novih korporativnih strategijskih pravaca. Imajući ovo u vidu, cilj rada jeste da se istaknu potencijalni strategijski pravci digitalne transformacije poslovanja u uslovima prodora digitalnih tehnologija. Polazna pretpostavka rada je da, iako postojeća preduzeća u digitalnoj transformaciji najčešće kreću od penetracije tržišta, preko strategije razvoja digitalnih proizvoda i strategije razvoja digitalnih tržišta, dalji put digitalne transformacije usmeren je prema izgradnji digitalnih platformi koje nastaju međusobnom kolaboracijom umreženih stejkholdera na zajedničkom kreiranju i isporučivanju vrednosti.

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Ključne reči: digitalna ekonomija, digitalna tehnologija, korporativna strategija, organizaciona struktura

1. UVOD

Četvrta industrijska revolucija ili industrijska revolucija 4.0 sagrađena na doprinosima prethodne tri revolucije, se često poistovećuje sa pojmovima digitalna smart revolucija i digitalna ekonomija. Naime, prva industrijska revolucija je vezana za drugu polovinu XVIII i prvu polovinu XIX veka kada se ručna proizvodnja počela zamenjivati parnim mašinama, čime je počeo razvoj koji je izmenio ranije političke, privredne i društvene sisteme u većem delu sveta. Drugu polovinu XIX veka i početak XX veka je obeležila druga industrijska revolucija sa uvođenjem naizmjenične električne energije i pojava masovne proizvodnje robe široke potrošnje. Treća industrijska revolucija je karakteristična za period od 1960. do 1995. godine kada dolazi do automatizacije proizvodnje koristeći prednosti koje donose elektronika i informacione tehnologije. Osnovna determinanta četvrte industrijske revolucije ili digitalne ekonomije postaju sposobni zaposleni koji razvijaju nove tehnološke ideje i digitalno inoviraju poslovanje preduzeća. Istu konstataciju potvrđuje i Don Tapscott (1995), jedan od najvećih svetskih autoriteta za pitanja uticaja tehnologije na poslovanje i društvo, u prvoj objavljenj knjizi o digitalnoj ekonomiji u svetu "The Digital Economy: Promise and Peril in the Age of Networked Intelligence", u kojoj ističe da digitalna ekonomija predstavlja ekonomiju baziranu na intelektualnoj imovini i radnicima znanja. On objašnjava da u digitalnoj ekonomiji kompanije zadržavaju konkurentsku prednost samo ukoliko se njihovi radnici stalno obrazuju i usvajaju korisna znanja brže nego konkurentske kompanije. Korisna znanja, koja treba da budu u funkciji nove ekonomije se odnose, između ostalih, na intenzivnu primenu digitalne, odnosno, informaciono-komunikacione tehnologije u poslovanju čime nastaju radikalne promene u poimanju resursa poslovanja – od fizičkih, opipljivih, prema digitalnim, elektronskim, odnosno, neopipljivim. Intenzivna primena digitalnog načina poslovanja ne odnosi se samo na tehnološka obeležja, nego i na sve ekonomske aktivnosti, procese, strukture, modele, što u konačnom znači da se radikalno menja i način stvaranja ekonomske vrednosti. Pomenuti autor je povodom dvadesetogodišnjice prvog izdanja ove knjige, objavio i drugo izdanje analizirajući gde je bio u pravu i šta se danas može konstatovati o digitalnoj ekonomiji. Interesantno je da je veoma dobro predvideo razvojne trendove digitalne ekonomije, ali i potvrdio postojanje negativnih strana digitalne ekonomije, kao što su njen uticaj na tržište rada, privatnost, socijalnu nejednakost, porodične veze, vladu, demokratiju i obrazovanje (Tapscott, 2015). Na slične opasnosti, godinu kasnije, u knjizi "Četvrta industrijska revolucija" ukazao je i Klaus Šwab, osnivač *Svetskog ekonomskog foruma*. Kako je naveo "promene su toliko duboke da, iz perspektive ljudske istorije, nikada nije postojalo vreme većih opasnosti ili većih obećanja" (Schwab, 2016). Prethodne industrijske revolucije najviše su promenile način na koji ljudi rade, dok, četvrta industrijska revolucija utiče i na način na koji ljudi misle i umanjuje, ili pak potpuno ukida, jaz između ljudi i tehnologije. Promene koje se dešavaju iz temelja menjaju percepciju menadžmenta, organizacije i strategije, s obzirom na to da se javljaju novi načini upravljanja, proizvodnje, komunikacije, transporta, isporuke, kooperacije i saradnje između ljudi.

2. INFRASTRUKTURNI ČINIOCI DIGITALNE EKONOMIJE

Najvažniji infrastrukturni činilac digitalne ekonomije jesu digitalne tehnologije, koje se odnose na upotrebu digitalnih resursa (tehnologije, algoritama, aplikacija i alata) kojima se efikasno pronalaze, analiziraju, stvaraju, prosleđuju i koriste digitalna dobra u računarskom

okruženju. Digitalne tehnologije se mogu podeliti u dve grupe, i to: *primarne i sekundarne*. Primarne digitalne tehnologije koje poslednjih nekoliko godina transformišu svetsku ekonomiju u digitalnu ekonomiju su: (Rogers, 2016) mobilne tehnologije – engl. *mobile technologies*, društvene mreže – *social networks*, računarski oblak – engl. *cloud computing*, Internet stvari – engl. *Internet of Things, IoT* i analitika velikih podataka – engl. *big data analytics*. Navedene primarne digitalne tehnologije predstavljaju konvergentne snage digitalne disrupcije koje mogu bitno uticati na promene koje će se dešavati na tržištu. Ove snage su inovativne i revolucionarne same po sebi, ali u kombinaciji, one će radikalno transformisati društvo i biznis, eliminisati stare poslovne modele i stvarati nove digitalne lidere (Schwertner, 2017). Osim primarnih, često se koriste i ostale – sekundarne digitalne tehnologije, u koje spadaju: 3D štampači – engl. *3D printers*, robotika – engl. *robotics*, dronovi – engl. *drones*, nosiva tehnologija – engl. *wearable technology* i veštačka inteligencija – engl. *artificial intelligence*.

Primena navedenih tehnologija u svakodnevnom poslovanju nije samo pitanje trenda ili prestiža, već postaje pitanje stvaranja konkurentne prednosti i inicijator promena koje će jedno preduzeće izdvojiti od ostalih i omogućiti mu da kupcu ponudi kvalitetniji proizvod i/ili uslugu. Digitalne tehnologije treba da budu integralni deo digitalne transformacije poslovanja. Svaka digitalna transformacija zahteva strategiju digitalne transformacije koja može pomoći preduzeću da ostvari željene rezultate. Preduzeća širom sveta usvajaju digitalnu transformaciju sa ciljem formulisanja i implementiranja nove strategije digitalne transformacije, i na osnovu toga unapređenja poslovnih procesa i izmene organizacione strukture.

3. ULOGA DIGITALNIH TEHNOLOGIJA U SAVREMENOM POSLOVANJU

Strategija digitalne transformacije predstavlja važan poslovni dokument kojim se u skladu sa strategijom i ciljevima poslovanja određuju prioritete upotrebe informacionih sistema baziranih na digitalnim tehnologijama u poslovanju, njihova optimalna hijerarhijska pozicija, prioritete ulaganja i informatički projekti, ali i poslovni rizici koji proizilaze iz njihovog intenzivnog korišćenja. U procesu određivanja poželjne uloge digitalnih tehnologija u poslovanju, menadžmentu preduzeća od pomoći može biti *McFarlanov model strategijske mreže* (engl. *strategic grid*) (McFarlan, 1983). Iako nastao pre tačno 40 godina, i dalje predstavlja referentni model za određivanje prikladnosti položaja digitalne tehnologije. Prema pomenutom modelu strategijska pozicija digitalnih tehnologija se može posmatrati kao funkcija dve varijable (strategijske važnosti postojećih i budućih digitalnih tehnologija). U zavisnosti od nivoa važnosti pomenutih varijabli, razlikuju se četiri značajna tipa strategija poslovanja: 1. podržavajući, 2. transformišući, 3. fabrički, 4. strategijski (Spremić, 2020).

Dvadesetak godina nakon utvrđivanja izvornog modela, McFarlan ga je zajedno sa saradnicima doradio i prilagodio novonastalim okolnostima. Važno je primetiti postojanost i inovativnost izvornog modela koji je, uprkos stalnom i teško predvidivom razvoju digitalne tehnologije i njene primene u poslovanju, uspeo predvideti trendove i poslužiti svrsi: pomoći menadžmentu preduzeća da utvrdi optimalnu poziciju digitalne tehnologije u poslovanju. Shodno tome, taj rad, zajedno sa Nolanovim radom (Nolan, 1977) se mogu smatrati teorijskim počecima onoga što danas nazivamo poslovna informatika ili informatički menadžment. McFarlan i Nolan su doradili model strategijske mreže prema kojem se razlikuju dve osnovne strategije digitalne transformacije, odnosno dve osnovne uloge digitalne tehnologije u poslovanju: 1. reaktivna (zaštitnička) strategija, i 2. proaktivna (napadačka) strategija.

Reaktivna (zaštitnička, defanzivna) strategija polazi od ideje da je osnovni zadatak digitalne tehnologije u poslovanju da omogući troškovno efikasnu, sigurnu, pouzdanu tehnološku osnovicu za odvijanje poslovnih procesa. Čest je primer kompanija koje su primenom inovativnih poslovnih digitalnih rešenja ostvarile konkurentsku prednost, pa ovu

taktiku koriste za njeno održavanje. Tipičan primer je SABRE, računarski sistem rezervisanja u vazduhoplovnoj industriji, koji, iako je kao izuzetno inovativno rešenje nastao još u 1960-im godinama, i danas predstavlja okosnicu poslovanja brojnih drugih vazduhoplovnih kompanija širom sveta. Ako SABRE sistem na kratko ne funkcioniše, poslovanje cele kompanije staje, a rizici rastu (Spremić, 2020).

Kod primene ove strategije poslovnih digitalnih rešenja, nadzornom i izvršnom odboru preduzeća treba garancija da je digitalna infrastruktura potpuno pouzdana, sigurna i zaštićena od raznih rizika, ali i da su troškovi njene upotrebe pod strogom kontrolom. Ipak, neophodno je istaći da se i dalje radi o strategijskoj primeni digitalne tehnologije u poslovanju, jer i najmanji ispad, prekid ili otežano funkcionisanje digitalnih tehnologija kompaniji može doneti velike gubitke odnosno izložiti je velikim rizicima. Iz tog razloga je česta praksa da organizaciona jedinica koja je zadužena za digitalne tehnologije vodi računa o uspešnosti digitalnih tehnologija. Pored glavnog menadžera zaduženog za digitalne tehnologije (engl. *chief digital officer* – CDO) i predstavnika menadžmenta zaduženog za digitalne tehnologije, članovi tog odbora su izvršni menadžeri ključnih poslovnih funkcija, a njihovim koordiniranim i stručnim delovanjem digitalnom tehnologijom se upravlja na korporativnom nivou.

Proaktivna (napadačka, ofanzivna) strategija podrazumeva da se poslovna digitalna rešenja, pored neophodne podrške odvijanju poslovanja i sprovođenja kritičnih poslovnih procesa, koriste i u svrhu promene poslovne strategije, pre svega kao sredstvo konkurentske prednosti. Ofanzivna i proaktivna uloga poslovnih digitalnih rešenja nastaje kada su strategijski razlozi njihovog korišćenja na istom nivou ili važniji od kriterijuma pouzdanosti i dostupnosti. Ofanzivna uloga poslovnih digitalnih rešenja znači da se oni koriste kao poluga inovacije poslovanja i radikalne promene poslovanja. Takve su aktivnosti vrlo ambiciozne i rizične, ali potencijalno isplative. Kompanije koriste ovu strategiju kada žele poboljšati svoju konkurentsku poziciju i ugroziti ili *napasti* tržišnog lidera. Čest način *napada* jeste korišćenje inovativne tehnologije i digitalnih informacionih rešenja kojima se ostvaruje operativna efikasnost (drastično niži troškovi poslovanja), ali i radikalno menja način odvijanja poslovnih procesa. Ova vrlo složena strategija često ima dualni karakter: kompanija mora ulagati u perfektno, mehanički tačno funkcionisanje postojećih rešenja i infrastrukture, a istovremeno stalno razvijati nove, inovativne sisteme koji će omogućiti postizanje ili održavanje konkurentske pozicije. S obzirom na to da se digitalna informaciona rešenja koriste u strategijske svrhe, pored nadzora njihovog funkcionisanja, uloga menadžera zaduženih za upravljanje digitalnim tehnologijama je i savetodavna, a odnosi se na predlaganje strategijskih inicijativa njihove upotrebe za poboljšanje konkurentske prednosti. Kompanije koje koriste ovu strategiju poslovnih digitalnih rešenja, obično organizuju i neka dodatna savetodavna i nadzorna tela za upravljanje digitalnim tehnologijama na korporativnom nivou (Odbor za upravljanje projektima, Odbor za strategijsku primenu digitalne tehnologije i dr.).

4. DIGITALNA TRANSFORMACIJA I POSLOVNE STRATEGIJE

Digitalna transformacija poslovanja se odnosi na proces koji započinje od trenutka kada organizacija počne da razmišlja o uvođenju digitalnih tehnologija u svim područjima poslovanja, i traje do trenutka njihove potpune integracije. Strategija digitalne transformacije poslovanja se odnosi na osmišljavanje onih aktivnosti koje omogućavaju razvoj informacionih sistema baziranih na digitalnoj tehnologiji koje efikasno podržavaju strategijske ciljeve poslovanja i omogućavaju njihovo ostvarenje na jedan od sledeća tri načina: (Spremić, 2020)

1. Efikasna podrška digitalne tehnologije postojećem poslovnom modelu (run the business);

2. Korišćenje digitalnih tehnologija pri promeni postojećih poslovnih procesa (change the business);
3. Stvaranje potpuno novih *disruptivnih* poslovnih modela uz intenzivnu primenu digitalne tehnologije (reinvent the business).

Suočene sa višestrukim izazovima digitalne transformacije, kompanije su prepoznale potrebu upravljanja složenim poduhvatom formulisanja i implementacije strategije digitalne transformacije koja će pratiti novu digitalnu stvarnost (Ismail et al., 2017). Adekvatno formulisana strategija digitalne transformacije je pokretački faktor menadžmenta i kritični faktor uspeha u procesu digitalne transformacije poslovanja. Iz poslovne perspektive, strategija digitalne transformacije ima za cilj transformisanje proizvoda, tržišta, poslovnih procesa i organizacionih aspekata korišćenjem digitalnih tehnologija. Shodno tome, neophodno je naglasiti da je ova strategija krosfunkcionalna, jer utiče na sve aktivnosti i funkcije u preduzeću. Ova činjenica zahteva koncepciju nove strategije, koja se naziva digitalna poslovna strategija, koja bi kroz korporativnu strategiju, koja se često naziva i generalnom, imala uticaja na poslovnu i funkcionalnu strategije kompanije (Popović-Pantić et al., 2019). Naime, opšte je poznato da korporativna strategija nastoji da odgovori na pitanje kojim se poslom preduzeće bavi, dok poslovna strategija odgovara na pitanje kako se treba takmičiti u određenoj industriji, poslovnoj oblasti ili privrednoj grani. Funkcionalna strategija ukazuje na način sticanja konkurentске prednosti konkretnim operativnim, odnosno poslovnim funkcijama. Stoga bi korporativna strategija digitalne transformacije trebala da pruži odgovor na pitanje koje digitalne proizvode nudi, kao i koja digitalna tržišta opslužuje konkretna organizacija. Proces digitalne transformacije poslovanja, posmatran sa stanovišta strategijskih implikacija, podrazumeva formulisanje korporativnih strategijskih pravaca digitalne transformacije, odnosno načina na koji se kompanije digitalno transformišu. Takav proces mora biti sveobuhvatan, dovodeći do promene ne samo u ponudi preduzeća, tj. u proizvodima i uslugama, već obuhvatajući i poslovne procese, organizacione promene i kulturološka prilagođavanja, kao i promene koje se tiču digitalnog tržišnog pozicioniranja.

S obzirom na širinu i dubinu promena, Stefanović i Simić (2020) sa pravom ukazuju da je korporativni strateški pristup procesu digitalne transformacije u preduzeću ne samo poželjan, nego i nužan, usvajajući pristup strategijom, a ne tehnologijom vođene digitalne transformacije. Digitalna transformacija poslovanja podrazumeva postojanje kompanija koje su sposobne vrlo brzo da menjaju svoje strategije rasta i da stvaraju potpuno nove modele poslovanja, nudeći proizvode ili usluge koji ranije nisu postojali na tržištu (Spremić, 2020). Naime, u strategijskom menadžmentu je opšte poznato da preduzeća korporativnom strategijom opredeljuju sledeće dimenzije svog poslovanja: (Đurićin et al., 2018) biznise u kojima je preduzeće prisutno (strukturni portfolio); širinu proizvodnog programa po biznisima (poslovni portfolio); aktivnosti u lance vrednosti u kojima će se graditi i koristiti kompetencije; veze između aktivnosti i resursa koje zahtevaju fokus strategije da bi se ostvarila sinergija; geografski prostor, u smislu tržišta nabavke i prodaje na kojem/kojima će nastupati. Kako ističu Đurićin i saradnici, korporativnom strategijom za nivo preduzeća opredeljuje se stav preduzeća prema rastu, odnosno da li će preduzeće ići putem dinamičnog rasta, sporog rasta ili putem negativnog rasta. Prema kriterijumu potencijala rasta, korporativne strategije se dele na strategije rasta, stabilizacije i povlačenja. Strategije rasta (ekspanzije) međusobno se razlikuju prema tome da li preduzeće izvore za rast nalazi u postojećem strukturnom portfoliju ili izvan njega. Ukoliko izvore za rast traži u užim granicama postojećeg strukturnog portfolija, preduzeće formuliše i implementira neku od strategija intenziviranja napora (penetracija tržišta, razvoj tržišta i razvoj proizvoda). U suprotnom, preduzeće bira neku od strategija diversifikacije (povezana i nepovezana).

Ovu tipologiju dao je *Igor Ansoff* osamdesetih godina prošlog veka (Ansoff, 1987) i ostala je aktuelna u referentnoj literaturi poslovne ekonomije do današnjih dana. Ova klasifikacija služi kao polazna osnova za klasifikaciju digitalnih korporativnih strategijskih pravaca. Naime, strategijski pokretači tranzicije ka digitalizaciji su, kao kod Ansoffa, dvodimenzionalni. Na jednoj strani su pokretači koji se tiču *proizvoda* i koji mogu biti postojeći (nedigitalizovani) i digitalizovani, tj. digitalni ili digitalno "uvećani" proizvodi ili usluge. Na drugoj strani, kada je reč o dimenziji *tržišta*, takođe se mogu razlikovati dve kategorije pokretača, odnosno onih koji su usmereni ka fizičkom (postojećem) i digitalnom tržištu. Kombinujući ove dve dimenzije u kontinuumu digitalne transformacije, i deleći ih na pomenute dihotomne kategorije dobija se matrica, prikazana na slici 1, koja predstavlja konceptualni okvir za sagledavanje korporativnih strategijskih pravaca ka digitalnoj transformaciji poslovanja.

| | Postojeći proizvodi | Digitalni proizvodi |
|-------------------|---------------------------------------|---|
| Postojeće tržište | Penetracija tržišta | Strategija razvoja digitalnih proizvoda |
| Digitalno tržište | Strategija razvoja digitalnih tržišta | Razvoj platformi |

Slika 1. Digitalni korporativni strategijski pravci (Autor)

Putevi digitalne transformacije najčešće vode preko strategije razvoja digitalnih proizvoda i strategije razvoja digitalnih tržišta, da bi ishodišni korporativni strategijski pravac rasta bila strategija razvoja platformi. Pre toga, *penetracija ili intenziviranje tržišta*, kao kod Ansoffa, potencira da se sa postojećim proizvodom (proizvodnim programom) osvoji u što većoj meri postojeće tržište, odnosno iskoriste na najbolji mogući način šanse koje postoje na već opsluživanom tržištu. Penetracija pretpostavlja da preduzeće treba da raste tako što će povećati proizvodnju i prodaju postojećih proizvoda na postojećem tržištu, odnosno ostvariti rast tržišnog učešća. Kompanije koje se pozicioniraju u gornjem levom kvadrantu matrice koriste digitalne tehnologije isključivo da unaprede, osavremene i optimiziraju svoje postojeće procese stvaranja vrednosti, pritom digitalno ne menjajući svoju ponudu (proizvode i usluge), niti tržište, što je i razlog da se taj kvadrant označava kao penetracija tržišta ili, kako *Planing i Pfoertsch* kažu (2016), *optimizacija nasleđenog biznisa*.

Alternativni strategijski pravci su razvijanje *novih digitalnih proizvoda*, kao i razvijanje *novih digitalnih tržišta*. *Strategija razvoja digitalnih proizvoda* podrazumeva poslovnu opciju kojom se želi povećati ukupna prodaja preduzeća modifikacijom postojećih proizvoda ili uvođenjem digitalnih proizvoda na postojećim tržištima. Naime, kako kažu Savić i saradnici (2019), novostvoreni digitalni proizvodi razlikuju se od tradicionalnih fizičkih proizvoda jer je njihovo umnožavanje mnogo brže i jeftinije. Govoreći o mogućnosti upotrebe digitalnih tehnologija u razvoju novih i modifikaciji postojećih proizvoda, autori često koriste termin

"pametni, povezani proizvodi" (engl. *Smart, Connected Products*) (Porter & Heppelmann, 2014). Prema njihovom mišljenju, ovi proizvodi osim fizičkih komponenti, koje obuhvataju mehaničke i elektronske delove, imaju i tzv. "pametne" komponente (senzori, mikroprocesori, softver, operativni sistem, korisnički interfejs) i komponente za "povezivanje". Zahvaljujući ovim uređajima, umrežavanju i prikupljanju ogromne količine podataka, ovi proizvodi mogu obezbediti monitoring, kontrolu, optimizaciju i autonomno funkcionisanje (Stefanović & Simić, 2020).

Strategija razvoja digitalnih tržišta potencira da se sa *postojećim proizvodom (proizvodnim programom)* ulazi na *digitalna tržišta*. Digitalna tržišta, kao tržišta koja su podržana tehnološkom infrastrukturom, omogućavaju razmenu dobara i usluga u *onlajn* okruženju. Digitalna tržišta podržavaju neku od tradicionalnih funkcija tržišta, poput: identifikacije partnera, pretraživanja proizvoda, cenovnog pregovaranja, uslova prodaje, kao i obavljanje trgovinskih transakcija, plaćanje, isporuku i pružanje podrške kupcu u održavanju i rešavanju problema sa proizvodom. Reč je o pravcu niskog rizika, zato što se sa *postojećim digitalnim proizvodima* ide na *povezana tržišta*. Razvoj tržišta pretpostavlja širenje digitalnih tržišta, jer preduzeće ima ljudske i ostale intelektualne resurse da implementira ovu strategiju. Glavno oružje preduzeća sa ovim pravcem razvoja treba da bude ulaganje u digitalni marketing (Rogers, 2016).

Platformaska diversifikacija podrazumeva korporativni strategijski pravac gde menadžment preduzeća, umesto da samostalno gradi elemente biznisa i pokušava da pridobije klijente da koriste njihove proizvode, izgrađuje ekosisteme gde klijenti saraduju jedni sa drugima. Umesto da plaćaju za neku uslugu, klijenti i proizvode i primaju vrednost. Rezultat toga jeste rast platforme, jer je sve više ljudi koristi. Takođe, ova strategija podrazumeva da izvore za razvoj preduzeća, menadžment vidi u heterogenom (diverzifikovanom) digitalnom proizvodnom, odnosno digitalno uslužnom programu, koji će se plasirati na *postojećim* i, posebno, na novim digitalnim tržištima, kako u okviru *postojeće delatnosti*, tako i u novim delatnostima. Stoga se, eventualno, može govoriti i o mogućnostima *povezanih i nepovezanih razvoja platformi*, analogno sa Ansoff-ovom strategijom povezane i nepovezane diversifikacije, gde povezana diversifikacija podrazumeva da preduzeće širi svoj digitalni asortiman proizvodima koji su na neki način povezani sa *postojećim*, dok nepovezana podrazumeva ulazak preduzeća u potpuno novo digitalno poslovno područje.

Najprecizniji opis onoga što sačinjava platformu definisali su *Andrei Hagiu i Džulijan Rajt* (2015) koji kažu da *platforma predstavlja biznis koji kreira vrednost olakšavajući direktnu interakciju između dva ili više različitih klijenata*. Ova definicija ukazuje na nekoliko bitnih karakteristika platformi. *Prvo*, platforma mora da opslužuje dve ili više različitih strana ili tipova klijenata (npr, kupci i prodavci; programeri i konsultanti; trgovci i vlasnici kartica/banke i sl.) *Drugo*, platforme, moraju omogućiti ovim dvema (ili više) stranama direktnu interakciju sa određenim stepenom nezavisnosti. *Treće*, iako platforma ne diktira interakcije, one se odigravaju i olakšane su kroz nju. Primeri koji pokazuju kako određeni broj različitih platformi spaja različite tipove klijenata i kreira vrednost, olakšavajući njihovu interakciju mogu biti: Airbnb (domaćini i iznajmljivači prostora), Uber (*freelance* vozači i putnici), PayPal (vlasnici računa, trgovci i banke), YouTube (gledaoci i kreatori videa i oglašivači), Google search (korisnici pretraživača, kreatori sajtova i oglašivači u potrazi). Kompanija kao što je *Uber* pruža taksi usluge, ne kupovinom vozila i zapošljavanjem vozača, nego pružanjem platforme koja će povezati vozače koji već imaju svoja vozila sa ljudima u blizini kojima treba prevoz. Popularne platforme se često mogu opisati kao dokaz "ekonomije iznajmljivanja" (iznajmljivanje imovine preko Airbnb-a), ili "ekonomije preprodavanja" (prodaja korišćenih dobara preko eBay-a) ili pak "ekonomije deljenja" (prodaja usluge prevoza preko Ubera). Poslovne platforme su svuda, i postoje u širokom spektru delatnosti: maloprodaja, mediji, oglašavanje, finansije, industrija

igara, mobilno programiranje, poslovni softveri, kućni aparati, ugostiteljstvo, transport, obrazovanje, zapošljavanje i pretraga poslova i sl.

5. ZAKLJUČAK

Problematika digitalne transformacije poslovanja postala je predmet interesovanja teoretičara i praktičara menadžmenta poslednjih nekoliko godina, pa nema mnogo teorijskih doprinosa u ovoj oblasti. Konačni cilj digitalne poslovne transformacije je stvaranje dodatne poslovne vrednosti. Uvođenje velikog broja digitalnih tehnologija u organizaciju samo po sebi neće pružiti očekivane koristi. Organizacije mogu ovaj cilj učiniti izvodljivijim definisanjem jasne, sveobuhvatne strategije digitalne transformacije, koja treba da naglasi ključne digitalne prednosti. Istraživanja digitalne transformacije sa strateškog aspekta, odnosno sagledavanje bitnih elemenata u formulisanju i implementaciji korporativnih strateških pravaca digitalne transformacije za sada su retka. Rad ističe da se razvoj digitalne strategije preduzeća se odvija po tipičnim fazama: proizvodnja jednog digitalnog proizvoda ili pružanje određene digitalne usluge, strategija razvoja digitalnih proizvoda i strategije razvoja digitalnih tržišta, da bi u poslednjoj fazi preduzeće formulisalo digitalnu platformu koje nastaju međusobnom kolaboracijom brojnih i umreženih stejkholdera na zajedničkom kreiranju i isporučivanju vrednosti. Digitalna transformacija poslovanja se odnosi na stalnu primenu digitalnih tehnologija usmerenu ka formulisanju inovativnih poslovnih strategija i disruptivnih poslovnih modela, primeni progresivnih koncepcija poslovanja, novih načina vođenja i upravljanja (pojavu digitalnih lidera), kako bi se kupcima ponudili bolji proizvodi, usluge i posebno unapredila njihova korisnička iskustva. Pri tom se intenzivno koriste digitalne tehnologije kako bi se stvorila nova vrednost za kupce što bi trebalo rezultirati boljim poslovnim performansama.

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"BULLWHIP" EFFECT IN THE SUPPLY CHAIN WHEN THE RISK OF BANKRUPTCY APPEARS

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Abstract: The purpose of the paper is to present a model of the influence of the "bullwhip" effect on the operation of the supply chain when there is a risk of bankruptcy. With this model, it is possible to explain and predict the negative effects of the dropout of a member of the supply chain. The paper will provide an extensive analysis of the important factors which are required for the formation of the weighting factors of the impact of the bankruptcy of individual members of the supply chain on the operation of the entire system.

Keywords: logistics, supply chains, substitute, bankruptcy, modeling

"BULLWHIP"-OV EFEKAT U LANCU SNABDEVANJA PRI POJAVI OPASNOSTI OD STEČAJA

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Apstrakt: Svrha rada je prikaz modela uticaja „bullwhip“-ovog efekta na poslovanje lanca snabdevanja pri pojavi opasnosti od pojave bankrota. Ovim modelom moguće je objasniti i predvideti negativne efekte ispadanja nekog člana lanca snabdevanja. Kroz rad će biti data opsežna analiza važnih činilaca na osnovu kojih se formiraju težinski faktori uticaja bankrota, pojedinih članova lanca snabdevanja, na poslovanje celokupnog sistema.

Ključne reči: logistika, lanci snabdevanja, supstitut, bankrot, modelovanje

1. UVOD

Poslovanje u modernom svetu iziskuje blisku saradnju velikog broja poslovnih organizacija, s obzirom na to da su moderni informacioni sistemi uglavnom usmereni na omogućavanje brze i jednostavne razmene informacija. Ovo vodi ka tome da je veoma teško povući jasne granice između članova jednog poslovnog sistema. Praktično, ovo je osnova

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lanaca snabdevanja, gde se gube tradicionalne granice između dobavljača, proizvođača, trgovaca i neretko finalnih kupaca. Ove integracije imaju ključnu ulogu u kreiranju visoko konkurentnih poslovnih sistema, koji su u stanju da opslužuju globalno tržište. Slobodan protok robe, materijala, ljudi i novca je od izuzetnog značaja za globalnu ekonomiju.

Iz prethodnog sledi da su svi u lancu snabdevanja u visokoj međuzavisnosti i nemaju u potpunosti slobodu izbora u postavljanju poslovne strategije. Međutim, ovo nije istina, jer i pored svih preduslova za integraciju, u smislu tehnike i tehnologije, svi članovi u lancu snabdevanja imaju svoj poslovni put. S tim u vezi, svi članovi lanca snabdevanja mogu i moraju imati svoje poslovne strategije i politike kojim upravljaju na duže staze.

Suština lanca snabdevanja jeste uspostavljanje jedne linije, koja integriše dobavljače sirovina, proizvođače, kupce i razne posrednike u jedinstveni poslovni sistem, uz očuvanje svih posebnosti pojedinih članova lanca snabdevanja. Iz ovog sledi da pojedini članovi lanca snabdevanja mogu biti deo više lanaca snabdevanja. Sve ovo vodi ka tome da svaki član lanca snabdevanja ima slobodu da ulaže u projekte i razvija svoje poslovne planove.

Ono što se mora naglasiti jeste da i pored kvalitetnog planiranja i dobrog menadžmenta, može doći do neuspeha. Tako da je moguća pojava da se mimo lanca snabdevanja, pojave remetilački faktori, koji dolaze od strane pojedinih članova lanca snabdevanja. Drugim rečima, postoji opasnost od strane jednog člana lanca snabdevanja, da usred nemogućnosti servisiranja svojih dugovanja, dođe do nemogućnosti ispunjavanja svojih obaveza prema ostalim članovima lanca snabdevanja.

2. LANAC SNABDEVANJA

Logistika i upravljanje lancem snabdevanja su dva povezana, ali različita koncepta. „Logistika je funkcija odgovorna za protok materijala od dobavljača u organizaciju, kroz operacije unutar organizacije, a zatim ka kupcima“ (Waters, 2003). Logistika kao nauka počinje da se izučava posle drugog svetskog rata, danas logistiku možemo podeliti na: vojnu, poslovnu i tehničku. Svaka grana logistike bavi se posebnim setom problema.

Već u ranim danima izučavanja logistike dolazi se do zaključka da postoji nedostatak u domenu integracije sa spoljnim saradnicima. Pod saradnike možemo svrstati posrednika, dobavljače, ali i kupce. Iz ovoga nastaje novi koncept, a to je lanac snabdevanja. „Lanac snabdevanja se sastoji od niza aktivnosti i organizacija kroz koje se materijali kreću na svom putu od početnih dobavljača do krajnjih kupaca“ (Waters, 2003). Iz ovoga može da se zaključi da je lanac snabdevanja širi pojam, koji uključuje daleko veći broj učesnika.

„Pre nego što završi u rukama potrošača, gotova roba putuje kroz distributivni kanal kompanije, koji se obično sastoji od proizvođača, distributera ili veletrgovaca i prodavaca na malo/e-prodavca“ (Myerson, 2023). Ovo je uobičajeni put koji svaki proizvod prolazi bez obzira na pojavni oblik. Naravno, u zavisnosti od prirode proizvoda, zavisi broj i tip članova lanca snabdevanja, ali svaki proizvod ili usluga imaju svoj put. Tradicionalni pogled na logistiku bio je usmeren na tok kretanja materijala, lanac snabdevanja ima fokus na integraciji, međutim sve više se pojavljuje pitanje informacije, kao vrlo važnog činioca lanca snabdevanja.

Moderno poslovanje je inače u previranju, u smislu rapidnih promena vladajućih paradigmi, usred digitalnih transformacija. „Aktivnosti proizvođača se transformišu kao rezultat napretka informaciono-komunikacione tehnologije (IKT) i skladištenja podataka, i treće industrijske evolucije,“ (Das et al., 2023). Ovo vodi ka četvrtoj industrijskoj revoluciji, koja se bazira na integracijama i snažnim uticajem IKT u virtualno svim sferama poslovanja.

Značaj informacija i novih IKT tehnologija može se videti u sledećoj rečenici. „Pošto kretanje logističkih jedinica u velikoj meri zavisi od spoljnih uslova od saobraćaja, u slučaju

drumskog transporta, do drugih oblika zagušenja na železničkim mrežama i lučkim operacijama, novi algoritmi koji koriste informacije iz IoT senzora i prošle istorije sada su u stanju da prognoziraju sa velikom preciznošću predviđeno vreme dolaska za odgovarajući teret i tako omogućuje optimizaciju rasporeda opreme primaoca (dizalice, viljuškari, itd.)“ (Brusset et al., 2022). Iz prethodnog se vidi da je tehnologija izašla van granica jednog poslovnog sistema i da se oslanja na Internet infrastrukturu kao i na nove IoT (Internet of Things, IoT – Internet stvari) tehnologije.

3. “BULLWHIP”-OV EFEKAT

S obzirom da je lanac snabdevanja u suštini visoko integrisan sistem, koji sa međusobnim povratnim uticajima sledi da postoje osetni efekti prilikom fluktuacija u ponudi i potražnji. „Bullwhip“ efekat je termin kojim se opisuje efekat promene na jednoj strani lanca i konsekventnog efekta na drugom kraju lanca snabdevanja. Efekat fluktuacije ima multiplikativan karakter, tako sa inicijalno male promene na jednoj strani lanca snabdevanja dovodi do velikih fluktuacija na drugoj strani lanca snabdevanja. „Ovaj fenomen navodi da proces potražnje koji se vidi u datoj fazi lanca snabdevanja postaje varijabilniji kako se krećemo nagore u lancu snabdevanja (tj. kako se udaljavamo od potražnje kupaca)“ (Chen et al., 2000).

„Bullwhip“ – ov efekat doprinosi povećanju troškova koji se šire uz lanac snabdevanja, u isto vreme ove fluktuacije utiču na neto zalihe i mogućnosti pojedinih članova lanca da se ispune svoje obaveze na ekonomski validan način“ (Disney et al., 2006). Širenje efekta ide od kraja ka početku lanca, odnosno od krajnjeg kupca ka dobavljaču sirovina. Postavlja se pitanje zašto bi oni na kraju lanca bili zabrinuti za ovaj efekat. Naime, povratni talas se vraća sa početka na kraj lanca u vidu viših cena i slabijeg kvaliteta usluga i proizvoda.

Način izlaska na kraj sa ovim efektom nije lak, niti je to jednostavno pitanje. „Pod određenim strategijama, vidljivost tržišne potražnje je od velike pomoći, ali čak i tada izbor menadžera lanca snabdevanja može dovesti do neočekivanih rezultata“ (Torres & Maltz, 2010). Drugim rečima, dobra komunikacije unutar lanca snabdevanja, uz kvalitetnu analizu ponude i potražnje tržišta je od vitalnog značaja.

Za potrebe ovog rada „bullwhip“-ov efekat se sagledava iz drugačije perspektive. Nestanak nekog člana lanca snabdevanja kreira efekat vrlo sličan „bullwhip“-u. Razlika je u tome što se ovaj efekat može identifikovati u bilo kom delu lanca snabdevanja. Ovo znači da remetilački faktor ne dolazi isključivo od strane tržišta. Prema našim analizama, čak i male fluktuacije na početak lanca snabdevanja, mogu dovesti do velikih fluktuacija na kraju lanca snabdevanja.

4. STEČAJ

Stečaj kao fenomen je sveprisutan bez obzira na spoljne i unutrašnje činioce, čak i u stabilnim i uspešnim ekonomijama kompanije mogu doživeti, neretko bez svoje krivice, poslovne poteškoće. Poteškoće u poslovanju mogu dovesti do nestanka jednog privrednog društva, a samim tim do nestanka jednog dela lanca snabdevanja.

„Većina zakonodavstava, među kojima nemačko i srpsko, koja u prvi plan postavljaju namirenje potraživanja poverilaca, teret odlučivanja prepuštaju poveriocima dužnika društva kapitala“ (Đurić, 2016). Ovim se može videti da se stečaj može voditi putem nestanka jednog privrednog subjekta, odnosno ka reorganizaciji.

U prvom slučaju imamo potpuni nestanak jednog preduzeća sa tržišta, i na taj način nestanka jednog dela lanca snabdevanja. Drugi put, kojim stečaj može da se kreće, barem

tehnički, može voditi ka ozdravljanju privrednog društva. Reorganizacija kao deo stečaja uključuje vrlo kompleksne i složene pregovore sa poveriocima s ciljem smanjenja tereta dugovanja.

Uspeh reorganizacije je vrlo upitan jer se neretko koren problema ostavlja netaknut, a napadaju se samo simptomi. „Od ukupno 83 kompanije koje su usvojile plan reorganizacije ili unapred pripremljenog plana reorganizacije UPPR u posmatranom periodu, nad 21 kompanijom je ponovo bio otvoren stečaj zaključno sa 31.12.2015“ (Rađen, 2016). Drugim rečima 25% organizacija se vrlo brzo nađu u istom ili čak i u nepovoljnijem položaju. Iz ovog razloga, reorganizacija se mora gledati sa određenom dozom rezerve. Takođe, posle reorganizacije može da se desi da jedno preduzeće ostane bez vitalnih delova i samim tim, ispada iz lanca snabdevanja.

Proizvođači mogu da se preorijentišu na izmamljivanje svojih kapaciteta, prostornih ili proizvodnih. Ovo znači da i pored uspeha u reorganizaciji preduzeće više nije u stanju da opslužuje ostale članove lanca snabdevanja. Sa druge strane, bankrot uvek označava nestanak jednog preduzeća. Ova grana stečaja vodi se tako što se proda sva postojeća imovina i iz ovog novca isplate poverioci, u odnosu na isplatne redove.

„Dužina trajanja stečajnog postupka i njegova složenost, kao i nepredvidljivost dešavanja u toku trajanja stečaja, često dovode do „nestanka“ nekog od poverilaca čije se potraživanje u navedenom postupku trebalo izmiriti“ (Ajnspiler-Popović, 2014). Ovde možemo videti još jednu posebnost stečaja. Vreme koje je potrebno za završetak stečaja može biti toliko dugačko da ostali članovi u lancu snabdevanja ili među poveriocima i sami nestanu sa tržišta. Nestanak može biti zato što se i sami mogu naći u stečaju. Ne sme se zaboraviti da ni jedno preduzeće nije ostrvo samo za sebe, na tržištu postoji jaka međuzavisnost velikog broja organizacija.

Finansijski aspekti preduzeća su od posebnog značaja i upravljanje finansijskim aspektima poslovanja su od velikog značaja. „Uopšteno se može reći da se investicije smatraju najvažnijim ekonomskim kategorijama u svim ekonomskim teorijama“ (Nikolić, 2011). Za pravilno poslovanje jednog preduzeća, naročito u domenu finansija informacije su ključni resursi. „Kada kompanije dožive finansijske probleme, informacije iz konvencionalnih izvora često nisu blagovremene“ (Gilson, 2010). Razne mahinacije unutar preduzeća ili jednostavno nedostatak jasnih smernica, može dovesti do pojava nepoklapanja raspoloživih informacija sa stvarnim stanjem. Prirodno je da se ovi problemi prenose niz lanac snabdevanja, stvarajući dodatne probleme.

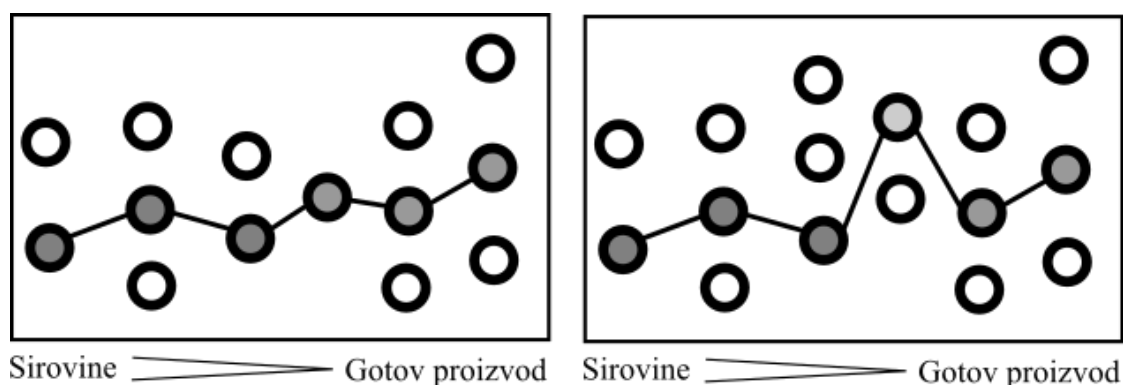
Postoje razni alati i tehnike za prevazilaženje problema stečaja, jedan od njih je spajanje i akvizicija. Ovo znači da se jedno preduzeće spoji sa nekim drugim u cilju prevazilaženja uočenih problema. Naravno, ovaj alat je jako kompleksan i relativno nepredvidiv. „U svetlu različitih zainteresovanih strana na koje utiče i koji utiču na M&A (Spajanja i akvizicije, prim. aut.), menadžeri moraju da olakšaju komunikaciju sa različitim grupama zainteresovanih strana“ (King, et. al., 2019). Menadžment koji nije navikao na intenzivnu komunikaciju i slobodno deljenje informacija je u nepovoljnijem položaju. Najveća razlika između spajanja i akvizicije je u tome što se kod spajanja, dve firme spajaju, a menadžment obe ostaje praktično neizmenjen. Akvizicija je utapanje jednog preduzeća u drugo, tako da menadžment jedne kompanije praktično nestaje. Teoretski, ovo je vrlo jasna podela, ali u praksi ima dosta zamagljenih granica. Kod spajanja nije racionalno udvajati uloge, a kod akvizicije često se ne može odbaciti sve od organizacije koja se utapa u drugu organizaciju.

„Kako kompanije postaju sve više digitalizovane, tako postaje uočljivo da ono što kompanije mogu zavisi od toga šta njihovi informacioni sistemi i upravljanje podacima mogu“ (Turban, et al., 2018). Tako da se još jednom može videti u kojoj meri su važne informacije. „Digitalna tehnologija može da promeni vaše proizvodne i poslovne procese.

Ona takođe može da oslobodi zaposlene od sporih i krutih papirnih procesa“ (Vasić et al., 2013). Tako da se sve više govori o kreativnim industrijama, koje se po konceptu značajno razlikuju od tradicionalnih industrijskih organizacija.

5. ANALIZA ČLANOVA LANCA SNABDEVANJA

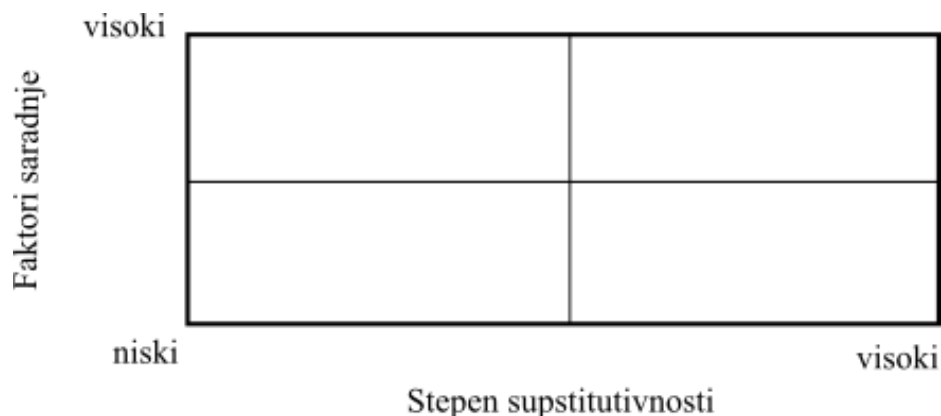
Svaka grana industrije je različita i ima svoja pravila po kojima se rukovodi, međutim mnogi aspekti poslovanja se mogu preslikati iz jedne u drugu granu industrije. Recimo, način na koji radi hotel i bolnica u domenu ishrane može da se poredi. Lanci snabdevanja su u velikoj meri uslovljeni „najslabijom karikom“, odnosno članom kojeg je teško ili čak i nemoguće zameniti. Takođe, pojedini tehnološki postupci i tehnologije nemaju supstitute što čini ove elemente lanca snabdevanja praktično nezamenjivima.



Slika 1. Šema lanca snabdevanja

Na prethodnoj slici može se videti šematski prikaz lanca snabdevanja. Na prvoj slici, možemo videti da se na jednom mestu nalazi samo jedan element bez nekih paralelnih alternativa. Na drugoj slici, možemo videti da svaki član lanca snabdevanja ima alternativu i prilikom ispadanja iz lanca moguće je doći do zamene člana.

Naravno, jedinstvenost nekog člana ili elementa lanca snabdevanja nije jedino merilo po kojem se može posmatrati ranjivost lanca snabdevanja. Cena, količina i rokovi isporuke, kao i kvalitet, moraju biti sastavni deo ove analize. „Veštačke“ barijere takođe, do nekog nivoa, mogu predstavljati određeni izazov. Pod veštačkim barijerama misli se na implementacije raznih standarda kvaliteta, određena kvazi pravila koja važe u nekoj grani industrije, nametanje različit pravila ponašanja od strane poslovnih alijansi ili monopola.



Slika 2. Kvadrant ranjivosti elemenata lanca snabdevanja

Svaki element lanca snabdevanja može posebno da se oceni za osnovu svojih karakteristika i da se na osnovu ove ocene postavi u odgovarajući deo kvadranta ranjivosti lanca snabdevanja. Elementi lanca snabdevanja sa visokim stepenom susstitutivnosti i visokim faktorom saradnje su najpoželjniji.

Elementi susstitutivnosti (ES) sastoje se od dva težinska faktora, jedinstvenost elementa (JE) i broja supstituta (SU). Tako da se elementi susstitutivnosti mogu prikazati narednom formulom:

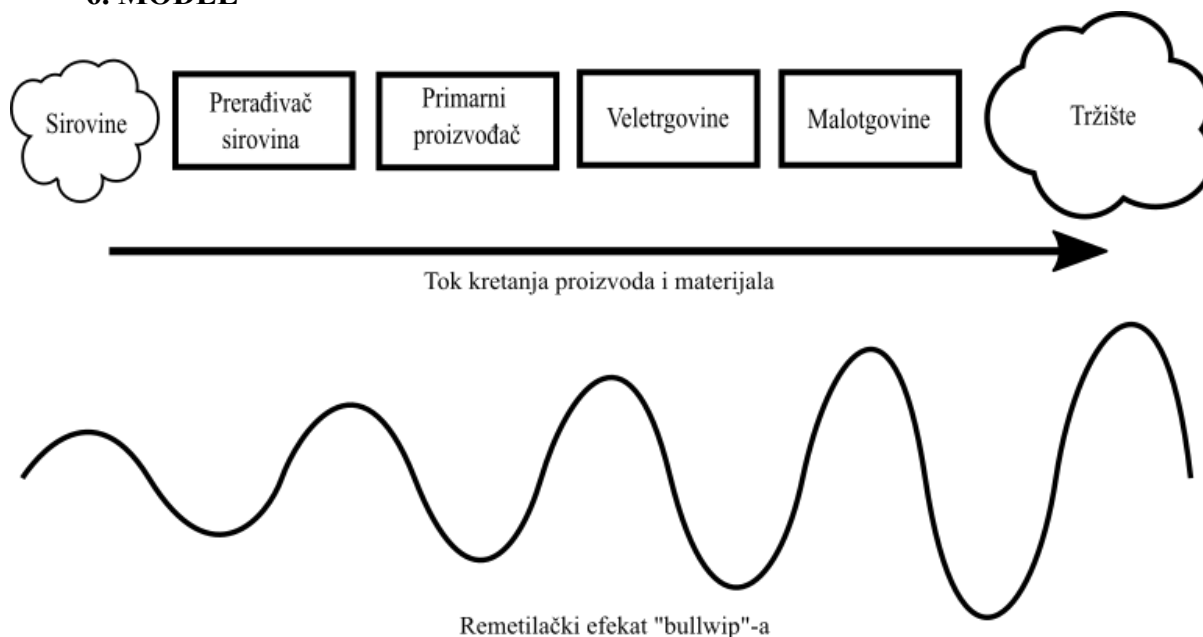
$$ES = JE * SU \quad (1)$$

Sa druge strane faktori saradnje (FS) imaju nešto kompleksniju formulu koja se sastoji od tradicionalnih elemenata poput cene robe (CR), kvaliteta robe (KR), rokova isporuka (RI) i idiopatskih faktora (IF). Formula faktora saradnje je sledeća:

$$FS = CR + KR + RI + IF \quad (2)$$

Kod stepena susstitutivnosti imamo proizvod jedinstvenost elementa i broja supstituta, naime ako imamo jedinstveni element tada je rezultat ES jednak nuli. Ako neki element nije jedinstven tada mu se može dati težinski faktor 1. Ovo znači da je ES u suštini broj supstituta koji mogu menjati neki element lanca snabdevanja.

6. MODEL



Slika 3. Model efekta „bullwip“-a u odnosu na lanac snabdevanja

„Klasični“ model „bullwhip“-a je takav da se fluktuacije bliže tržištu multiplikuju kroz lanac snabdevanja, tako da oni na početnim delovima lanca imaju daleko veće fluktuacije. Međutim, nestankom nekog elementa bližeg tržištu, daje daleko veći poremećaj, nego nestanak nekog elementa na početku lanca snabdevanja. Ovo važi ako imamo veliki broj substitutivnih ponuđača sirovine, odnosno ako je proizvod takvog karaktera da proizvodnja može brzo da se osvoji. Logika je da je teže nastupiti na nekom tržištu gde postoji jaka konkurencija nego proizvesti neko dobro ili uslugu.

Jednom kada neki element iskoči iz lanca snabdevanja bliži tržištu, teže je naći adekvatnu zamenu. Sa druge strane, zalihe koje se nalaze u lancu snabdevanja, mogu poslužiti za ublažavanje efekta „bullwhip“-a dok se ne nađe adekvatna zamena.

Međutim, što je neki element „jedinstveniji“ odnosno nema adekvatnih supstituta, to je teže oporaviti lanac snabdevanja. Model se snažno oslanja na informacije koje se slobodno dele unutar lanca snabdevanja, kao i na konstantnom ocenjivanju pojedinih članova lanca.

7. ZAKLJUČAK

Vrlo je važno pratiti tok informacija, kao i način na koji pojedini članovi lanca snabdevanja formiraju i drže se svoje poslovne strategije. Jaka integracija je ključ za pravilno funkcionisanje jednog uspešnog lanca snabdevanja. Nestanak nekog člana lanca snabdevanja može u manjoj ili većoj meri poremetiti poslovanje.

Vrlo je važno pratiti finansijske izveštaje i konstantno graditi poverenje svih članova lanca. Međutim, u slučaju pojave opasnosti od stečaja, potrebno je imati rezervne planove za opravak, jer u suprotnom konkurencija može preuzeti značajan deo tržišta.

Ovaj model je koncept na osnovu kojeg je moguće izgraditi kompleksan aparat ocenjivanja elemenata lanca snabdevanja. Takođe, potrebno je naglasiti da je ovaj model samo okvir za dalje istraživačke napore. Daljim istraživanjem, poboljšaće se preciznost analize i daće se bogatiji model. Krajnji cilj je kreiranje modela predikcije uticaja nestanka nekog elementa lanca snabdevanja, kao i mogućnost oporavka.

Ograničenja rada ogledaju se u nedovoljno preciznoj analizi uticaja stečaja na poslovnu sferu. Trenutno ne postoje dovoljno dobri pokazatelji uticaja stečaja sa poslovne organizacije neke regije ili grane industrije. Nedavna propast nekoliko velikih banaka u Sjedinjenim Američkim Državama izazvaće određene udare širom sveta, međutim nije jasno koliki će ovi udari biti ozbiljni.

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RESTRUCTURING MODEL OF RAILWAYS OF THE REPUBLIC OF SRPSKA

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Željeznice Republike Srpske a.d. Doboj, Bosna i Hercegovina

Abstract: Republika Srpska has identified restructuring of the railway sector among top priorities to improve public finance and ensure the provision of high-quality rail services. Modernization of the railway sector was envisaged as the reform of the company in order to operate public rail transport of passengers and goods in accordance with the EU principles and Directives. The objectives of organizational restructuring are to provide the ŽRS with appropriate mechanisms to support their long-term financial sustainability and to align the organizational structure with the railway framework of EU directives and regulations, while creating a clear vision, direction and independence of the role of infrastructure management and operations. The specific objectives of this component include planning and implementation of a new, more commercially driven organizational structure of ŽRS, consisting of corporate core plus two independently managed and separately accounted business divisions, one for infrastructure management and one for transport operations. Within the operations, the accounts will be kept for freight and passenger traffic.

Keywords: restructuring of the railway sector, organizational structure of ŽRS, financing of railway services.

1. INTRODUCTION

Restructuring of a company means any change in the structure of capital, business or ownership which goes beyond the limits of the ordinary or daily course of company business (Rodić, 1998). The fundamental goal of company restructuring is to create more value for company owners (Rodić, 2003).

"Republika Srpska Railways" (Serbian: *Željeznice Republike Srpske*) operates as a joint stock company, and the ownership structure consists of the Stock Fund of the Republic of Srpska jsc. Banja Luka 63.92%, The Pension Reserve Fund Of Republic of Srpska jsc. Banja Luka 10%, Republika Srpska Restitution Fund jsc. Banja Luka 5% and small stockholders 21.08%. The macro-organizational structure of the company consists of Department of Operations, Department of Infrastructure and Common Affairs.

Republika Srpska Railways is the only railway undertaking in Republika Srpska, and the main activity of this company is the transport of passengers in domestic traffic, the transport of goods in domestic and international traffic, train traction and maintenance of the technical and operational validity of traction and hauled vehicles, maintenance of rolling

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stock, organizing and regulation of railway traffic, maintenance of railway lines and railway facilities.

The basic characteristics of the workforce employed by the RS Railways are: numerous different and specific occupations, the requirement of having certain health capacity, a significant number of work positions where workers are entitled to accelerated retirement due to working conditions, the phenomenon of an unfavorable age structure and a significant number of disabled people.

2. THE RESTRUCTURING PROCEDURE

Republika Srpska Railways jsc. Doboj is currently in a situation when it is necessary to initiate a comprehensive restructuring, both in terms of ownership and financials, as well as the organization (Advantis broker, 2017).

The restructuring of Republika Srpska Railways aims to perform:

- Ownership,
- Financial,
- Organizational restructuring and
- Investments (Advantis broker, 2017).

In order for all three aspects of restructuring to be implemented almost simultaneously, the only possible way is to implement it through the financial and operational restructuring procedure, which was made possible with the adoption of the new Law on Bankruptcy at the beginning of 2016.

Thus, it has been made possible to convert the liabilities that the Republika Srpska Railways have to suppliers and creditors into basic capital, which directly improves the liquidity position, and also reduces liabilities for regular and default interest (for loans). This procedure, in particular the debt-to-equity conversion of Republika Srpska Railways, primarily refers to liabilities based on international loans to the RS Government based on the principal amount of the debt, regular and default interests.

The restructuring procedure under the Law on Bankruptcy includes the following steps:

- The Company's Management, with the possible assistance of external associates, prepares a proposal for the restructuring program.
- The Supervisory Board reaches a decision on the initiation of the restructuring procedure and authorizes the director to submit a proposal for the initiation of the procedure to the court, along with the documentation provided for by the Law on Bankruptcy.
- The director submits the proposal to the Commercial Court in Doboj.
- The Commercial Court Doboj reaches a decision on opening the restructuring procedure and appoints a trustee within 8 days (it can be assumed that the Court will need a slightly longer period to reach a decision due to the lack of court practice).
- The trustee analyzes the claims and liabilities.
- The Court schedules an examination hearing.
- In case of reported claims which are not included in the plan, Republika Srpska Railways must change the data on claims in the plan within eight days.
- The court schedules a hearing where the financial and operational restructuring plan is discussed and voted on - a minimum of 25% of creditors as well as creditors who have at least half of the total reported claims should vote for the adoption of the Plan.
- After the adoption of the restructuring plan, the Supervisory Board convenes a stockholders' meeting.
- The Assembly of Stockholders adopts the decision to increase the basic capital by converting liabilities based on (international) loans into capital (Advantis broker, 2017).

The implementation of the restructuring procedure of Republika Srpska Railways largely depends on:

- Acceptance to convert debt to equity by the RS Government.
- Regularity of grant payments by the RS Government.
- Support from the World Bank, through lending and providing technical assistance.

Prior to the formal initiation of the restructuring procedure, it is necessary to:

➤ Conduct consultations with the president of the District Commercial Court Doboje regarding the operational implementation of the restructuring procedure before the District Commercial Court Doboje as the actual and locally competent court.

➤ Formalize cooperation with the World Bank through a loan arrangement in order to settle the liabilities towards the employees before the restructuring process, which would reduce the number of creditors and make assumptions for the 25% of creditors to vote for the restructuring plan (the RS Government will have more than 50% of the value of receivables through the loan and tax liabilities) and enable financial stability considering that tax liabilities and expenses for informatization of the Company would be settled.

➤ Obtain a written approval from the RS Ministry of Finance that they will vote to accept the restructuring procedure (Advantis broker, 2017).

The measures within the restructuring procedure are as follows:

- Reduction in number of employees through technological redundancy.
- Accounting separation of infrastructure and operator.
- Creation of profit centers.
- Organizing special department to manage the assets.
- Establishing complementary companies with the partners.
- Conversion of debt under international loans into capital of Republika Srpska Railways.

➤ Payment of liabilities to the RS Tax Administration immediately (loan from the World Bank) or rescheduling of the liabilities to the RS Tax Administration.

- Settlement of the remaining liabilities to employees.
- Infrastructure investments.
- Modernization of rolling stock for passenger and freight traffic.
- Informatization of the Company.
- Appointment of the implementation unit.
- Activation of non-prospective assets.
- Activation of assets through public-private partnerships.

3. OWNERSHIP RESTRUCTURING

The first step in the process of ownership restructuring of Republika Srpska Railways would be the conversion of the total debt based on international loans into the equity of Republika Srpska Railways. The debt conversion for international loans refers to the loans from the EBRD, the EIB, the loan from the Portuguese Government, the loan from the Polish Government and a loan from the Serbian Government.

The total contractual loan obligations that the Republika Srpska Railways have to the RS Government based on the repayment of international loans, which includes all associated interests (principal + interest + legal default interest), would be converted into the basic capital of the Railways (Advantis broker, 2017).

This procedure would be carried out following the adoption of the financial and operational restructuring plan by the Assembly of Creditors.

The stages of the procedure:

➤ The Supervisory Board of Republika Srpska Railways convenes a stockholders' meeting.

➤ The Assembly of Stockholders of Republika Srpska Railways adopts the decision on the conversion of the debt owed to the RS Government into equity, i.e., the decision on the third issue of stocks by conversion of debt into equity.

➤ Registration of the third issue of stocks in the Register of the RS Securities Commission, the Central Register of Securities, registration of the increase in the basic capital in the court register (Advantis broker, 2017).

Following the implementation of the debt-to-equity conversion procedure, the ownership share of the majority stockholder would currently reach over 99%, and thus the prerequisites would be met for the initiation of the transfer of the stocks of the remaining stockholders from the ownership structure to the majority stockholder, the implementation of which would make Republika Srpska Railways a single-member joint stock company.

The procedure for transferring minority stocks to the majority stockholder implies the following activities:

➤ Assessment of the stock value by an authorized appraiser.

➤ Provision of the guarantee of the Majority stockholder for the purchase of stocks.

➤ The Supervisory Board of Republika Srpska Railways convenes the Assembly of Stockholders.

➤ The Assembly of Stockholders of Republika Srpska Railways adopts a decision on transfer of the stocks to the purchaser (majority stockholder).

➤ Registration at the court register.

➤ Registration of the stock transfer at the Central Securities Register (Advantis broker, 2017).

It is necessary for the RS Government to accept the restructuring procedure and to appoint the persons who will be in charge of managing the procedure for the purchase of stock from the minority stockholders. Republika Srpska thus becomes the 100% owner of the stocks of Republika Srpska Railways following the conversion of debt into equity and the payment to the stockholders.

4. FINANCIAL RESTRUCTURING

In addition to ownership restructuring, the Company must also carry out the financial transformation. In the process of financial restructuring, obligations under international loans would be converted into capital.

The liabilities to employees and the liabilities to the RS Tax Administration (for taxes and contributions to salaries) will be settled with funds secured by a loan from the World Bank. Until the loan from the World Bank is secured, it is necessary to suspend the calculation of default interest by the Funds and the Tax Administration in order to prevent blockages, while fulfilling the obligations of the Funds.

Liabilities to other suppliers continue to be repaid according to the previously determined schedule (Advantis broker, 2017).

Following these measures (conversion of liabilities under the international loans into capital, loan borrowing with the World Bank) and by reducing the cost of gross wages, along with the regular monthly payment of the grant by the RS Government, the prerequisites for financially stable operations will be created, which will enable the regular payment to all the creditors.

5. ORGANIZATIONAL RESTRUCTURING

The Management Republika Srpska Railways proposed certain organizational changes, primarily in terms of termination of legal and economic affairs, that is, their unification into Common Affairs, along with the segments of investments, internal control, international relations and information dissemination (Advantis broker, 2017).

The primary goal of this proposal of the Management is to clearly highlight two basic business segments, namely Department of Infrastructure, with responsibilities related to the management and maintenance of railway infrastructure, as well as organization of railway traffic, and the Department of Operations, which is responsible for the transport of goods and passengers, as well as the rolling stock maintenance.

A clear statutory highlighting of these two segments, along with the financial separation, is the basis for any future plan of a more thorough restructuring.

The Management Board in the proposed organizational structure, would consist of the general director and executive directors of the Department of Infrastructure and Department of Operations, with a significant increase in the roles and responsibilities of the executive directors in the segments they manage.

The mentioned organizational changes represent activities which are possible at this moment, as the preparation of activities which should be done in parallel with other stages of restructuring.

In order to implement the organizational restructuring process, it is necessary for the Company's Management to adopt a new systematization of jobs and to set clear deadlines for its implementation. During the process, the Management is obliged to harmonize the organization and systematization in accordance with status and technological changes in the Company. The Supervisory Board should determine the method and deadlines for reporting on the effects of the systematization adopted by the Management (Advantis broker, 2017).

To meet the requirements of the European regulations in the field of railways, the Departments of Infrastructure and Operations (freight and passenger traffic) will be separated in terms of accounting, with the possibility of a complete analysis of the business performance of each segment separately.

In this way, a quality basis will be created for making a decision on the factual separation of the Departments of Infrastructure and Operations as separate legal entities.

6. OVERALL LOGISTICS FOR A SUCCESSFUL IMPLEMENTATION OF THE RESTRUCTURING PROCEDURE

For a successful implementation of the restructuring process, the Company's Management should appoint teams to implement each of the activities, primarily in terms of organizational restructuring, and especially in terms of:

- Implementation of the new systematization of jobs,
- Preparations and implementation of the new accounting separation of the infrastructure and the rail operator,
- Establishment of profit centers (the Maintenance of Rail Vehicles, as the first step),
- Activation of the asset management unit.

In addition to the teams responsible for the implementation of the abovementioned activities in the restructuring process, for the purposes of supervising the implementation of the restructuring program, it is necessary to establish a unit for the implementation of the restructuring program.

The unit will be tasked to monitor the implementation of the restructuring program in the part financed by a World Bank loan, i.e., all stages of the program except the ownership restructuring (Advantis broker, 2017).

Before the very procedure, it is necessary to:

- sign the agreement on the loan arrangement which includes loan funds for settling obligations to employees (liabilities according to the lawsuits and severance payments, tax liabilities, informatization of the company) and
- prepare all the necessary documentation for submitting a request for the initiation of the restructuring procedure at the competent court.

7. CONCLUSION

Republika Srpska Railways are not financially sustainable in their current role and form. It is necessary to embark on a comprehensive restructuring, both ownership and financial, as well as the organizational.

The plan is to conduct the restructuring in accordance with the Law on Bankruptcy, which regulates the field of financial and operational restructuring. In the restructuring process itself, it is necessary to convert receivables based on international loans into the basic capital of Republika Srpska Railways.

By implementing the ownership, financial and operational restructuring of Republika Srpska Railways, the company will be able to regularly fulfill their obligations to employees, suppliers and creditors and to provide quality services, primarily in freight and passenger traffic at the level of services of similar companies from the region.

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THE ROLE OF MODEL-DRIVEN DECISION SUPPORT SYSTEMS

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Abstract: In today's business environment, organizations have huge amounts of data that are constantly increasing, and to gain meaningful, relevant information, you need to effectively and efficiently manage this data. Given the fact that the volume of this data is rapidly increasing, there is a need to provide tools that will allow managers to make business decisions in real-time. Several information technologies are available to support managers, such as decision support systems, director support systems (at the organization level), group decision support systems, intelligent systems, and others. These technologies can be used independently or in combination, each of which provides different possibilities. The paper aims to point out the importance of timely information needed by managers to make better and better decisions and the role of decision support systems in this case.

Keywords: data, information, information system, model-driven decision support system

ULOGA SISTEMA ZA PODRŠKU ODLUČIVANJU BAZIRANIH NA MODELIMA

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Apstrakt: U današnjim uslovima poslovanja organizacije raspolažu ogromnim količinama podataka koje se neprekidno povećavaju, te da bi se stekle smislaone, značajne informacije, treba efektivno i efikasno upravljati tim podacima. Imajući u vidu činjenicu da se obim tih podataka rapidno povećava, stvara se potreba za obezbeđivanjem alata koji će dozvoliti menadžerima da donosu poslovne odluke u realnom vremenu. Za podršku menadžerima na raspolaganju je nekoliko informacionih tehnologija poput sistema za podršku odlučivanju, sistema podrške direktorima (na nivou organizacije), sistema podrške pri donošenju grupnih odluka, inteligentnih sistema i drugih. Navedene tehnologije mogu se koristiti nezavisno ili se kombinovati, pri čemu svaka od njih pruža različite mogućnosti. Rad ima za cilj da ukaže na značaj pravovremeno dobijenih informacija potrebnih menadžerima za donošenje što boljih i kvalitetnijih odluka, te kakvu ulogu u tom slučaju imaju sistemi za podršku odlučivanju.

Ključne reči: podaci, informacije, informacioni sistem, sistem za podršku odlučivanju baziran na modelima

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1. UVOD

Ispravna, i na vreme dobijena informacija glavno je oružje pri praćenju i predviđanju situacije na tržištu, kao i razumevanja i analize poslovnih kretanja. Potreba menadžera za informacijama u organizacijama vezana je sa jedne strane za interne informacije (definisane u okviru organizacije), i sa druge strane za eksterne informacije (nametnute okruženjem). S tim u vezi, kvalitet odluke zavisi od kvaliteta dostupnih informacija i njihovog pravovremenog dostavljanja na zahtev menadžmenta.

Informacije su potrebne menadžeru u cilju donošenja pravovremenih i valjanih odluka u realnom vremenu, te praćenja njihovog sprovođenja, kao i praćenja stanja izvršenja tekućih zadataka i toka donetih odluka. Na taj način može se održati korak sa konkurencijom. U skladu sa prethodno rečenim, poželjan je jedinstven i integrisan izvor podataka kako bi se menadžeru omogućilo samostalno kreiranje izveštaja, kroz jednostavan alat za podršku odlučivanju. U tu svrhu su neophodna i odgovarajuća znanja, gde svaki menadžer i član stručnog osoblja treba spoznati informacionu tehnologiju u okviru svoje struke, same organizacije i između organizacija.

2. INFORMACIONI SISTEMI

Svrha informacionog sistema jeste da obezbedi pravu informaciju pravim ljudima u pravom trenutku u pravoj količini i u pravom formatu, odnosno jednom rečju, korisne informacije. U literaturi se mogu naći brojne definicije koje se odnose na pojam informacionog sistema, a jedna od opšteprihvaćenih je da je informacioni sistem integrisani skup komponenti za prikupljanje, snimanje, čuvanje, obradu i prenošenje informacija, gde informacija predstavlja značenje koje je dodeljeno podatku.

U današnje vreme gotovo je nezamislivo poslovanje jedne organizacije bez informacionih tehnologija i sistema. Organizacija koristi informacione tehnologije u izvršnim i upravljačkim procesima, a zadatak istih je da racionalizuju ljudsku aktivnost, te olakšaju rad ljudima u poslovnoj aktivnosti. Sa druge strane, informacioni sistemi su moćno sredstvo menadžmenta za upravljanje poslovanjem i svim radnim procesima u organizaciji. Zasnivaju se na primeni savremenih računarskih sistema i softvera, a na osnovu izgrađene računarsko-komunikacione infrastrukture preduzeća (Link-eLearning.com, 2023). Informacioni sistemi integrisani su u svako funkcionalno područje jedne organizacije, a obezbeđuju:

- brzinu i efikasnost rada na računaru,
- veću tačnost podataka i standardizovanu obradu,
- brži pristup podacima i efikasnije generisanje novih izveštaja,
- povećanje sigurnosti podataka,
- povezivanje, tj. integraciju različitih sistema, smanjenje troškova poslovanja.

3. ODLUČIVANJE I VRSTE ODLUČIVANJA

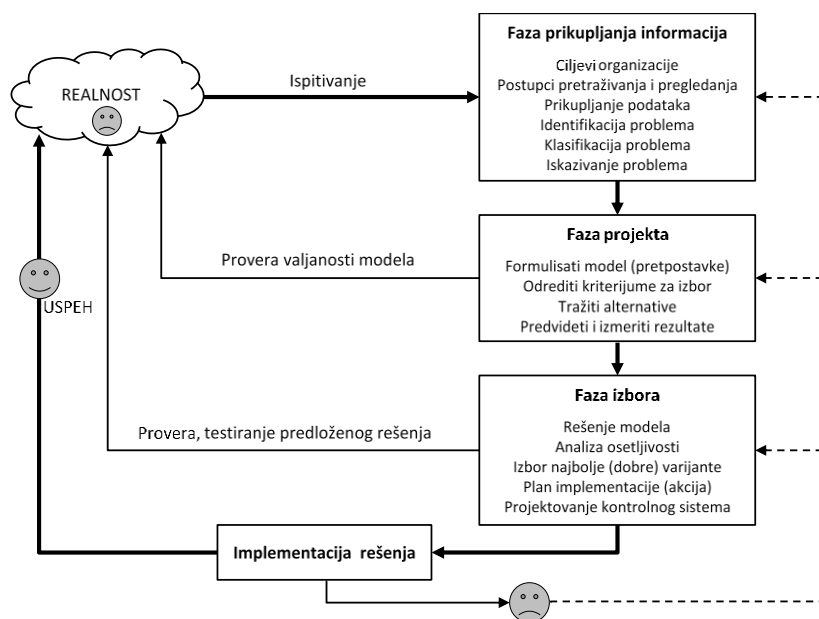
Gotovo da ne postoji organizacija i vrsta poslova kod kojih se ne javlja potreba za odlučivanjem, a kvalitetna odluka mora biti bazirana na tačnim, relevantnim i blagovremenim informacijama za akciju. Način da se ostvare namere ili ciljevi formulisani u procesu planiranja smatra se poslovnim odlučivanjem. U vezi s tim, što je nivo odlučivanja viši, to je i samo odlučivanje važnije, dok pogrešna odluka može imati negativne posledice za organizaciju kao celinu.

Pod odlučivanjem se najčešće podrazumeva proces odobravanja jedne ili više alternativnih akcija, koje se preduzimaju kako bi se postigao neki cilj. Odlučivanje kao proces i odluke kao akcija, razvrstavaju se prema sledećim kriterijumima (Vujović, 2005; Balaban i ostali, 2012):

- 1) broju osoba koje donose odluke:
 - individualno odlučivanje;
 - grupno odlučivanje;
- 2) količini informacija i znanja u momentu donošenja odluka:
 - odlučivanje u uslovima izvesnosti - ako je za svaku od alternativnih akcija poznato da nepromenljivo vodi nekom specifičnom ishodu, posledici;
 - odlučivanje u uslovima rizika - ako svaka od alternativnih akcija vodi nekom iz skupa mogućih specifičnih ishoda, pri čemu se svaki ishod pojavljuje sa poznatom verovatnoćom;
 - odlučivanje u uslovima neizvesnosti - ako je verovatnoća ishoda akcije nepoznata (ili su možda čak i sami mogući ishodi nepoznati);
 - odlučivanje u uslovima kombinacije rizika i neizvesnosti - u svetlosti podataka dobijenih empirijskim istraživanjem, spada u područje statističkog zaključivanja;
- 3) strukturisanosti odlučivanja:
 - strukturisano (programirano) odlučivanje - odlikuje se velikom ponovljivošću pod istim ili sličnim uslovima i mogućnošću da se izričito odrede pravila odlučivanja, čija je opštost tako velika da važe i u različitim uslovima;
 - nestrukturisano (neprogramirano) odlučivanje - obavlja se u neuobičajenim uslovima, jednokratno je ili bar retko ponovljivo (ali obično u različitim okolnostima) i za njega se ne mogu odrediti pravila odlučivanja;
- 4) prema oceni da li su raspoložive informacije dovoljne ili nisu dovoljne za odlučivanje:
 - terminalne odluke - za donošenje ovih odluka na raspolaganju su informacije koje u datim okolnostima omogućavaju izbor neke od alternativnih odluka;
 - istraživačke odluke - ove odluke se donose u cilju prikupljanja dodatnih informacija, s obzirom da su raspoložive informacije nedovoljne.

3.1. Proces i faze donošenja odluka

Proces donošenja odluka je prilično sistematičan, a sastoji se iz nekoliko faza: prikupljanje informacija, projektovanje, izbor i implementacija. Smatra se da je proces jako uopšten, tako da može biti podržan pomoćnim sredstvima pri odlučivanju. Konceptijski prikaz procesa donošenja odluke u skladu sa prethodno navedenim fazama dat je na slici 1.



Slika 1. Proces i faze donošenja odluka/modeliranja (Turban i ostali, 2003)

Ono što se na slici najpre može uočiti je to da postoji stalan protok informacija, od prikupljanja istih, preko projektovanja do izbora, kao i to da se iz svake faze može vratiti u prethodnu fazu. Opis procesa donošenja odluka dat je u nastavku (Turban i ostali, 2003).

- 1) U prvoj fazi, fazi prikupljanja informacija, menadžeri ispituju situaciju, identifikuju problem i definišu ga.
- 2) U drugoj fazi, fazi projekta, osobe koje donose odluke konstruišu model koji pojednostavljuje problem. To se radi uz pomoć pretpostavki koje pojednostavljuju realnu situaciju, kao i izražavanjem odnosa svih promenljivih faktora. Zatim se proverava valjanost modela, a osobe koje odlučuju postavljaju kriterijume za ocenu mogućih alternativnih rešenja koja su identifikovana.
- 3) U trećoj fazi, fazi izbora, vrši se odabir rešenja koje se testira „na papiru“, sve dok isto ne bude izgledalo izvodljivo.
- 4) U četvrtoj fazi, fazi implementacije, rešava se prvobitni problem, gde eventualni neuspeh dovodi do povratka na prethodne faze.

Sistem za podršku odlučivanju pokušava da automatizuje neke od zadataka u ovom procesu čija je suština u modeliranju.

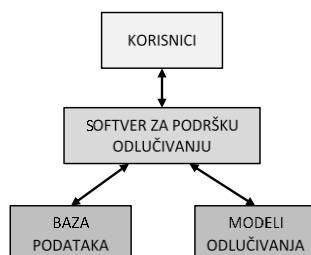
3.2. Odlučivanje i sistemi za podršku odlučivanju

Važno pitanje koje se nameće kada je reč o procesu odlučivanja jeste u kojoj meri je isti automatizovan i podržavan softverskim proizvodima. Svakodnevni razvoj informacionih tehnologija i sistema u mnogome doprinosi uporednom razvoju i primeni različitih softverskih rešenja automatizacije strukturisanih i polustrukturisanih problema odlučivanja. Ovo ujedno znači i da je razvoj sistema za podršku odlučivanju dostigao visok nivo, i što je još važnije, taj proces i dalje uspešno traje. Sa druge strane, automatizacija i konstantan razvoj softverskih rešenja za nestrukturisane probleme odlučivanja je takođe u usponu, te poprima sve veći značaj u sistemima za podršku odlučivanju, i to zahvaljujući, pre svega, tehnologijama poslovne inteligencije, poput *Data Warehouse*, *Data mining* i statističkih tehnika za analiziranje podataka.

4. SISTEMI ZA PODRŠKU ODLUČIVANJU

Nastojanja da se prevaziđe kriza u upotrebi kvantitativnih metoda i modela i informacionih sistema u procesu odlučivanja dovela su krajem sedamdesetih godina do pojave sistema za podršku odlučivanju (*engl. Decision Support System - DSS*). Pored ovih sistema namenjenih pojedinačnim donosiocima odluka, razvijeni su sistemi koji podržavaju i grupno odlučivanje (*engl. Group Decision Support System - GDSS*) (Bračika, 2011).

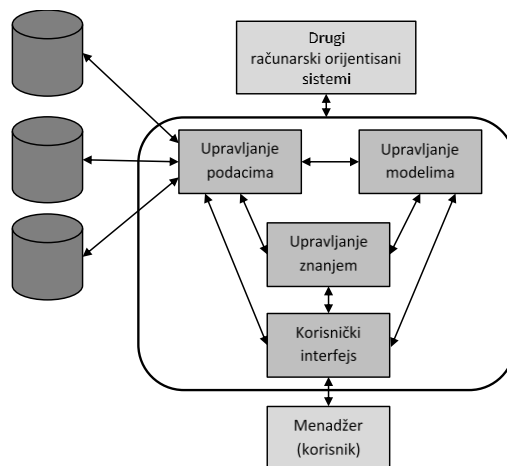
Sistemi za podršku odlučivanju su informacioni sistemi, koji su slični i komplementarni standardnim informacionim sistemima i imaju za cilj da podržavaju, uglavnom poslovne procese donošenja odluka. Predstavljaju simbiozu informacionih sistema, primene niza funkcionalnih znanja i tekućeg procesa donošenja odluka (Veljović i ostali, 2008). Ovi sistemi dizajnirani su tako da menadžerima, suočenim sa nekom neuobičajenom situacijom pomognu u donošenju pravilnih odluka. U slučajevima kada je proces odlučivanja relativno nestruktuiran (kada stepen uticaja određenih varijabli na neku aktivnost ili poslovni rezultat nije od početka jasan i/ili kada je unapred poznat samo deo potrebnih informacija) sistem za podršku odlučivanju pomaže u struktuiranju datog problema tako što menadžeru pruža dodatne informacije. Tom prilikom se, uz pomoć sistema za podršku odlučivanju, kreira kvantitativni model date situacije nakon čega se vrši obrada informacija radi određivanja uticaja onih varijabli koje su u taj model uključene (Seen, 2007). Na slici 2 predstavljen je model funkcionisanja sistema za podršku odlučivanju.



Slika 2. Model funkcionisanja sistema za podršku odlučivanju (Lazović i Bulatović, 2019)

4.1. Struktura sistema za podršku odlučivanju

Više je elemenata koji čine sistem za podršku odlučivanju. Struktura istog prikazana je na slici 3.



Slika 3. Struktura sistema za podršku odlučivanju (Bečejski-Vujaklija, 2008)

Elementi koji čine sistem za podršku odlučivanju su (Bečejski-Vujaklija, 2008):

- Podsystem za upravljanje podacima - uključuje bazu podataka koja sadrži relevantne podatke, kao i softver za upravljanje podacima (SUBP).
- Podsystem za upravljanje modelima - softverski paket koji sadrži finansijske, statističke i druge kvantitativne modele preko kojih se obezbeđuju visoke analitičke sposobnosti sistema. Sadrži i specijalne jezike za izgradnju korisničkih modela. Baza modela sadrži skup raspoloživih metoda i tehnika, projektovanih saglasno ciljevima koje konkretni sistem za podršku odlučivanju treba da zadovolji.
- Podsystem korisničkog interfejsa - preko koga korisnik komunicira i upravlja sistemom za podršku odlučivanju. Korisnički interfejs artikuliše zahteve korisnika i prezentuje izlaze iz sistema za podršku odlučivanju.

4.2. Karakteristike sistema za podršku odlučivanju

Brojne su karakteristike sistema za podršku odlučivanju, a neke od najvažnijih su (Seen, 2007):

- Pomaže ljudima koji donose odluke u situacijama kada zahtevi za informacijama nisu unapred poznati.
- Podržava proces rešavanja problema i donošenja odluka onda kada je situacija samo delimično struktuirana.
- Pruža informacije koje su neophodne za definisanje i rešavanje problema.
- Zasniva se na upotrebi fajlova i baza podataka, kao i ljudi koji stupaju u online interakciju sa sistemom.
- Pruža informacije u formatu koji definiše primalac i u vreme kada su one stvarno potrebne.

4.3. Vrste sistema za podršku odlučivanju u organizacijama

Shodno mišljenjima autora koji se usko bave ovom oblašću, postoji veliki broj sistema za podršku odlučivanju u organizacijama i mogu se kategorizovati kao (The Global Development Research Center, 2023; Felsberger i ostali, 2016):

- DSS bazirani na modelima (*engl. Model-driven DSS*);
- DSS bazirani na podacima (*engl. Data-driven DSS*);
- DSS bazirani na dokumentima (*engl. Document-driven DSS*);
- DSS bazirani na znanju (*engl. Knowledge-driven DSS*);
- DSS bazirani na komunikaciji (*engl. Communication-driven DSS*).

DSS bazirani na modelima su složeni sistemi koji pomažu u analizi odluka ili biranju između različitih opcija. Koriste ih menadžeri i zaposleni u organizaciji, ili ljudi koji komuniciraju sa organizacijom, u brojne svrhe, u zavisnosti od toga kako je model postavljen - planiranje, analize odluka i drugo. DSS bazirani na modelima koriste analitičke, finansijske, optimizacione i simulacione modele za podršku odlučivanju. Ne zahtevaju velike baze podataka, osim možda kod pojedinih specifičnih analiza. Glavna komponenta u arhitekturi DSS baziranih na modelima su jedan ili više kvantitativnih modela koji obezbeđuju funkcionalnost. Analitički alati zasnovani na algebarskim modelima dodeljuju elementarni nivo funkcionalnosti. Cilj analize odluka je da se otkrije najpovoljnija alternativa u datoj situaciji. Modeli optimizacije integrisani u DSS razvijeni su u mnogim okruženjima, a postali su važno polje za DSS naročito u proizvodnom i operacionom menadžmentu i lancima snabdevanja. Ovi DSS se mogu primeniti putem softvera/hardvera na stand-alone računarima, klijent/server

sistema ili u veb okruženju (Felsberger i ostali, 2016; The Global Development Research Center, 2023).

Većina DSS baziranih na podacima usmerena je na menadžere, osoblje, kao i dobavljače proizvoda/usluga. Koriste se za postavljanje upita nad bazom podataka ili skladištem podataka u potrazi za određenim odgovorima u određene svrhe. DSS bazirani na podacima omogućavaju pristup strukturiranim podacima i upravljanje njima, a mogu da obrađuje vremenske serije internih, kao i eksternih podataka organizacija, kao i podatke u realnom vremenu. Dok jednostavni sistemi datoteka kojima se pristupa pomoću alata za upite i pronalaženje omogućavaju osnovni nivo funkcionalnosti, sistemi za izveštavanje o upravljanju poput skladišta podataka ili izvršnih informacionih sistema, koji omogućavaju manipulaciju podacima pomoću kompjuterizovanih alata, pružaju detaljniju funkcionalnost. Još jedan primer DSS baziranih na podacima su sistemi poslovne inteligencije ili mrežna analitička obrada (OLAP). Primenjuju se putem mainframe računara, klijent/server sistema ili putem veba (Felsberger i ostali, 2016; The Global Development Research Center, 2023).

Količina dokumenata, prepiski, slika, audio zapisa, video zapisa i hipertekstualnih dokumenata se neprestano povećava, tako da upravljanje dokumentima postaje sve važnije za organizacije. DSS bazirani na dokumentima su češći, usmereni na široku bazu korisničkih grupa. Svrha takvih DSS je pretraga veb stranica i pronalaženje dokumenata po određenom skupu ključnih reči ili pojmova za pretragu. Uobičajena tehnologija koja se koristi za primenu ovih DSS je putem veba ili klijent/server sistema (Felsberger i ostali, 2016; The Global Development Research Center, 2023).

DSS bazirani na znanju (poznati još i kao „baza znanja“) su kategorija koja obuhvata veliki broj sistema koji pokrivaju korisnike unutar organizacije, ali mogu da uključe i druge koji su u interakciji sa organizacijom. U suštini, koriste se za pružanje saveta za upravljanje ili za odabir proizvoda/usluga. DSS bazirani na znanju su računarski zasnovani sistemi zaključivanja sa razlikom što su u okviru njih integrisane AI tehnologije, ekspertski sistemi za upravljanje, tehnologije rudarenja podataka i komunikacioni mehanizmi. Tipična tehnologija koja se koristi za primenu takvih sistema može biti klijent/server sistem, veb ili softver koji se pokreće na stand-alone računaru (Felsberger i ostali, 2016; The Global Development Research Center, 2023).

Većina DSS baziranih na komunikaciji usmerena je na unutrašnje timove, uključujući partnere. Njihova svrha je da pomognu u održavanju sastanaka ili da korisnici sarađuju. Tipično, DSS bazirani na komunikaciji oslanjaju se na hibridne mrežne i elektronske komunikacione tehnologije kako bi povezali donosioce odluka i stvorili okruženje za razmenu resursa i informacija, saradnju i komunikaciju između grupa donosilaca odluka. Jedna velika podkategorija odlučivanja, razvijena tokom nekoliko godina istraživanja na ovom polju, je grupno donošenje odluka, kasnije prošireno u takozvane Grupne sisteme za podršku odlučivanju (GDSS). Najčešća tehnologija koja se koristi za primenu ovih DSS je veb ili klijent/server sistem (Felsberger i ostali, 2016; The Global Development Research Center, 2023).

5. SISTEMI ZA PODRŠKU ODLUČIVANJU BAZIRANI NA MODELIMA (MODEL-DRIVEN DSS)

Donošenje odluke smatra se vrlo jednostavnim procesom, pod uslovom da su razmotreni svi relevantni faktori koji se tiču određivanja posledica, što je uglavnom nemoguće, pa tako ni odgovarajući model ne može biti sveobuhvatan. U svakom slučaju, model koji predstavlja realni sistem može obezbediti rezultate koji će biti osnova za donošenje odluke.

Sistemi za podršku odlučivanju su sistemi koji koriste modele. Posredstvom modela stižu se informacije neophodne za opisivanje i predviđanje pojava, događaja, stanja i procesa značajnih za upravljanje organizacijom i za rešavanje problema odlučivanja. Radi odabiranja odgovarajućih modela koji će biti primenjivani u rešavanju problema odlučivanja i upravljanja, neophodno je obaviti istančanu analizu zahteva zadataka i korisnika DSS. Pošto se na osnovu rezultata te analize specificuju relevantni zadaci i zahtevi zadataka i korisnika, svakom od tih zadataka i zahteva potrebno je pridružiti odgovarajući podetni model. Ovakvim upravljanjem zadataka, odnosno zahteva i prikladnih modela, zapravo se određuje sadržaj baze modela (Vujović, 2005; Balaban i ostali, 2012).

DSS bazirani na modelima koriste matematičke i analitičke alate za izradu na primer finansijskih modela, modela predstavljanja, optimizacionih modela. Koriste jednostavne statističke i analitičke alate, tako da velike baze podataka nisu potrebne. Ovi sistemi akcentiraju na izgradnju i proučavanje modela. OLAP sistemi, koji omogućavaju kompleksne analize bazirane na modelima objedinjuju modeliranje, pretraživanje velike količine podataka i mogućnost sumiranja podataka. Ovakvi sistemi nazivaju se hibridnim DSS sistemima. Čisto modelima orijentisani sistemi koriste podatke i parametre obezbeđene od strane donosioca odluke, ali oni obično nisu intenzivno orijentisani na podatke (Plojović, 2009).

Brojni su primeri primene DSS baziranih na modelima, te se isti koriste za predviđanje prodaje primenom ekonometrijskih modela; računovodstveni i finansijski DSS generišu procene bilansa uspeha, bilansa stanja ili drugih mera ishoda; optimizacioni DSS generišu optimalna rešenja, u skladu sa ograničenjima, i pomažu u planiranju i raspodeli resursa; DSS bazirani na modelima mogu pomoći u predviđanju tražnje za proizvodima (UNI ScholarWorks, 2023).

Srce sistema za podršku odlučivanju baziranih na modelima upravo su modeli. Model predstavlja deo stvarnog sveta u pojednostavljenom obliku. Složenost i dinamika stvarnog sveta svodi se na aspekte koji su relevantni za trenutni problem koji bi trebalo da bude predstavljen u modelu. Kvalitet modela je presudan za celokupan DSS baziran na modelu i njegove performanse.

Sistemi za podršku odlučivanju bazirani na modelima koriste se u slučajevima odlučivanja koji zahtevaju odgovarajuće matematičke i statističke analize. Pri tom, da bi se dobio odgovor na postavljeno pitanje, mogu se kombinovati podaci iz baza podataka sa matematičkim modelima. Najčešće se radi o donošenju prognoza, statističkim analizama, simulaciji neke situacije, izboru najpovoljnije alokacije resursa i slično (Bračika, 2011). DSS bazirani na modelima razvijeni su pre svega oko jednog ili više optimizacionog ili simulacionog modela, obično sadrže značajne aktivnosti u formulisanju, održavanju i upravljanju modelom u distribuiranom računarskom okruženju, i „šta-ako“ analizi. Mnoge *large-scale* aplikacije spadaju u ovu kategoriju (Nestić i Stefanović, 2011).

5.1. Elementi DSS baziranih na modelima

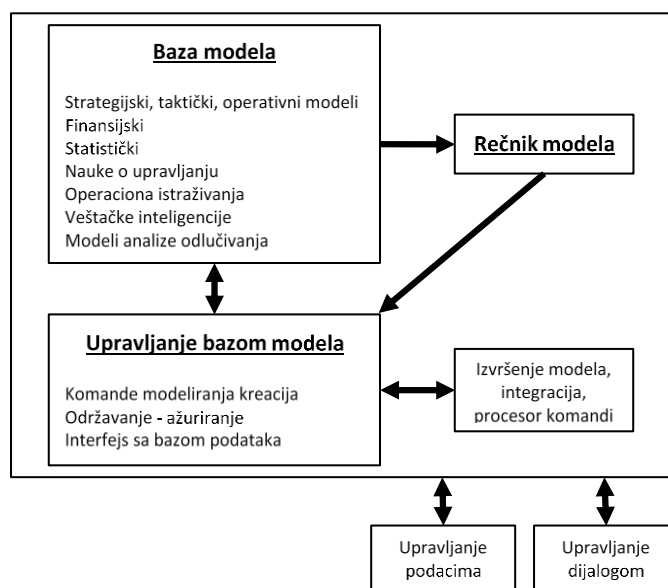
DSS bazirani na modelima sastoje se iz sledećih elemenata (Balaban i ostali, 2012):

- Baze modela - glavno sredstvo za podržavanje mnogih aktivnosti koje će donosilac odluke izvršavati u procesu odlučivanja i rešavanja problema. Podrška baze modela je posebno značajna u fazi dizajna i izbora. Najznačajnije aktivnosti koje modeli podržavaju su: projekcija, dedukcija, analiza, kreacija alternativa, komparacije alternative, optimalizacija i simulacija.
- Sistema za upravljanje bazom modela (*engl. Model Base Management System - MBMS*) - omogućava pažljivo i efikasno upravljanje sadržajem ove baze. To je odgovarajući softverski proizvod sa mnogim funkcijama kreiranja modela, korišćenja

podrutina i izgrađenih modulskih blokova, ažuriranja i promene baze modela, manipulacija sa podacima, generisanja alternativa, izveštaja i slično.

- Rečnika modela - ima ulogu sličnu rečniku podataka. Reč je o meta bazi modela. Sadrži definicije, glavne funkcije, način korišćenja modela, i druge značajne podatke o modelima.
- Izvršenja modela, integracije i upravljanja - je softverski proizvod sa sledećim osnovnim funkcijama: kontrola aktuelnog izvršenja modela, integracija ili kooperacija više modela kada to problem odlučivanja zahteva, povezivanje sa drugim podsistemima DSS.

Navedeni elementi DSS baziranih na modelima prikazani su na slici 4.



Slika 4. Elementi sistema za podršku odlučivanju baziranih na modelima (Balaban i ostali, 2012)

Glavne funkcije (mogućnosti) sistema MBMS su sledeće (Turban i ostali, 2003):

- lako i brzo pravi DSS modele, iz osnova ili na osnovu postojećih modela, odnosno od sastavnih delova;
- omogućava korisnicima da manipulišu DSS modelima tako da mogu da izvode eksperimente i analizu osetljivosti;
- čuva veliki broj različitih tipova modela i upravlja tim modelima na logičan i integrisan način;
- pristupa sastavnim blokovima DSS modela i integriše ih;
- pravi i prikazuje spisak modela;
- prati upotrebu modela, podataka i aplikacija;
- dovodi modele u međusobnu vezu odgovarajućim povezivanjima kroz bazu podataka;
- upravlja bazom modela i održava je uz pomoć upravljačkih funkcija analognih upravljačkim funkcijama za baze podataka: skladištenje, pristup, izvršavanje, ažuriranje, povezivanje, izrada spiskova i postavljanje upita.

Izgradnja nekih vrsta modela zahteva visok nivo stručnosti. S tim u vezi, mnoga stručna literatura objašnjava kako primeniti određene tipove modela poput simulacije ili linearnog programiranja. Smatra se da je ključna karakteristika u dizajnu DSS baziranih na modelima integracija pojedinačnih ili više kvalitativnih modela kao deo sistema, kako bi se obezbedila

povećana efikasnost u analizi rešenja (Aqel i ostali, 2019). Takođe, mnoge kompanije koriste na zahtev izrađene DSS aplikacije i gotove modele.

5.2. Benefiti DSS modela

Korišćenje modela kod DSS ima brojne prednosti, a neke od njih su (Liang i ostali, 2008):

- Modeli dozvoljavaju laku manipulaciju varijablama odlučivanja (promenom vrednosti podataka varijabli odlučivanja ili okruženja varijabli) za istraživanje potencijalnih scenarija, što je mnogo lakše od manipulisanja stvarnim sistemom. Eksperimentisanje sa i na modelima ne ometa svakodnevni rad organizacije koja donosi odluke.
- Modeli omogućavaju uštedu vremena - godine poslovanja mogu se simulirati u minutima ili sekundama vremena na računaru.
- Troškovi analize modeliranja mnogo su manji od troškova sličnog eksperimenta izvedenog na stvarnom sistemu.
- Cena pravljenja grešaka tokom pokušaja eksperimenta mnogo je manja upotrebom modela, nego u stvarnom svetu.
- Modeli mogu pomoći u proceni i smanjenju rizika. Poslovno okruženje uključuje znatnu neizvesnost. Modeliranjem, menadžer može proceniti rizike koji proizilaze iz određenih akcija i razviti planove za nepredviđene situacije.
- Matematički modeli omogućavaju analizu vrlo velikog, ponekad beskonačnog broja mogućih rešenja. Čak i kod jednostavnih problema donošenja odluka, menadžeri se često suočavaju sa velikim brojem alternativa. Modeli odlučivanja mogu znatno pojednostaviti analitički proces.
- Modeli poboljšavaju i pojačavaju učenje i obuku.
- Modeli i metode rešenja su lako dostupni za rešavanje nekih tipičnih problema. Njihova pravilna upotreba može poboljšati izvršenje odluka.
- Postoje brojna rešenja, uključujući Java aplete (i druge veb programe), koji se mogu koristiti za rešavanje modela.

5.3. Primer za DSS baziranog na modelu

Tabelarne kalkulacije su jako česte i ne previše komplikovane za upotrebu za DSS bazirane na modelima na osnovu optimizacionih i simulacionih modela. Primer za DSS baziranog na modelu predstavljen je u nastavku, a isti se odnosi na kupovinu laptop računara na kredit. Radi se o „šta-ako“ analizi, preciznije scenario analizi, izvršenoj pomoću programa MS Excel. Scenario analiza omogućava procenu uticaja većeg broja različitih parametara na posmatrane veličine. Kod scenario analize najpre se unosi izvesan broj scenarija sa različitim ulaznim veličinama, na bazi kojih se kreira izveštaj.

U konkretnom primeru biće kreirana tri scenarija (tabela 2), kako bi se na kraju donela odluka o tome koji je od njih najpovoljniji u pogledu visine mesečne rate i ukupne kamate. Čelije u kojima se nalaze promenljive ulazne veličine obojene su crnom bojom (Učešće, Broj rata i Kamatna stopa) (tabela 1). Efekat promene pomenutih ulaznih veličina biće praćen na dvema izlaznim veličinama, Mesečna rata i Ukupna kamata (tabela 1).

Tabela 1. Pregled ulaznih i izlaznih veličina

| Kupovina laptop računara na kredit | |
|---|-----------------|
| Cena: | 78.000,00 |
| Učešće: | 30% |
| Iznos učešća: | 23.400,00 |
| Broj rata: | 24 |
| Kamatna stopa: | 12,00% |
| Iznos kredita: | 54.600,00 |
| Mesečna rata: | 2.570,21 |
| Ukupna plaćanja: | 61.685,08 |
| Ukupna kamata: | 7.085,08 |

Tabela 1. Scenarija

| | Scenario 1 | Scenario 2 | Scenario 3 |
|----------------------|-------------------|-------------------|-------------------|
| Učešće | 10% | 15% | 25% |
| Broj rata | 12 | 24 | 18 |
| Kamatna stopa | 15% | 13% | 14% |

Tabela 3. Izveštaj o scenario analizi

| Rezime scenarija | | | | |
|-------------------------------|---------------------|------------|------------|------------|
| | Sadašnje vrednosti: | Scenario 1 | Scenario 2 | Scenario 3 |
| Čelije sa promenama: | | | | |
| Učešće | 30% | 10% | 15% | 25% |
| BrojRata | 24 | 12 | 24 | 18 |
| KamatnaStopa | 12,00% | 15,00% | 13,00% | 14,00% |
| Čelije sa rezultatima: | | | | |
| MesečnaRata | 2.570,21 | 6.336,13 | 3.152,02 | 3.622,04 |
| UkupnaKamata | 7.085,08 | 5.833,60 | 9.348,55 | 6.696,68 |

Kod scenario analize akcenat je na proceni efekata ulaznih na izlazne veličine. Analizom dobijenog izveštaja (tabela 3) može se zaključiti da je Scenario 3 najpovoljniji u pogledu visine mesečne rate i ukupne kamate.

6. ZAKLJUČAK

Korisnici ne mogu čekati da IT kreira izveštaje za stotinu pitanja koja mogu biti postavljena od strane jednog korisnika, dok istovremeno IT ne može obezbediti resurse za stotine izveštaja koji su neophodni za adekvatno upravljanje poslom. Sistemi za podršku odlučivanju potpomažu i podržavaju donosiocima odluka u procesu odlučivanja, ali ne čine proces odlučivanja automatizovanim, jer ne zamenjuju čoveka u „prosudivanju“ problema odlučivanja i drugim sličnim ljudskim funkcijama. Oni pomažu donosiocima odluka da donesu kvalitetnije odluke pa se zato kaže da više služe poboljšanju efektivnosti (kvaliteta) nego efikasnosti (brzine) procesa odlučivanja.

Sistemi za podršku odlučivanju bazirani na modelima pružaju menadžerima modele i mogućnosti analize koje se mogu koristiti tokom procesa donošenja odluke. Opseg i obim ove kategorije DSS je veoma velik. Redovno se najavljuju novi komercijalni proizvodi, razvijaju se nove veb aplikacije za uspostavljene alate, a organizacije razvijaju sopstvene zaštićene sisteme.

Da bi iskoristili ove mogućnosti, DSS analitičari i menadžeri moraju da razumeju analitičke alate i modelovanje.

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ENTREPRENEURIAL ACTION AS THE KEY TO CONTEMPORARY MARKET BUSINESS

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Abstract: The subject of this study paper indicates the possibility of harmonizing the company's potential with the market needs, i.e. adequate market positioning with a special focus on the tourist economy and an analysis based on the example of a travel agency. In order to choose the optimal market position, it is necessary to understand what consumers value most when buying tourist products, ie. which features are most important to them. It is important to research the market in order to reduce deviations from those optimal characteristics and have a positive impact on consumer preferences, and at the same time on the market share of the product. The purpose of the research in this paper is to show, through a practical example, how market conditions changed under the influence of various factors condition the development of entrepreneurial spirit and energy for the survival of the company both at the local and global market level.

Keywords: marketing concept, entrepreneurship, consumers, tourism

1. INTRODUCTION

Entrepreneurship occupies an important place in the economy of many countries, especially in those with strong market economies, which can be seen from the numerous direct and indirect impacts on national economies. Even in the current economic crisis, some world organizations claim that entrepreneurial action can be the key driver for getting out of the crisis.

The World Tourism Organization (UNWTO, 2013) believes that tourism as a branch of the economy can significantly contribute to economic, social and ecological development as pillars of the sustainable development concept. If companies want to survive in the changing tourist market, constant innovation is needed, which implies creativity, new ideas and new services on the market (Poon, 2003). Traditional tourist products such as sunbathing and sightseeing are not attractive to new generations of tourists. Nowadays, tourists are more curious, they are characterized by greater mobility, they have more money; however, they also have a much greater choice of tourist activities, as well as information thanks to new information technologies (Derret, 2001). Therefore, it is necessary to individualize a tourism product, which would be a much more sophisticated way to attract consumers.

The path to this sophistication leads through a strategy, so-called target market that divides the market into homogeneous groups that can be served effectively. Thanks to the awareness of the wishes and needs of the targeted segments, it is possible to create a strategy of differentiation, which starts from finding possibility to make the company's offer different

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and more attractive than the offer of other market participants. However, in order for the company to gain a permanent competitive advantage, in addition to the segmentation and differentiation strategy, it is necessary to choose an optimal positioning strategy and thus create a strong market position.

2. IMPORTANCE OF TOURISM AS AN ECONOMIC BRANCH

In recent years, it is almost impossible to find a company in whose overall offer there has been no service, as an additional package to the overall offer; therefore it can be said that society is going through a phase of certain "revolution of hospitality activities". More and more products, in addition to tangible ones, also contain intangible components such as speed of service, ambience, comfort, friendliness, all aimed at increasing the volume of sales and creating profit as a basic economic goal.

Another aspect of looking at tourism as an economic branch indicates that it is a rather heterogeneous, unstable economic branch in terms of its export activities, characterized by a low degree of consumer loyalty to the destination. It is subject to large seasonal variations, it is characterized by oscillations in the degree of elasticity of demand for tourist services and the inelasticity of tourist supply, the impact of the virus pandemic on a global level, the ever-present natural disasters, political and war events in the world, as well as a number of other factors of a different nature.

The hospitality sector, including construction, with a dominant share in GDP in 2021 (57.5%) was most affected by the pandemic during 2020. The hospitality sector, which is characterized by positive developments in 2021, recorded positive contribution to GDP growth in the first quarter of 2022, primarily due to trade growth, transport, accommodation and catering services. A record trade surplus of about 1.4 billion euros was achieved in the hospitality sector in 2021. Growth export of services during the eight months of 2022 was followed by the growth of almost all hospitality activities, whereby the export of tourist and ICT services provided the most significant positive contribution (growth of 51.8% and 43.1%) (National Bank of Serbia /NBS, balance of payments, 2022, Program of economic reforms for the period from 2023-2025, year 2022).

Incentives to the tourism sector, investments in infrastructure and rapid vaccination have influenced the rapid recovery of the tourism sector after the pandemic. Foreign currency inflow from tourism amounted to 1.6 billion euros in 2021, which is an increase of 47.2% compared to 2020 and 11.2% more than the record year 2019 (1.4 billion euros) (NBS, balance of payments, 2022).

Tourism consumption has direct and indirect impacts on the economy (Unković, & Zečević, 2011).

Direct impact is exerted on those participants of the tourism industry who directly sell services to tourists (hotels, transport companies, trading companies, etc.) and the most important of these impacts are:

1. impact on gross domestic product and national income;
2. impact on the development of economic activities that make up the tourist economy;
3. impact on the country's balance of payments;
4. impact on the employment of the population and the level of living standards;
5. impact on investment activity and investment structure, as well as
6. impact on the faster development of underdeveloped countries and areas;

Indirect impact is exerted on those economic activities that do not directly participate in the provision of services to tourists, but supply the tourist economy (industry, agriculture, construction, water management).

2.1. Influence of social factors on business change

Tourism, being an economic branch, is affected by a large number of changes, both inside and outside of the branch. Lifestyle, consumer purchasing power, emergence and competitiveness of new tourist destinations, globalization, numerous socio-economic trends, political situation, technology, demographic factors, climate change, natural disasters, wars and terrorism modify tourist flows, influence the change of form in tourism, as well as changes in supply and demand (Wall & Mathieson, 2005).

The study on the European Union tourism industry competitiveness distinguished the following eight megatrends in the tourism market: globalization, demographic changes, access to information, experience economy, adaptation, sustainability, health, business models based on low costs (Popescu, 2011).

These megatrends cause the emergence of new segments on the market and it is necessary to monitor them in order to influence the development of tourism as well as tourist consumption. Globalization means that different societies, cultures and economies are increasingly intertwining.

With regards to the demographic changes, around 20% of the European population was over 65 years old in 2020. The new generation of retirees is richer, healthier, more educated and oriented towards individual forms of tourism. In addition to the aging of the population, the increase in single-member households is also a factor that should be taken into consideration when creating a tourist offer, and when it comes to the expected sources of demand, the most developed countries in the world will continue to play a dominant role (Unković & Zečević, 2011).

The application of new modern computer technology, Internet browsers, mobile phone applications, global positioning systems (GPS) and digital television is a particularly significant megatrend that affects the improvement of business in many areas in tourism. Advancement in the Internet and sophisticated IC technology have influenced the expansion of consumer purchasing options and stimulated organizations to re-engineer marketing in terms of new forms of advertising, promotion, and distribution systems (Wall & Mathieson, 2011).

The impact of tourism on the economy will grow more and more as countries become richer, due to:

1. Increase in life expectancy and increase in the number of pensioners who travel more and more, affecting the growth of demand;
2. increase in wealth affects the shortening of the working week and the increase in time for leisure and rest;
3. Tourism is characterized by high elasticity of demand in relation to income, so if income increases, demand also increases, known in economics as income elasticity (Tribe, 2006).

3. SPECIFICITIES OF THE MARKET CONCEPT IN THE HOSPITALITY SECTOR

Marketing as a business concept has been accepted in most hospitality companies and out of an activity perceived as supplementary, it has become a philosophy that permeates the entire business activity and decisions of a company (Milisavljević, 2020).

The specific approach of marketing to the hospitality sector originates primarily from the characteristics of services, among which the intangibility of services stands out, which means that they cannot be easily evaluated or demonstrated before purchase. Consumers cannot try a tourism product unless they buy it. The communication, attentiveness and care of the service staff cannot be felt before, but only after the purchase and consumption of services. This specificity implies marketing as a business orientation that emphasizes the effort of all employees in the organization towards one goal, to sell a service and satisfy a consumer (Milisavljević, 2020).

A task of marketing experts is to use certain strategies to reduce or eliminate the risk imposed by the intangibility of services. These strategies include the use of tangible signs to make the service tangible, the use of personal information sources to spread word of mouth about the services offered, and the creation of a strong image of the organization to reduce the perceived risk associated with purchase of the service (Bateson & Hoffman, 2013).

3.1. Research on consumer behavior in tourism

In order for a company to be successful in its marketing business, it is necessary to have a good knowledge of consumer needs, desires and behavior. The American Marketing Association defines consumer behavior as "the dynamic interaction of affect and thinking, behavior and environment by which human beings manage the exchange aspects of their lives" (Maricic, 2011).

Consumer behavior is very complex and its essence lies in how individuals decide to spend their resources, such as time and money, on different items. For a better understanding of consumer behavior and as an attempt to provide the requested service, consumer behavior models are used. Concepts such as motivation, benefit from product use and service quality can help in evaluating passenger behavior.

Knowledge of people's behavior during travel is very important for the tourism industry, because in the conditions of increasing competition in the market, the need to create and deliver value plus for the consumer is becoming greater.

The conclusion is that different people have different needs, and their purchasing decisions are influenced by individual preferences and social circumstances. Research has also shown that there are many psychological and cultural sociological reasons explaining why people travel (Raj, 2004).

4. ENTREPRENEURSHIP ON THE EXAMPLE OF THE TOURIST AGENCY "HOLIDAY PLUS KM"

The Holiday Plus KM tourist agency was founded in 2000 with the Agency for Business Registers of the Republic of Serbia and is registered as a micro-enterprise in the form of a partnership that employs three full-time employees, of whom the general manager is one of the co-owners/partners, while the other partner acts as a legal representative and has no operational functions. It is a family business based in Kosovska Mitrovica.

If we look at the market position from the point of view of competition in Kosovska Mitrovica, in addition to the Holiday travel agency, there is also a Sedef travel travel agency, which is certainly our most serious direct competitor, says the owner and general manager, Nenad Stojaković. Although it is the only competitor registered in the same city, it does not mean that the market is an oligopoly with only two bidders. The characteristics of an oligopoly, in addition to having only a few bidders with a large market share, are that there are barriers to entering the market. However, the tourist market in Kosovo and Metohija is very open. Regardless of the fact that they do not have their own representative offices in Kosovo and Metohija, all agencies from Serbia can participate in tenders for organizing student excursions, recreational classes, tourist trips intended for students and other tourist arrangements for which the call for participation in tenders or public procurement is published in the public gazettes of Serbia.

The role of the Holiday Plus KM agency in all of this is to recognize opportunities and adapt its potential to the needs of the market through an adequate offer. In the mentioned spectrum of tourist services, a special moment for the agency owner is organizing guided tours around Kosovo and Metohija and introducing travelers to the rich cultural heritage, as well as the customs of the people of that area. The next big competitor of Holliday is, relatively speaking, the Internet.

Namely, business today is moving from personal, direct contact to the internet (online) and it is no longer necessary to go to a travel agency and look at pamphlets, catalogs, but to go to a search machine, enter parameters and a list of agencies that can meet your requirements will appear. That segment of the competition is currently not very pronounced when it comes to the experience of employees in the aforementioned agency. Namely, in the mentality of their clients, i.e. the majority of them, they see safety in personal contact and will not leave it to someone else to decide on their long-earned days off and vacation money by an imaginary person on the Internet. However, after the declaration of the SARS Covid-19 virus pandemic, business over the Internet, doing business from home, as in other segments of the economy and even in the Holiday travel agency itself, has rapidly accelerated. Therefore, market positioning on the Internet should be understood as a great potential for further development and expansion of the business, but also as a great competitive threat if this market challenge is not answered adequately.

All of the above leads to the conclusion that the tourist company Holiday Plus KM operates in conditions of perfect competition, because there are many providers of tourist services, however, they offer differentiated, but also homogeneous products; sellers and buyers are perfectly informed, so the price is formed based on the actual costs of the arrangement. The attempt to expand the business to the newly opened office in Gračanica turned out to be a problem, because the local population did not show enough interest in the tourist offer. Several sporadic payments of the arrangement in the peak season did not cover the costs of renting the space, the worker's salary, utilities and other operational costs. The general manager insisted that the branch office is maintained with the money generated by the main office in Kosovska Mitrovica, because the demand needs to get used to the product and every business needs to be invested into at the beginning. Two seasons have passed and in spite of great marketing activities and expansion of activities, the branch office did not operate with a profit, so under insistence of the sales manager and the clear position of the legal representative, the general manager saw that the branch office had to be closed.

4.1. Change in market conditions and their impact on the formation of supply and demand of the agency Holiday Plus KM

If we look at the company's strategic decisions, such as the marketing strategy of market segmentation, differentiation and service positioning, they were initially approached spontaneously. The main decision on what will be the basic offer was always made by the general manager, first of all because he had vast experience as the director of the leading Yugoslav travel agency Putnik, and later the director of Kosmet tours, Vobtours... but on the other hand, he is also an expert on tourism demand in Kosovo and Metohija.

In the first years after the war in 1999, the population living in the north of Kosovo and Metohija in that period lived under difficult conditions and was not too interested in tourist arrangements. Although the agency regularly visited educational institutions, offering them favorable package deals for excursions and recreational classes, no one showed interest and courage to organize them in the first years after the war.

As the political situation stabilized, the market had greater demands, the population began to express their wishes for vacations, and the agency's task was to adapt to their demands.

Until 2020, the development of the agency's tourist offer was expanding. If we look at the initiative aspect, in addition to standard 7- and 10-day vacations, the majority of the population also pays for mini-vacations, visits to European cities, and frequent trips to distant exotic destinations such as the Maldives, Zanzibar, Cuba. Organizing seminars, congresses, visits to trade fairs and professional training is a daily routine. Tourists plan their trips in advance and pay up to 6 months in advance in the form of early booking, so it happened that in May the entire capacity of certain hotels was sold out for the peak summer months - June, July, August, September.

After a golden year for tourism, both in Serbia and the world, as well as in the Holiday travel agency, the SARS Covid 19 pandemic was announced, which abruptly blocked the whole world and whose consequences were felt mostly by the tertiary sector and consequently by travel agencies.

The state of emergency that entered into force in Serbia by the Government Decision dated 03.15.2020, limited the movement of the population and organized, commercial passenger travels were abolished, the work of companies in certain sectors of the economy was limited or completely prohibited, including travel agencies as well as all other activities that directly or indirectly support the tourism economy.

Like other tourism workers, the management of the Holiday agency met the pandemic with surprise and looked day by day how to adapt to the new situation. Although the border closure ended in May, due to health and political reasons, the 2020 summer season could not start regularly. Travelers who paid for their vacations through the early booking system were issued replacement vouchers for the 2021 season or were given the opportunity to have their money returned within the deadlines provided by law. A big problem was also caused by the graduation excursions of the students, which could not be carried out due to the pandemic.

In order not to remain at a complete loss, all tourism entrepreneurs had to come up with new products for their clients. Greece was closed, Montenegro also, one could only go to Croatia with tests that were quite expensive and then Albania appeared as a new destination that did not have any epidemiological requirements for entry and tourist stay, and the Holiday agency saw a new market opportunity.

The positive things caused by the Covid pandemic are the increased influence of information technologies that facilitate the work of the agency. A better presentation on social

networks made it possible to open an agency for clients who are displaced from Kosovska Mitrovica and thus strengthened the competitive position.

Restrictions regarding the cultural specificities of the heterogeneous market, mentality, seasonal nature of the activity, political and administrative conditions (restricted movement, the problem of recognizing travel documents, license plates), are the everyday life of the population that makes up the majority of the tourist offer of Kosovo and Metohija and create difficulties in work. Nevertheless, the agency tries to benefit from the mentioned restrictions, following the travel regulations and constantly informing its clients, as well as the rest of the citizenry. It has profiled itself as a business entity that can be trusted and that can respond to the challenges presented by the changing market environment.

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IMPLEMENTATION OF INVESTMENT PROJECTS INTO TOURISM INDUSTRY THE REPUBLIC OF TATARSTAN

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Abstract: This article contents really investment projects which implemented on Republic of Tatarstan there will be a positive trend in the development of the tourism sector. According to the dynamics of the development of the tourism industry, the Republic of Tatarstan occupies one of the leading positions in Russia. The tourist flow to the republic is growing by about 9-12% per year. Thanks to the policy pursued by the state authorities, the investment climate in the tourism industry is currently significantly improving in the republic. Increasing the investment attractiveness of the tourism sector, especially in the regions, requires the adoption of individual measures for recreational areas, including, among other things, state support for plans for the development of tourist areas.

Keywords: region, investment in tourism, Republic of Tatarstan, tourist clusters

1. INTRODUCTION

Tourism investment is one of the primary sources of funding for the industry. However, the characteristics of a complete appraisal of investments in tourism firms have not been researched in depth. Possession of current methods of economic evaluation of selected solutions, taking into consideration the peculiarities of the operation and development of tourism firms, is required to design an appropriate investment policy in this sector (Nawaz & Hassan, 2016).

It should be highlighted that investment in the tourism industry much more differently greatly from other sectors of the economy. This is due to the specific capital intensity which magnitude of the finished goods production process in this sector of non-material production (Shabalina & Amriddinova, 2022). Typically, public investment leads to both sectoral and economic growth (for example, tourism). The involvement of the public sector in the growth of the tourism industry is critical in many developing countries. Egypt, Thailand, Vietnam, Turkey, the United Arab Emirates, and other countries are instances of this in practice. In addition to developing tourism policies and developing a national tourism development plan, governments are actively involved in the provision of tourism and hospitality facilities and services. Given that tourism is a highly fragmented sector, the role of governments in facilitating and promoting tourism through the creation of an enabling socio-political and legal environment is of paramount importance (Tang et al., 2007).

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Public sector investments in tourism can be made at several levels of government, including supranational, national (for example, central governments of nations), and municipal governments of cities and towns. And until there is an environment of confidence, private sector investors will not take risks. In the early phases, regional or national tourism agencies are in charge of tourism planning and promotion, as well as the smooth operation of the industry. In this environment, the government assumes the roles of hotelier, travel agent, tour operator, and transportation provider (Petrova Mariana et al., 2018).

Similarly, the Turkish public sector has taken the lead in tourism development. However, at a later stage, the public sector's function is confined to coordinating numerous actors in the tourism business. Its function is confined to giving aid and support rather than leadership, and it attempts to fill the gaps left by the private sector if it is viable and effective (Keskin & Harun, 2010). Thus, the public sector is responsible for developing the reputation and promotion of the country's tourism industry overseas, as well as providing basic infrastructure, training and development of industry people, and environmental protection, which the private sector typically overlooks.

2. THE MAIN MATERIAL'S STATEMENT

Positive dynamics in the growth of the tourism industry may be seen in the Republic of Tatarstan. The state authorities' policy is responsible for the major improvement in the republic's investment climate for the tourism sector.

The Program "Development of the Tourism Sector in the Republic of Tatarstan for 2014-2016" significantly contributed to the growth of domestic tourism. A fundamental set of ideas and investment plans for the advancement of the republic's tourism infrastructure were developed as part of it.

For priority tourism recreational clusters and tourist centers (Kazan, Ancient City of Bolgar, Island-town Sviyazhsk, Shores of Yelabuga, Sviyaga-Land, Kama Pearl), capital building and modernization of infrastructural facilities were completed.

The subprogram's efforts strengthened the positive trends in the growth of tourism in the Republic of Tatarstan, which resulted in the construction of both new and updated tourist facilities and, eventually, a vibrant and competitive local tourism sector. The design of tourist clusters and the high dynamics of growth in the Republic of Tatarstan's budget's income portion were decided by the program (Government program for development economy Republic of Tatarstan, 2016).

The Republic of Tatarstan has ranked among the highest cities in the Russian Federation's constituent states for the past five years according to the National Rating on the state of the investment climate in those countries. The rating evaluation considers several factors, including support for small businesses, the development and growth of business institutions, infrastructure indicators, the ease of access to and use of resources, the regulatory environment's condition, and other sensible factors.

In the Republic of Tatarstan, a growing portfolio of more than 50 sizable investments totaling 5 trillion rubles has been created. By putting these projects into action throughout all significant economic sectors, the Republic will be able to meet its GRP targets of 5 trillion rubles by 2030. rub. (Summary Ministry Economy Republic of Tatarstan for 2018 year).

The Republic of Tatarstan approved a strategy for its social and economic development till 2030 years. The major objective of the Strategy is for Tatarstan to become a globally competitive, sustainably growing area that powers the Volga-Kama growth pole.

According to the Investment Development Agency of the Republic of Tatarstan, the service sector and tourism are among the top areas for development. Given the current

political and economic challenges, domestic tourism will continue to be a sector that requires financial investment for a considerable amount of time. Due to this, the government of Tatarstan promotes initiatives geared toward the growth of both domestic and international tourism, particularly ecotourism and tourist recreational clusters (TRCs).

Creating and fostering the growth of tourism clusters is the goal of regional authorities' cluster tourism policy, which consists of a number of initiatives. Investments, financial tools, information support, and legal safeguards are a few of these initiatives. Therefore, the goals of the tourism cluster strategy are to foster the growth of small and medium-sized firms, encourage the diversification of the regional economy, and boost the competitiveness and inventive potential of enterprises in the tourism industry.

Examples of investment initiatives for the growth of the mall in the Republic of Tatarstan include:

1. A comprehensive investment project within the framework of the tourist regional cluster "Volga Bulgaria" commissioned by the State Committee of the Republic of Tatarstan for Tourism.
2. "5 Winds" is a concept for the development of domestic and inbound tourism in the Volga-Kama basin of the Republic of Tatarstan. (Kamskoye Ustye cluster, Nariman cluster, Rybnaya Sloboda cluster, Veliky Bulgar cluster, Sviyazhsk cluster)
3. SEC "Vysokogorsky" (Mirrors of Tatarstan)
4. SEC "Kamskoye Ustye" (Eco-resort Sea - Sea of Tatarstan)

Take into consideration the 2013 presentation of the Sviyazhsk shopping complex idea. The goal of the cluster is to make the area more alluring by expanding chances for the use of tourism and recreational resources through the development of tourist infrastructure facilities, work to deepen a portion of the Volga riverbed, and installation of an extra navigable fairway to the pier of Sviyazhsk Island.

As a result, by analyzing the provided data, we are able to determine the outcome of the investment project. Nearly 900 000 tourists visited the island-city of Sviyazhsk in 2021, above pre-pandemic numbers (700 000 tourists visited the island in 2019, and this number had already plummeted to 480 000 in 2020). And in 2014 (prior to the implementation of the SEC project), Sviyazhsk received 147 thousand tourists annually. Thus, these metrics reflect state's necessity to tourism, the value of building tourist clusters, and the success of the investment project.

Table 1. Volumes and financial sources for the TRK "Sviyazhsk"(official website of the State Committee of the Republic of Tatarstan for Tourism, 2017)

| Source of financing | 2015 year | 2016 year | Total |
|---------------------------|-----------|-----------|-------|
| Federal budget | 72,0 | 0 | 72,0 |
| Tatarstan Republic budget | 14,4 | 0 | 14,4 |
| Extrabudgetary funds | 201,8 | 282,5 | 484,3 |
| Total: | 288,2 | 282,5 | 570,7 |

The growth of domestic and international tourism in the Volga-Kama basin of the Republic of Tatarstan includes the Great Bulgar cluster, which is situated in the Spassky district of Tatarstan. Tourists interested in visiting historically significant locations and learning about the local heritage are the project's target market. Bulgar, a historic city, is included as a World Heritage Site by UNESCO. It was necessary to create this tourism cluster since there was a clear gap between the volumes and needs of the current tourist flow and the construction of high-quality tourism infrastructure. The cluster has a total area of 236644.4

m2. A total of 408.2 million rubles were invested. State funding made up 131.1 million rubles of this total, while investor funds composed 277.1 million rubles.

The hotel and sanatorium complex's ratio are depicted in the figure 1.

1. Hotel and sanatorium complex. Capital investments: 328 million rubles.
2. Thematic baths. Capital investments: 92.5 million rubles.
3. Agritourism farm. Capital investments: 17.7 million rubles.

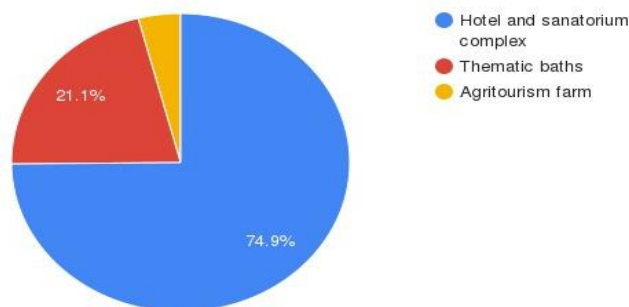


Figure 1. Volumes of investments in various infrastructure facilities (Shabalina et al., 2023)

The construction of the cluster began in 2016, and tourists were able to evaluate the first infrastructure facilities already in 2017.

Table 3. Dynamics of indicators of the tourism industry at the end of the implementation of the tourism development program of the Republic of Tatarstan (State Committee of the Republic of Tatarstan for Tourism, 2023)

| Indicators tourism industry | 2017 year | 2022 year |
|---|-----------|-----------|
| 1. Tourist flow (thousand people) | 285 | 488 |
| 2. Number of tourists accommodated in the KSR (thousand people) | 16 | 46 |
| 3. Room fund area (thousand sq. m.) | 1,4 | 6,1 |
| 4. Amount of room fund | 56 | 201 |
| 5. Beds amount | 145 | 446 |
| 6. Number of persons working in KSR, travel agencies | 48 | 296 |
| 7. The volume of paid tourist services (million rubles) | 279 | 479 |

According to the developed and improved infrastructure, the overall revenue from tourism activities in the area, and the attracted tourist flow, the metrics provided reflect the success of the investment project. The State Committee of the Republic of Tatarstan for Tourism served as the executive body for the project, and it was carried out in accordance with the public-private partnership model, in which the investor serves as the object's owner.

As part of the project for the development of domestic and inbound tourism “5 Winds”, high-class hotels Kol Gali Resort & Spa in Bolgar, “Kamsky Trophy” in Kamsky Ustye and “Volga House” in Upper Uslon were built in Tatarstan. Which contributed to attracting wealthy tourists to the region as a touristic center of the Volga region.

Furthermore, the Volga Bulgaria investment project was included in the activities of the national project Tourism and Hospitality Industry in 2021. Within this project, the Federal Tourism Agency will provide a financial assistance from the federal budget to the budget of the Republic of Tatarstan to co-finance the construction of supporting infrastructure facilities, which includes the reconstruction of the “Kazan-Orenburg” - “Alekseevskoye - Vysoky Kolok” highway as well as landscaping of the territory near the object "Tubetey Tower". The steps taken to enhance the cluster's auxiliary tourism infrastructure have improved the region's accessibility and appeal to tourists.

It should be noted that in the Republic of Tatarstan, outdoor recreation is currently experiencing active development, with an increase in the number of travelers preferring ecotourism. The Department "Directorate for the Development of Natural Territories and Ecotourism" of the Foundation "Institute for Urban Development of the Republic of Tatarstan" was established in order to further develop this region. The Directorate's duties include creating high-quality and affordable outdoor recreation opportunities in the nation, cozy surroundings for business owners and investors to start commercial ventures in Tatarstan's natural areas (glamping, camping, recreation centers), and the development of these areas without compromising the ecosystem. In collaboration with the executive committees of the Republic of Tatarstan's municipal districts, the Directorate prepares a register of land parcels with a high tourism potential and creates concepts and choices for packaged solutions for investors. Additionally, the Directorate performs cluster management duties, draws investors for basic and commercial infrastructure projects, and develops a plan for cluster promotion in the tourism industry.

One of the successful projects supported by the Directorate is “Best Glamp” glamping. Best Glamp is a glamping complex 50 minutes drive from Kazan. Located on a cape near the Volga River. There is an air path on the territory of the complex, where at a height of 3 meters above the ground you can walk between the crowns of oaks. The complex includes 6 types of houses: one- and two-story Tiny Houses, A-frame, geo-dome, bell-tent and glass tree house.

By the end of 2021, a total of 110 million rubles had been allocated for the project's execution. The project's annual income is approximately 30,000,000 rubles, and its annual net profit is around 15,000,000 rubles when considering the average cost of renting a single house for a night (20,000 rubles) and the average occupancy of Tatarstan's room stock (75 percent). According to the glamping founder, it is feasible to complete the project's payback in 3–4 years.

On the territory of the Republic of Tatarstan, 14 facilities with various types of outdoor recreation concepts will be operational by the end of 2021. The overall investment in the built recreation facilities was 393.2 million rubles. It is planned to open 11 more such housing facilities in the Republic of Tatarstan's natural lands by 2022.

In 2021, the State Committee of the Republic of Tatarstan for Tourism, in collaboration with the Directorate, held a "Glamping Business" educational acceleration program for entrepreneurs offering recreation and recreation facilities in the sphere of eco-tourism.

More 110 participants took part in the program, and ten of the best and most developed entrepreneur projects received tracking support. The educational program included five modules: glamping as a commercial product, the concept of the planned object and design work, building, and glamping company administration.

3. CONCLUSIONS

This event helped to popularize ecotourism among entrepreneurs by illustrating the availability and demand for such eco-tourism facilities to be built on the territory of the

Republic of Tatarstan. As a result, the Directorate contributes to the expansion of private investment in tourism infrastructure, which leads to a rise in the cash flow involved in the development of tourism in the Republic, the enhancement of tourism infrastructure facilities, and the stimulation of tourist flow.

With the assistance of the State Council of the Republic of Tatarstan, the State Committee launched changes to the Land Code of the Republic of Tatarstan that allow business owners to rent plots for the development of suburban recreation facilities. On July 8, 2021, during the twenty-third session of the State Council of the Republic of Tatarstan's sixth convocation, the new amendments were approved in three readings.

The changes speed up the process of launching eco-tourism projects, contribute to the development of infrastructure and material and technical base of the territories of municipal districts, attract additional tourist flow and, as a result, have a positive economic effect on the development of the Republic of Tatarstan.

Additionally, ecotourism-map.tatar, a digital platform created in partnership with the Directorate, has been made available for the search and evaluation of land for the development of outdoor recreation facilities in the Republic of Tatarstan. This website features land parcels with excellent tourist and recreational potential. Using platform's many capabilities, you may determine where the property is in relation to service facilities, utilities, and cultural, historical, and natural assets. The service also offers a public cadastral map, master plans, and land use plans.

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THE SPECIFICS OF BUSINESS MANAGEMENT IN DIGITAL ECONOMY

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Abstract: Modern business climate is quite volatile. The parameters of the external business environment, the competitive situation, the transformation of business models, changes in customer behavior and internal processes of organizations lead enterprises to understanding the necessity of creating new, more flexible, adaptive structures that are adaptable to the volatility of the external business environment. In the new context of the digital economy, organizations, creating digital platforms and ecosystems, strive to achieve competitive advantage and effectiveness, in general, using the so-called "digital footprint" in the management of both external and internal processes. The approach to defining business performance is changing. Operational efficiency is becoming a broader concept and implies the achievement of indicators that ensures an organization has the advantage and contributes to the achievement of the goals. The methods of managing operational efficiency are optimization and digitalization of business processes using modern technologies, innovation and process reengineering, the use of management concepts "Six Sigma", "Lean Manufacturing", kanban systems and unit-economy metrics. The scope of application of the unit economy in the management of digital processes, based on focus metrics for economic efficiency increase by means of the transition to the unit as a business management unit in the digital environment is shown.

Keywords: digital contour, operational efficiency, economic efficiency, unit economics, critical thinking.

1. INTRODUCTION

Making a business in a digital economy imposes a number of requirements on modern organizations, following which they have to adapt in order to maintain a competitive position, keep customers, comply with regulatory requirements and other parameters.

The digital business environment involves the study of a few external factors affecting the efficiency of modern organizations. These factors can have both a positive and negative impact on the business, due to its high degree of volatility.

2. LITERATURE REVIEW

At the stage of the digital economic system shaping, organizations in various sectors have experienced evolutionary periods specific for the external environment current situation. In each individual evolutionary period, there are certain factors of external environment of the

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functioning organizations that affect both external and internal business processes. It is these elements that are decisive for both - the company's business model as a whole and its competitive position, and certain processes, including the specifics and guidelines of interaction with customers, as well as building up a team that ensures the company performance.

Table 1 presents four "types of worlds" that accompanied the evolution and performance of organizations (Netology group blog, 2022). We will highlight the individual evolutionary components and stages of evolutionary transformations.

Table 1. Features and elements of the stages of the external environment

| Stage name | Duration period | Features and elements |
|-------------|-----------------|--|
| SPOD world | until 1980 | Steady Predictable Ordinary Definite |
| VUCA world | since 1980 | Volatility Uncertainty Complexity Ambiguity |
| BANI world | since 2020 | Brittle Anxious Nonlinear Incomprehensible |
| SHIVA world | since 2022 | Split Horrible Inconceivable Vicious Arising |

Table 1 demonstrates that up to 1980 the external environment of organizations' performance was steadier and more sustainable, as well as simple and predictable from the point of view of task setting and making a calculated decision. In such an environment, a company could predict its further development, form a management strategy based on simple, certain business factors, such as, for example, the competitive environment, market structure, set of market participants, the geopolitical and the economic situation, etc.

The next evolutionary stage, which replaced the SPOD period, is characterized by a greater degree of uncertainty and volatility. Thus, it becomes more difficult for organizations to make simple, clear, regulated business decisions and forecasting becomes complex and ambiguous. The terms of operation, the structure of markets and the number of participants is changing, the clearly defined contours of the business infrastructure are changing.

The third evolutionary stage belongs to the BANI period, the main parameter of which is the external environment anxiety increase and, consequently, the risk increase that may arise in the course of managing the organization's performance. This aspect of anxiety also manifests itself in the understanding of instability, that is, a certain fragility of the situation in the external environment, the incomprehensibility of factors influencing the formation of a long-term strategy for the development of the organization, the nonlinearity of decisions made in the business environment.

The current state of the external environment is characterized by the presence of a SHIVA component, which, on the one hand, determines the even greater anxiety of the organization in understanding the general market situation, however, on the other hand, is

aimed at forming a so-called "new", arising world in which modern organizations will continue their development.

As a result, at the present stage of the evolutionary development of the external environment, such conditions should be created which enable participants to determine a set of factors that can have a positive impact on the organization's performance and under which they should adjust and adapt taking into account the requirements of business performance and a set of risks, including digital ones, which will arise under the influence of changing conditions.

Thus, changing the picture of the world, that is, the general state of the external environment of the organizations' performance, especially in the digital economy, has a rather significant impact on the operation of companies in various industries and fields of activity, contributes to the emergence of new risks and opportunities' categories that are inherent in a certain evolutionary stage of the development of the external environment, provides new opportunities for business evolution in new conditions.

In the rapidly changing situation of the external environment, it is furthermore appropriate to highlight the factor of diversification of the competitive environment and the arrival of new, sometimes quite strong market participants within the framework of new business models of organizations.

On the one hand, we are talking about blurring the boundaries and limits of the competitive field in which the organization has been operating for a long time. The arrival of new market participants, such as large digital ecosystems and large digital platforms, compels organizations not just to pay attention to them, but to scrutinize their competitive advantages and detect shortcomings to differentiate from them and achieve the required efficiency level.

According to a study by the McKinsey consulting company (McKinsey, 2020), we can point out that by 2025, about 30% of global GDP may come from various ecosystems. The largest international ecosystems in the modern economic system are GOOGLE, APPLE, AMAZON, ALIBABA, TENCENT and others.

The main specifics and, at the same time, competitive advantages of digital ecosystem models are the concept that digital ecosystems allow you to create partnerships with many companies from different industries, creating a greater value offer to customers.

It should be noted that currently most organizations are already actively exploring the digital environment options, using relevant digital technologies and solutions in order to take a competitive stand in the market and give a quick and adequate response to changing environmental situations.

In the context of global business transformation and increasing struggle for the end-user, one of the main objectives of the organization's management is to ensure operational efficiency by introducing digital technologies and restructuring business processes, improving the manageability of the organization and creating motivational incentives for personnel in the constantly changing environment.

The implementation of digital solutions expands the interpretation of the concept of operational efficiency, proposed by the English economist M. Farrell in 1957 and amended by the concept of operational improvement by J. A. DeFeo. In the classical interpretation, the production effect is suggested to determine by the ratio between the cost of resources and the output of products using the indicator "efficiency index", which is calculated according to the technological indicators of the enterprise (Farrell M. J., 1957). The theory of operational improvement as a measure of efficiency offers an indicator of continuous "breakthroughs", meaning the improvement of the quality of the organization's products, resulting in an increase in revenue and customer loyalty, alongside with loss reduction (Dr. Joseph A DeFeo, 2020). The variety of tasks and models of business operations expands the interpretation of

the concept of operational efficiency, supplementing economic indicators with process management targets. Operational efficiency becomes a broader concept, implies the achievement of qualitative and/or quantitative performance indicators that provide the organization with an advantage and contribute to the achievement of operational and strategic goals by optimizing business processes. A comparison of approaches to determining economic and operational efficiency is presented in Table 2.

Table 2. Operational efficiency criteria

| Comparison criteria | Economic efficiency | Performance efficiency |
|--------------------------|--|---|
| Performance measurement | profitability ratio | achieving the process's KPI |
| Mechanism of achievement | cost reduction; revenue growth; quality improvement; income to expenses ratio | change/transformation of business processes |
| Responsible | head of the organization / project | business-process owner |
| Remuneration | dividends / profit | bonuses and remuneration |

Operational efficiency is ensured by creating an infrastructure of changes aimed at enhancing activities, improving customer experience and raising the quality of products / services, involving personnel and creating an incentive system for external and internal stakeholders of the organization. As an assessment of the effectiveness of operational efficiency management, qualitative and quantitative indicators can be used, which are not unified, but are developed by the enterprise independently, correlating with the objectives of the activity, the availability of time and financial resources, the efficiency of the personnel incentive system. In general, the following indicators can be used for evaluation: improving process metrics (achieving KPIs), increasing customer loyalty, optimizing customer experience, eliminating resource losses, minimizing operational risks, and others.

A prerequisite for the operational efficiency growth is the achievement of at least the fourth or fifth level of maturity (out of five possible) of the enterprise's business processes. Efficiency growth is ensured through continuous improvement of business processes, increasing their adaptability to changing conditions, and the development of a KPI system for evaluating the result. Optimization and digitalization of business processes using modern technologies and artificial intelligence capabilities, innovation and process reengineering using the concepts of process management "Six Sigma", "Lean Manufacturing", kanban systems and others can be viewed as tools of managing operational efficiency. According to research data, about 42% of managers of Russian enterprises consider the growth of operational efficiency as one of the main business objectives, while 47% of respondents talk about economic efficiency and the target indicator of cost reduction, while about 31% of managers are focused on the modernization of business processes with the involvement of new competencies (PWC, 2021).

One of these new competencies is business process management based on unit-economics metrics. Unit economics is an approach to assessing the financial performance of a business at the level of a unit of a product or service. It allows you to estimate how much money a company earns on each unit of a product or service, as well as how much it costs to produce each unit of a product or service. In a rapidly changing world, a business unit is one of the most important indicators of the economic success of any business. It reflects the profit earned from a single product, service, or group of products and services. Unit business can be used to assess the economic success of a business in a digital environment, as well as as a

metric of the economic and operational efficiency of an organization's business processes. For example, you can evaluate the effectiveness of an advertising campaign based on unit economics using process analytics and machine learning. Analytics helps to evaluate the effectiveness of each advertising campaign, and machine learning helps to predict which advertising campaigns will be more efficient in the future. Thus, organizations can use unit economics to calculate the effectiveness of advertising campaigns performed with use of digital tools.

In the context of the digital transformation of the organization's business processes, the unit economy can become one of the tools for effective business management. For example, when managing an online store, it is possible to use unit-economy tools to determine the profitability of each product or product category. Unit-economy tools can be used to determine the effectiveness of digital marketing campaigns. When launching an advertising campaign on the Internet, metrics allow you to estimate the cost of a click on advertising (CPC), revenue from each click (cost per action, or CPA). The analysis of information will optimize marketing costs, as well as determine the most effective product promotion channels. It should be emphasized that the main condition for the use of unit-economy tools in digital business management is the collection and analysis of a significant amount of data about all aspects of the organization's activities, accounting and management accounting data using Big Data technologies.

The work of John Koers (John Koers, 2014) reveals the possibilities of using unit-economics tools in a digital environment, ways to optimize the company's performance based on the metrics obtained, including the development of an optimal pricing strategy, cost management for advertising and marketing, and optimization of production processes. Based on the provisions considered by the author, it is possible to formulate a number of practical recommendations on the use of unit-economics metrics in digital business management in order to increase the economic and operational efficiency of activities:

- using metrics such as Lifetime Value (LTV), Customer Acquisition Cost (CAC) and Average Revenue per User (ARPU) to evaluate business performance in a digital environment;
- development of an optimal pricing strategy that will allow the business to maximize revenue and profit;
- optimization of marketing and advertising costs, including choosing the most effective promotion channels and managing the cost of attracting customers;
- automation and digitalization of production business processes, including inventory management, reduction of delivery costs and improvement of product quality, procurement management, recruitment;
- customer service processes' optimization, including the service quality improvement, improving customer experience, reducing customer support costs.

3. DISCUSSION OF RESULTS

Unit-economics tools enhancement is a key factor for business success in the digital environment, effective use of metrics and optimization strategies can help businesses achieve high profit and growth rates. One of the main tasks is to use, apply and further refine analytical tools and software for data collection and analysis, such as Google Analytics, Mixpanel or Kissmetrics. These products show good results in the procedures for tracking customer experience, user behavior on a website or in an application in order to further improve the business processes of user interaction, increase conversion rates, and achieve

operational efficiency. Existing tools also allow you to set up automatic reports and dashboards for monitoring key indicators in real time and use this information to make decisions based on unit-economics metrics to improve the efficiency of the business as a whole. Unit-economics tools also allow digital business to audit key indicators, determine a set of key metrics, a focus metric, help assess the state of a digital product, set up basic metrics for measuring efficiency and performance in a competitive environment under the influence of changing factors of the SHIVA world.

New business environment in the digital economy affects the approaches to the human resources and team management of the organization. Of particular relevance in the building of efficient, also digital, teams are such qualities of employees as adaptability, developed self-management skills, especially in demand in the distant work mode, a high level of emotional intelligence, cognitive flexibility (i.e. the ability to think in several paradigms simultaneously), etc.

The World business Forum's "Future of Jobs 2020" report lists skills whose significance will increase by 2025. According to the results of the survey, the group of skills "Critical thinking and data analysis" will be the most in demand in the coming years (WBF, 2020).

4. CONCLUSION

The development of critical thinking skills' issue is that it's an interdisciplinary field amalgamating philosophy, logic, psychology, and pedagogics. It takes a lot of time for adults to develop critical thinking skills, which often contradicts the interests of employers who are not always ready to invest in human resources without seeing quick real results. Moreover, there is currently a lack of psychometric techniques that allow for a quick and qualitative assessment of critical thinking skills. These factors challenge employers to assess and develop the competencies of employees, which are difficult to implement in a rapidly changing business environment.

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SHORT REVIEW OF METHODS FOR QUALITY IMPROVEMENT IN PRODUCTION SYSTEMS

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Abstract: A large number of competitors, high costs and a lack of resources today represent a major challenge for the smooth functioning of business/production systems. In order for organizations to survive and develop in complex business conditions, constant improvement of all segments of production systems is necessary. The quality of products that customers demand is constantly changing, and the requirements for the level of quality are getting higher and higher. On the other hand, the quality of the final products will largely depend on the production processes, human and material resources used in the production process. Successful companies will be those that adapt the fastest to changes in the environment, improving their products or services and constantly improving the knowledge and skills of employees. In this sense, numerous and different methods for improving quality are applied in the literature and practice. Some of the most frequently used methods such as total quality management, six sigma, kaizen and lean methodology will be briefly presented in this paper.

Keywords: quality, TQM, six sigma, kaizen

1. INTRODUCTION

Modern business conditions are very difficult and demanding. Supply chain problems, labor and resource shortages, inflation and numerous conflicts are affecting business in all parts of the world. In addition, there is a constant need for innovative products to meet consumer expectations. In order for production systems to survive in such complex conditions, it is necessary to constantly work on improving efficiency and productivity, reducing production costs, developing new technologies, shortening the flow through production while improving product quality.

Performance improvement is an integral part of business strategy of numerous companies in production and service sector (Flifel et al., 2017). Numerous methods for improving quality have been developed and are used in practice. Some of them such as Total Quality Management, Six Sigma, Kaizen, Lean methodology will be briefly described in this paper.

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2. QUALITY IMPROVEMENT METHODS

2.1. Total quality management

Total quality, according to (Oakland, 1993), is "a way of managing business processes to ensure complete customer satisfaction at every level." It is an approach that leads to increased competitiveness, effectiveness and flexibility of the entire enterprise.

According to (Stevenson, 1993), total quality is "a philosophy that involves the involvement of everyone in the organization in achieving quality. It is aimed both at customers and their satisfaction, as well as at suppliers". The goal of that philosophy is to meet customer expectations or even exceed those expectations with the purchased product or service.

Avelini (1998) views total quality management (TQM) as "a system of improving, increasing flexibility, effectiveness and efficiency of business. TQM tries to ensure ie. to create conditions for all employees to work together to achieve one goal as efficiently and effectively as possible: to produce a product and provide a service when, where and as the customer and consumer want and expect, the first time and every subsequent time".

It is a system that is completely oriented towards the market, that is, it is a process that starts with the customer and ends with the customer. The difference between the TQM system and quality control is that quality control focuses on identifying errors, while TQM takes preventive measures to prevent errors from occurring.

To be successful in implementing total quality management, an organization must concentrate on eight key elements (Feigenbaum, 2003):

- 1) Integrity represents honesty, morality, values and adherence to facts and honesty;
- 2) Ethics is a discipline that governs good or bad in every situation. There are two types of ethics: organizational ethics, which establish business codes of conduct, which every employee is obliged to follow, and individual ethics, which include personal codes, what is right and what is wrong;
- 3) Trust is a product of integrity and ethics. Without trust, a total quality management framework would be impossible to build. Trust requires the full participation of all members of the organization, their commitment and enables the decision-making process related to continuous improvements. Trust is necessary to ensure customer satisfaction;
- 4) Training is a critical element in the organization in order for employees to reach high productivity levels in their areas of activity. The training that must be provided to employees primarily includes interpersonal relations, teamwork, problem solving, decision-making, analysis of work done and continuous improvements, economic aspects of work and technical knowledge;
- 5) Teamwork is an extremely important element of total quality control. With the use of teams, the organization benefits from faster and better problem solving and more effective implementation of potential solutions. Teamwork also provides constant improvements in processes and enables more pleasant work for each employee, taking into account the synergistic effect created in teamwork;
- 6) Leadership represents the most important element of total quality management and requires the leadership to provide an inspiring vision and to lead the organization in strategically optimal directions, which are understood by all members of the organization. For total quality management, in order to be successful, leadership in all segments of the organization is necessary, for each member of the organization to

believe in the goals, to be committed to them through daily activities and to constantly improve them;

- 7) Communication represents that element that connects all other elements together as a vital chain between all elements of total quality management. Communication, in its essence, represents the understanding of ideas between the one who puts them forward and the one who absorbs them. The success of the entire total quality management depends on the communication between all members of the organization, suppliers and customers;
- 8) Recognition is the last and final element in the entire total quality management system. Recognition comes for achievements by teams or individuals in the organization. Discovering and recognizing the factors that contribute to recognition is the most important process in this phase. When employees are recognized, huge changes can be recognized in self-actualization, productivity, quality, amount of effort put in to complete certain tasks.

The TQM philosophy is based on three basic principles:

1. **Doing the right things** - this is the basic guideline of strategic management and belongs to the responsibilities of top management. It is necessary to determine the vision, mission, strategic goals of the company and the necessary actions for the realization of those goals.
2. **Doing things right the first time** - refer to efficiency, which is the task of operations management.
3. **Doing things better** – none system is perfect. Errors can occur but there is a chance to improve process and remove errors. When the error is corrected, process should be standardized, in order to prevent the same problem from appearing again.

2.2. Six sigma

The methodology *Six Sigma* was developed and applied for the first time in Motorola Company in 1982 (Antony, 2002). Six sigma is now a widely used and well accepted method which can eliminate root causes of the unwanted variations and provides good control of the process. The main purpose of the Six Sigma concept is to measure the variability of business processes. Six Sigma serves to measure the level of quality because it also serves as a standard that maintains the level of control over any process within the limits set for that process (McCarty & Gupta, 2005). In the processes that exist in production systems, it is necessary to reduce wastage, because this results in a reduced time cycle of the process, better quality and cheaper products and services. Six Sigma is a multidimensional structured approach which has proven to be effective in process improvement, minimalisation of flaws, reduction of process variability, cost reduction, increase in customer satisfaction and profit (Flifel, 2017).

To improve the process, the following are used:

- 1) **Define Measure Analyze Improve Control (DMAIC)** - Most widely used approach of the six sigma. It is a five-step model adopted by organisations to improve their processes and capacities.
- 2) **Define Measure Analyze Design Verify (DMADV)** - a method used when a process or product does not exist and needs to be developed.

2.3. KAIZEN

Kaizen is a combination of two Japanese words: kai, which means change or modification, and zen, which means good, so it can be said that Kaizen can be translated as constant and continuous improvement, which is the core of the Kaizen philosophy. Kaizen originated in Japan in the 1940s of the last century. The major problems after the war in all segments and the limited resources that were available required the improvement of the approach to planning and work in order to increase efficiency and reduce unnecessary costs which led to the development of Kaizen. This philosophy, which originated in Japan, is successfully applied today in many companies around the world.

The implementation of Kaizen does not require large financial investments, but the dedication and participation of all employees in the system. The implementation of Kaizen implies compliance with the following steps (Vojteški Kljenak et al., 2011):

1. Reject conventional old ideas.
2. Thinking in terms of how to do something, not in terms of why it cannot be done.
3. Do not make exceptions and do not look for excuses and justifications. Start by asking questions about current habits, practices and customs.
4. Not to seek, that is, not to demand, perfection.
5. If you make a mistake, don't hide it, but try to correct it immediately, and if necessary, ask for help from your colleagues.
6. Don't spend money for Kaizen, you should think.
7. Wisdom surfaces in difficult situations.
8. Seek the cause of all problems by asking the question "why" five times.
9. Seek the opinion of ten different people rather than just one.
10. Kaizen ideas are endless

Kaizen implies continuous improvement, so methodology can be described by the PDCA cycle (plan, do, check, act):

- **Plan** - It is necessary to identify the specific elements that need to be changed. Then, create a change plan, define the steps that must be taken, and anticipate the results of those changes.
- **Do** - Plan execution in a test environment. The change should be tested on a small sample, or on a reduced scale, and the result of the proposed change examined. Small steps are taken under limited conditions. This step primarily represents an attempt, that is, testing the change.
- **Check** – Examining the test results. If the change had a positive impact and improved the business process, it is applied to the business. If the change did not lead to the desired results, you should try again with someone else.
- **Act** – Application of change to the entire business. Introducing change in business.



Figure 1. PDCA cycle

2.4. Lean methodology

Lean is a production philosophy that, when implemented, shortens the time from the customer's order to the delivery of the finished product, eliminating all sources of waste, i.e. losses in the production process.

According (Slack et al., 2013) lean methodology is defined as synchronization in which the elements that are important for the provision of services and the production of products pass through the system in a synchronized manner, and thus the customer is always provided with exactly what he wants, the service or product is of the highest quality, and the customer is provided with exactly the quantity that the customer wants at the time when the customer wants and in the place where the customer wants.

According to (Stevenson, 1993) characteristics found in Lean systems are:

- 1) eliminating loss,
- 2) continuous improvement,
- 3) teamwork,
- 4) working in cells,
- 5) visual product control,
- 6) high product/service quality,
- 7) reduce stocks to a minimum level,
- 8) pull system,
- 9) quick change of tools (flexible equipment),
- 10) Lean culture,
- 11) smaller amount of production

Lean methodology consists of the application of methods, tools and philosophies, and some of them are:

- Just in time (JIT) - production of products in the time of customer request arrival and elimination of all warehouse operations (both internal and external warehouse operations);
- Continuous production - production without internal intermediate storage operations;
- Pull system (eng. Pull system) - using kanban containers in the production process, in order to optimize stocks;
- Takt time - the time period required for the production of products, in order to satisfy the needs of end customers and to eliminate any kind of stock and intermediate storage;
- Heijunka – after calculating the time required for production to meet customer needs (production cycle), Heijunka gives an answer in which order to produce products in order to fulfill the production plan according to customer requirements;
- Jidoka - production automation:
 - Poka yoka – prevention of errors in all stages of production;
 - Andon - detection and elimination of errors or malfunctions during production;
- Smed - tool change in less than 10 minutes;
- 5S method – organization of workplaces according to the production plan.

3. CONCLUSION

Successful business and competitiveness in today's demanding market can only be achieved with constant improvements in the quality of processes and products. The aforementioned improvements are unthinkable without the application of appropriate methods. Some of them are presented in this paper (TQM, six sigma, kaizen, lean). Each of the mentioned methods can greatly contribute to the improvement of quality in production systems.

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NAVIGATING THE AI REVOLUTION: IMPLICATIONS AND TRANSFORMATIONS IN THE FUTURE WORKPLACE

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Abstract: Artificial Intelligence (AI) has the potential to revolutionise the workplace, impacting various aspects of employment, productivity, and the overall work environment. This paper conducts a literature review to explore the potential consequences of AI on the workplace, assessing both the positive and negative implications. The findings suggest that AI will significantly change the job market, necessitating re-evaluating employee skill sets and organisational structures. All the literature in the past decade, prior to the end of 2022, suggests that AI would have a moderate effect on the workplace. Nevertheless, new sources find that AI would have a severe impact on the workplace and deeply on careers and organisations.

Keywords: Artificial Intelligence, Workplace, Employment, Automation, Future of Work, large language models (LLMs)

1. INTRODUCTION

The emergence of Artificial Intelligence (AI) has been a topic of interest and concern for researchers, policymakers, and industry leaders. AI technologies have advanced significantly over the past decade, and their applications now span various domains, from manufacturing and logistics to customer service and healthcare. As AI becomes more ubiquitous, it is essential to consider the potential impact of these technologies on the workplace. This paper examines how AI is likely to influence the workplace, focusing on job displacement, new job creation, required skills changes, and organisational structure shifts.

Consensus holds that AI is a subfield of IT and CS that primarily concerns the design and projection of intelligent services (Ndrejaj & Ali, 2022) with consequential societal and economic effects (Saghiri et al., 2022). The term "artificial intelligence" (AI) first appeared in print in 1956; today, it refers to a field of study that attempts to understand and model human-like intellect via computers. Boucher (Boucher, 2020) defines AI as an example of a software that exhibits intelligent behaviour by monitoring its environment and taking appropriate action when necessary.

Artificial intelligence (AI) has emerged as one of the most promising—and potentially disruptive—technologies of recent years (Yigitcanlar, 2020). This is a hotly contested area of study in many academic disciplines, including engineering, science, education, health, and economics. Businesses can increase income and cut costs by employing AI-based systems

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with access to extensive management, accounting, finance, human resources, marketing, and sales database. As a result, AI and the self-learning capabilities of AI-enabled algorithms lead to more creativity, better process or resource management, and higher-quality output (Cioffi, 2020).

Eloundou et al. (2023) looked into how LLMs like Generative Pre-trained Transformers (GPTs) might affect the U.S. job market by focusing on the increased functionality of LLM-powered software in comparison to standalone LLMs. According to the data, LLMs may have an impact on at least 10% of the jobs in the United States' employment, and on at least 50% of the jobs in that sector for about 19% of the workforce. And it's not only higher-income employment that can be more vulnerable to LLM skills and software powered by LLM; the implications are widespread. These effects are not restricted to sectors where productivity has increased in recent years.

According to the findings, around 15% of all worker tasks in the United States could be accomplished substantially faster while maintaining the same level of quality if workers had access to an LLM. When using applications and resources backed by LLM, this figure rises to between 47% and 56%. The study's authors draw the conclusion that LLMs like GPTs share traits with general-purpose technologies, which could have far-reaching effects on the economy, society, and government (Eloundou et al., 2023).

2. METHOD

A comprehensive literature review was conducted to examine the effects of AI on the workplace. Research articles, whitepapers, and industry reports published within the past decade were reviewed to ensure relevance to the current state of AI technologies. The review focused on identifying key trends and insights related to AI's impact on the job market, skill requirements, and organisational structures. In addition, 20 selected articles and studies published in the last decade were analysed.

3. RESULTS

The literature review revealed several key findings regarding the influence of AI on the workplace. First, AI has the potential to automate various tasks, which may result in job displacement across numerous industries (Arntz et al., 2016). However, AI is also expected to create new job opportunities, particularly in sectors focused on AI development, maintenance, and application (Bessen, 2019).

As the workplace evolves, there is a growing demand for technical skills, such as programming and data analysis, due to the increasing use of AI technologies (Chui et al., 2016). In addition, soft skills, such as adaptability, critical thinking, and emotional intelligence, are also becoming more important (Brynjolfsson & McAfee, 2014). This shift in required skills highlights the need for organisations to invest in ongoing training and development to ensure their workforce remains competitive (World Economic Forum, 2018).

AI can potentially drive changes in organisational structures, with companies adopting more agile and flexible approaches to accommodate AI integration (Daugherty & Wilson, 2018). Furthermore, AI can facilitate collaboration and communication across departments, leading to more efficient decision-making processes (Manyika et al., 2017).

These results indicate that AI will have positive and negative consequences for the workplace, necessitating a proactive response from organisations and policymakers to mitigate potential challenges and capitalise on emerging opportunities (Kaplan & Haenlein, 2019). By embracing AI technologies, investing in workforce development, and fostering

collaboration between stakeholders, the transition to an AI-driven workplace can be navigated successfully (Bughin et al., 2018). Future research should continue to explore the various ways AI influences the workplace, informing decisions and strategies that promote a successful transition into the future of work (Dell Technologies, 2020).

As the influence of AI on the workplace becomes more pronounced, organisations and policymakers must consider the broader societal implications. For instance, the potential for increased income inequality due to AI-driven job displacement could exacerbate existing social divides (Autor, 2015). To address this issue, it is essential to design and implement policies that promote equal access to education and training opportunities, ensuring that individuals from diverse backgrounds can acquire the skills necessary to thrive in an AI-driven job market (Frey & Osborne, 2017).

Integrating AI into the workplace raises ethical concerns like privacy, data security, and algorithmic bias (Jobin et al., 2019). Organisations must develop guidelines and best practices for the responsible use of AI technologies, ensuring that employee rights are respected and that AI systems do not perpetuate existing inequalities (Crawford & Calo, 2016).

Collaboration between the public and private sectors is also essential in fostering a successful transition to an AI-driven workplace (Susskind & Susskind, 2015). Public-private partnerships can facilitate the development of innovative training programs, infrastructure improvements, and regulatory frameworks that support the responsible integration of AI into various industries (Makridakis, 2017).

In recent years, large language models (LLMs) have made significant strides in AI research, excelling in various applications such as translation, classification, creative writing, and code generation (Radford et al., 2018; Brown et al., 2020). Increased model parameters drive this progress, as more extensive training data and improved training configurations. Researchers have enhanced LLMs' steerability, reliability, and utility, making them more user-friendly and practical. LLMs show potential in programming and controlling other digital tools, suggesting they may eventually execute any task typically performed on a computer.

While LLMs have been deployed as modular specialists, it is crucial to see them as building blocks for additional tools. Despite limitations, LLMs are increasingly integrated into specialized applications, paving the way for broader adoption. Complementary technologies, including tooling, software, or human-in-the-loop systems, can address LLMs' shortcomings, such as factual inaccuracies or biases. A positive feedback loop may emerge as LLMs help build the tooling that enhances their usefulness and usability across various contexts, lowering costs and accelerating LLM adoption. However, these trends also bring serious risks that must be addressed.

The economic impacts of automation technologies have been widely studied, with research showing that technological progress increases demand for skilled workers over unskilled workers, leading to skill-biased technological change (Acemoglu & Autor, 2011). Workers in routine and repetitive tasks are more likely to be displaced by technology-driven advancements (Levy & Murnane, 2003). Automation technologies have led to wage inequality, particularly for workers specializing in routine tasks. Various approaches have been employed to estimate the overlap between AI capabilities and tasks performed by workers, showing that AI tools have diversified exposure at the task level within occupations. General-purpose technologies (GPTs) have far-reaching consequences and require extensive co-invention to realize their full potential. Many studies on machine learning technologies focus on systems-level adoption, as organizational systems may need redesigning to effectively take advantage of AI advancements (Brynjolfsson & McAfee, 2014). However,

appropriately designed systems can yield considerable business value and improve firm performance.

In recently conducted study researchers Eloundou and associates used the O*NET database, which contains information on various occupations and their tasks and detailed work activities, specifically 1,061 occupations, 19,265 tasks, where each task has a "task description" and a corresponding occupation, and 2,087 detailed work activities. They used the database to analyze the impact of GPTs on various occupations and tasks performed within those occupations. The results of study conducted by Eloundou and associates indicate that based on their task-level capabilities, GPTs have the potential to significantly impact a diverse range of occupations in the US economy, demonstrating a key characteristic of general-purpose technologies. In the following sections, we discuss the results in various roles and wage structures. Additional results on the relative exposure of industries in the US.

This study explains that some occupations are more exposed to the impact of GPTs and GPT-powered software in terms of saving the time needed to perform their tasks. However, it is important to note that this does not mean that this technology will completely replace human labor in these occupations. Exposure here is measured by reducing the time needed to perform tasks by at least 50%.

Table 1 shows occupations with the highest exposure according to each measurement. The final row lists the occupations with the highest σ^2 value, indicating the greatest variability in vulnerability prediction. Exposure percentages indicate the share of tasks within an occupation that are exposed to GPTs (α) or GPT-powered software (β and ζ), where exposure is defined as reducing the time it takes to complete the task by at least 50% (see exposure rubric A.1). As such, occupations listed in this table are those where we estimate that GPTs and GPT-powered software can save workers a significant amount of time completing a large share of their tasks, but it does not necessarily suggest that their tasks can be fully automated by these technologies (Eloundou et al., 2023).

Table 1. Occupations with the highest exposure according to each measurement (Eloundou et al., 2023)

| Group | Occupations with highest exposure | % Exposure |
|---|--|------------|
| Human α | Interpreters and Translators | 76.5 |
| | Survey Researchers | 75.0 |
| | Poets, Lyricists and Creative Writers | 68.8 |
| | Animal Scientists | 66.7 |
| | Public Relations Specialists | 66.7 |
| Human β | Survey Researchers | 84.4 |
| | Writers and Authors | 82.5 |
| | Interpreters and Translators | 82.4 |
| | Public Relations Specialists | 80.6 |
| | Animal Scientists | 77.8 |
| Human ζ | Mathematicians | 100.0 |
| | Tax Preparers | 100.0 |
| | Financial Quantitative Analysts | 100.0 |
| | Writers and Authors | 100.0 |
| | Web and Digital Interface Designers | 100.0 |
| | <i>Humans labeled 15 occupations as "fully exposed."</i> | |
| Model α | Mathematicians | 100.0 |
| | Correspondence Clerks | 95.2 |
| | Blockchain Engineers | 94.1 |
| | Court Reporters and Simultaneous Captioners | 92.9 |
| | Proofreaders and Copy Markers | 90.9 |
| Model β | Mathematicians | 100.0 |
| | Blockchain Engineers | 97.1 |
| | Court Reporters and Simultaneous Captioners | 96.4 |
| | Proofreaders and Copy Markers | 95.5 |
| | Correspondence Clerks | 95.2 |
| Model ζ | Accountants and Auditors | 100.0 |
| | News Analysts, Reporters, and Journalists | 100.0 |
| | Legal Secretaries and Administrative Assistants | 100.0 |
| | Clinical Data Managers | 100.0 |
| | Climate Change Policy Analysts | 100.0 |
| <i>The model labeled 86 occupations as "fully exposed."</i> | | |
| Highest variance | Search Marketing Strategists | 14.5 |
| | Graphic Designers | 13.4 |
| | Investment Fund Managers | 13.0 |
| | Financial Managers | 13.0 |
| | Insurance Appraisers, Auto Damage | 12.6 |

4. IMPLICATIONS AND RECOMMENDATIONS

Based on the literature review results, several implications and recommendations can be derived for organisations, employees, and policymakers to address the challenges and opportunities presented by AI in the workplace.

Embrace AI and Invest in Research and Development: Organizations should embrace the potential of AI technologies and invest in research and development to stay competitive (Brynjolfsson et al., 2017). In addition, by identifying areas where AI can be implemented to improve efficiency, reduce costs, or enhance customer experiences, organisations can capitalise on the benefits of AI (Chui et al., 2016).

Prioritise Workforce Reskilling and Upskilling: Organizations and employees should prioritise reskilling and upskilling to adapt to the changing job market (World Economic Forum, 2018). As the demand for technical and soft skills increases, it is crucial for employees to continually develop their skills through training programs and lifelong learning (PWC, 2017). In addition, employers should invest in employee development initiatives and encourage a culture of learning within the organisation (Accenture, 2019).

Adapt Organizational Structures: Organizations need to reconsider their structures to accommodate the integration of AI technologies (Daugherty & Wilson, 2018). More agile and flexible structures can enable companies to respond to rapid changes in the market and ensure that AI systems are used effectively (Tushman & Nadler, 1978).

Develop Policies and Regulations: Policymakers should develop policies and regulations that promote responsible AI development and use, ensuring that the benefits of AI are distributed fairly across society (Kaplan & Haenlein, 2019). This includes policies that encourage innovation, support worker retraining programs, and protect workers' rights in the age of automation (Arntz et al., 2016).

Foster Collaboration between Stakeholders: Collaboration between stakeholders, including industry leaders, policymakers, educators, and employees, is essential to ensure a smooth transition into the AI-driven workplace (Susskind & Susskind, 2015). By fostering dialogue and cooperation, stakeholders can work together to develop strategies that address the challenges and opportunities presented by AI technologies (Bughin et al., 2018).

In conclusion, the influence of AI on the workplace presents challenges and opportunities. Organisations, employees, and policymakers must work together to address these issues proactively, ensuring that the benefits of AI are harnessed effectively while minimising potential negative consequences (Dell Technologies, 2020). By embracing AI technologies, investing in workforce development, and fostering collaboration between stakeholders, the transition to an AI-driven workplace can be navigated successfully.

5. DISCUSSION

One of the most significant concerns surrounding AI in the workplace is the potential for job displacement. As AI systems become more capable of performing various tasks, they may replace human workers in specific roles, leading to unemployment (Frey & Osborne, 2017). However, the literature also suggests that AI could create new jobs, as these technologies open up new avenues for innovation and demand for skilled workers to manage and maintain AI systems (Bessen, 2019).

As AI becomes more prevalent in the workplace, the employees' required skill sets will likely evolve. The literature suggests that there will be an increased demand for technical skills, such as programming and data analysis, and soft skills, such as adaptability and emotional intelligence (Brynjolfsson & McAfee, 2014). Employees must develop their skills to stay relevant in the changing job market. Organisations must invest in ongoing training and development to ensure their workforce remains competitive (World Economic Forum, 2018).

AI technologies have the potential to reshape organisational structures, enabling more efficient and streamlined operations (Daugherty & Wilson, 2018). The literature suggests that companies may need to adopt more agile and flexible structures to accommodate AI systems and respond to rapid changes in the market (Tushman & Nadler, 1978). Additionally, AI has the potential to facilitate collaboration and communication across departments, as well as streamline decision-making processes (Manyika et al., 2017).

While the literature review provides valuable insights into the influence of AI on the workplace, it also highlights several areas that warrant further investigation. Longitudinal studies can provide a better understanding of the long-term effects of AI on job displacement and creation across different industries and regions, allowing for more accurate predictions of the job market landscape and aiding in the development of appropriate policies and interventions (Arntz et al., 2016).

Research focusing on specific industries or job roles can provide a more nuanced understanding of how AI will influence different sectors and professions, helping

organisations and employees better prepare for changes in their respective fields (Chui et al., 2016). As AI becomes more integrated into the workplace, it is essential to consider the ethical implications of these technologies. Future research should investigate issues such as privacy, data security, algorithmic bias, and the potential for AI to perpetuate existing inequalities (Jobin et al., 2019).

Identifying the barriers and facilitators to AI adoption in the workplace can inform strategies to encourage the responsible and effective integration of AI technologies. This may include examining organisational culture, leadership, infrastructure, and regulatory environments (Dell Technologies, 2020). As organisations invest in reskilling and upskilling initiatives, evaluating the effectiveness of these programs in preparing employees for the AI-driven workplace is crucial. Future research should examine the success of various training programs in developing relevant skills and improving job prospects for workers (PWC, 2017).

By exploring these research directions, the academic and professional communities can develop a more comprehensive understanding of AI's influence on the workplace, paving the way for informed decisions, policies, and strategies that promote a successful transition into the future of work.

6. CONCLUSION

In conclusion, the influence of AI on the workplace is multifaceted and complex. While there are concerns about job displacement, the literature suggests that AI could also create new job opportunities and necessitate re-evaluating the skills required in the workforce. Organisations must adapt to these changes, investing in employee training and development and reconsidering their organisational structures. Further research is needed to understand the long-term implications of AI on the workplace and to develop policies and strategies that ensure a painless transition into the future of work.

Increased economic inequity and disruption of the labour market have been connected to the advent of automation technologies like LLMs, highlighting the importance of societal and regulatory readiness. While it is beyond the scope of this article to make concrete policy suggestions, prior research has pointed to potential modifications to US education, workforce development, and social safety net programmes. This research is limited because it was conducted just in the United States. Patterns of GPT adoption across industries and professions, as well as the capabilities of state-of-the-art models pertaining to worker activities, should be investigated in future studies. Finally, this research shows the generalizable potential of GPTs and considers the consequences for US workers, as well as the potential impact of LLMs on the US economy. In order for policymakers and stakeholders to make educated judgements about AI's role in the future of work, more study is needed to explore the broader implications of GPT breakthroughs, including as their impact on job quality, inequality, skill development, and other outcomes.

6.1. Limitations and Further Research

Despite the valuable insights provided in this article, there are certain limitations that should be acknowledged, and these limitations give rise to opportunities for further research.

- **Scope of the literature review:** The literature review conducted in this article focuses on a limited number of sources. A more comprehensive review, including a broader range of publications and perspectives, could yield a more nuanced understanding of the impact of AI on the workplace.

- **Generalizability of findings:** The findings in this article are primarily derived from studies conducted in developed countries, which may limit their applicability to other contexts. Further research should explore the influence of AI on the workplace in developing countries, as well as investigate the impact of cultural and regional factors on AI adoption and its consequences.
- **Rapidly evolving AI landscape:** Given the rapid pace of AI development, the findings of this article may become outdated quickly. Continuous research and updates are necessary to stay abreast of the latest advancements in AI and their implications for the workplace.
- **Industry-specific analyses:** This article provides a general overview of the impact of AI on the workplace. However, the effects of AI integration may vary significantly across different industries. Therefore, further research should focus on AI's specific challenges and opportunities in various sectors, such as healthcare, manufacturing, and finance.
- **Longitudinal studies:** Most of the studies cited in this article are cross-sectional, which limits the ability to draw causal inferences and assess long-term effects. Longitudinal studies can provide deeper insights into the long-term consequences of AI integration in the workplace and inform the development of effective policies and interventions.
- **Ethical considerations:** While this article briefly touches upon the ethical implications of AI in the workplace, further research is needed to explore these issues in greater depth. This could include investigations into the ethical responsibilities of organisations and policymakers and the development of guidelines and best practices for the responsible use of AI technologies.

By addressing these limitations and conducting further research in the areas outlined above, researchers can contribute to a more comprehensive understanding of the impact of AI on the workplace, ultimately supporting informed decision-making and the development of effective strategies for navigating the AI-driven future of work.

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USE OF GEOGRAPHICAL DATA BANKS IN TOURISM

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Abstract: The current economic situation dictates new requirements for various fields of activity. After the 2020 pandemic, the process of digitalization of society has accelerated. Industry 4.0 has affected the tourism sector, automating and introducing new technologies, thereby changing the provision of information. The digital nature of tourism has launched the creation of the Tourism 4.0 platform. The development of a new generation is primarily associated with a set of various information technologies. Their use in tourism is also due to the fact that the scope has a large amount of information and needs to be systematized and information consumption. To store and structure a large amount of information, it makes sense to create and use geographic banks. The use of statistical data of banks of a high degree of various categories of consumers in digital consumption, where the formation of a tourist product of increased concentration is possible. The article deals with statistical data on banks, the structure and scope of their application. The author also uses the statistical data of the bank to create the prestige of the portal, for artificial intelligence and application when detecting chat bots. The use of the proposed technologies provides interaction with consumers, as well as improves the high quality of the export of the tourism product.

Keywords: tourism, geographic data bank, geographic information systems, neural networks, chat bots

1. INTRODUCTION

Currently, there is an active digitalization of society and the use of digital technologies is becoming an integral part of life. Consumers are gradually adopting new technologies that greatly simplify and expand the consumption of services. The policy of the state is also aimed at increasing the digital literacy of the population, as this will allow the development and promotion of national programs (Vishnevskaya, 2019). The transformation of the tourism industry allows the implementation of new directions and new ideas that will improve and improve the quality of services provided. The need of recreants to receive new impressions and emotions requires the introduction of various modern technologies from the sphere. The digitalization of the tourism sector involves the use of all modern tools, such as portals, chatbots, tourist marketplaces, augmented reality technologies, artificial intelligence and other popular services to meet consumer demand (Bogomazova & Klimova, 2022).

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1.1. Methods and organization of the study

The tourism sector has long been a promising area for research, since attracting recreants to certain territories allows developing the regional economy and attracting additional investment. People's need for rest exists constantly, therefore, there is a need for tourism and the search for the best places that can satisfy human needs. The need to develop the tourism sector is due to the fact that this area is able to develop the infrastructure and transport of visited places, which will favorably affect not only the recreants, but also the local population. The tourism sector creates a sufficient number of jobs, which also favorably affects the economic situation of the region and increases the national income. The 2020 pandemic set new trends in tourism, as interactive tours, augmented reality tours began to actively develop, and the format for selecting tours and bookings also moved online. In this paper, an analysis of the available modern technologies is carried out, a data bank layout is built in the MC Access program.

1.2. Literature Review

Considering research in the field of information technology in tourism, it is worth highlighting the works of Vishnevskaya E.V., Chernova M.A., Turdieva G.S., Shoimov A.S., Kireeva Yu.A., Shpilman V.I. Works in the field of the formation and significance of geographical data banks of such authors as Makarov V.Z., Chumachenko A.N., Demin A.M., Gusev V.A., Fedorov A.V., Volkov Yu.V., Danilov V.A., Pankratiev A.S., Sliva E.A., Rubtsov V.A., Rozhko M.V.

Recently, there has been an active development of digital technologies in the world, which affect all spheres of human activity. These technologies are actively used for the development of urban space and a more complete integration of the tourist into the city environment. This trend allows tourists to independently plan their trips, and the integration of artificial intelligence in this area will allow the formation of tours based on the individual needs of consumers.

1.3. Research results

Digitalization of the tourism industry is the process of introducing digital technologies into the tourism industry in order to improve and accelerate the processes of booking, paying, selling, servicing and organizing tourism services, as well as improving the quality of services for tourists and ensuring their safety.

The main tools for digitalization of the tourism sector are:

- electronic platforms for booking and paying for tourist services;
- mobile applications for searching and booking hotels, air tickets, transport and excursions;
- the use of big data (Big Data) to analyze trends and provide personalized information to tourists;
- Internet of things (IoT) for monitoring and managing tourist facilities, hotels, transport and equipment;
- artificial intelligence and machine learning to improve the efficiency of travel companies and improve tourist services;
- the use of virtual and augmented reality to create more efficient systems for booking, showing attractions and organizing excursions (Bogomazova et al., 2019).

The digitalization of the tourism industry will increase the competitiveness of national economies, attract new tourists and improve the service of existing ones.

Tourism 4.0 is a new generation of tourism based on the application of innovative technologies. This means that the travel industry is undergoing a revolution with digital, data analytics, artificial intelligence, blockchain and many other technologies taking over the world. One of the main features of Tourism 4.0 is the personalization and individualization of offers that can be tailored to the needs of each individual tourist and their preferences. This means that tourists get exactly what they need, instead of one-off, indefinite and bulk travel packages. Tourism 4.0 also uses various forms of virtual reality that allow tourists to experience the place they are going to visit from the other side of the world. Not only does this save time and money, but it also prepares tourists better for their trip, allowing them to explore culture, customs, and sights. In addition, Tourism 4.0 technologies make it possible to simplify the process of planning and booking, for example, through the use of chatbots and online assistants. The interaction between tourists, local residents and entrepreneurs is also improving, which contributes to the development of communities and an increase in the level of service. In general, Tourism 4.0 technologies improve business models and increase the comfort of tourists, thereby stimulating the development of the industry as a whole (Bautista et al., 2019).

In recent years, geographic databanks have been increasingly used in the tourism industry. Geographic databanks are a collection of data that contains information about geographic features and phenomena. In addition to the above data, banks may include geographic coordinates, territory boundaries, terrain features, climate, available resources and environmental situation. The use of such data banks is noted in such industries as geology, ecology, geography, geopolitics, and transport. Among the most popular geographic data banks are the Geographical Portal of Russia, GeoNames, NASA Earth Observations, WorldClim and others. The use of geographic data banks allows you to store and process information about spatial objects. It also allows you to collect, store, analyze and display spatial information through queries. Geographic databanks are actively used in various applications that create population models of the urban environment, as well as in applications that manage geographic information systems. The creation of geographic databanks for the tourism sector has long been used for various geoinformation programs, for creating maps. Such databanks are automated and have their own data organization system. The task of such data banks is the integration and integrity of data, independence, redundancy and data security (Rubtsov & Rozhko, 2021). Geographic databanks are created to store and process geographic data such as maps, geometric objects, geographic information systems and indicators. The process of creating geographic databanks includes the following steps:

- Definition of goals and objectives that can be solved with the help of a geographic data bank.
- Definition of data sources that will be used to populate the geographic data bank.
- Creation of a data model that defines the structure and format of data stored in a geographic data bank.
- Development of a data management system for a geographic data bank, which includes the processes of entering, storing, updating and retrieving data.
- Populating a geographic data bank and testing its functionality and performance.
- Development and maintenance of a geographic data bank in accordance with user needs and changes in the environment.
- Teaching users how to work with the geographic database and providing support in using its functionality (Rubtsov et al., 2022).

Depending on the model of the data bank, the connections within them also differ. The following data banks are distinguished:

- hierarchical, where the relationship between data is in the form of "parent-children";
- network, where a descendant can have any number of ancestors;
- relational, where two-dimensional tables are used.

The main features of data bases are the following:

- each element of the table is one data element;
- all columns in the table are homogeneous;
- each column has a unique name;
- there are no identical rows in the table;
- the order of rows and columns can be arbitrary.

Relationships in this model are represented as tables, and rows correspond to records, columns correspond to fields.

To link two relational tables, you need to enter the key of the first table into the key of the second table and enter the foreign key-key of the second table into the structure of the first table.

Creating a relational database consists of three steps:

- conceptual stage;
- logical stage;
- physical design.

The conceptual stage is the creation of a database based on the description of the area for which the database is being created. The description contains a set of documents and data that are necessary for loading into the database, as well as

Logical design is necessary to transform the conceptual model into a logical one, where the structure of the tables, the relationships between them and defining the key details are determined.

Physical design, in turn, complements the logical data model with the characteristics that are needed to determine how the database is physically stored and used, the amount of memory, and the type of storage devices (Ostankova, 2017).

The result of creating a database is an information-logical data model, that is, there is a composition, structure and logical connections.

Creating databases is possible in many programs, MC Access was chosen for this work. The objects of cultural, historical and natural potential of the Republic of Tatarstan were selected as data. As you can see, Figure 1 shows the relationship of three tables by key value. The key value is the name of the region. Thanks to requests, it will be possible to display all objects of one or several selected areas.

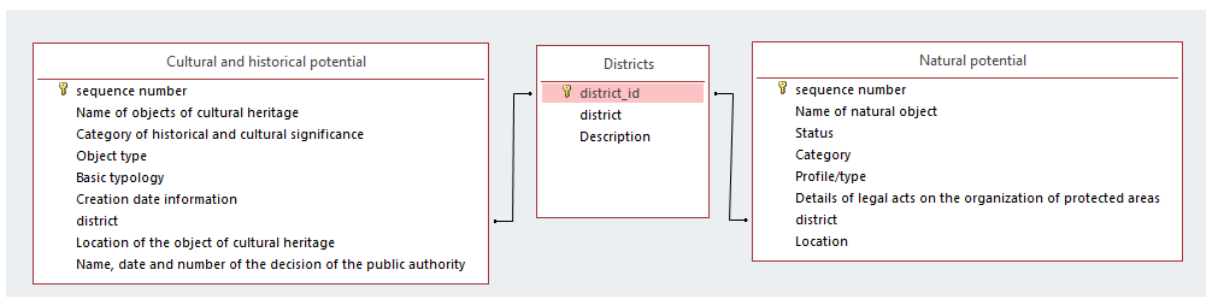


Figure 1. Geographic Databank Example

The use of such databases in the field of tourism is possible when creating tourism portals. Among the advantages, one can single out the fact that information is entered and stored in the database, and it is also possible to create backup copies. The use of databases allows you to constantly record and change information, depending on the content being released. Hence, all information is stored in structured tables. The content of these sites is stored as a site code that can be modified. Databases are managed using SQL queries (Murat & Kartanova, 2019). In the tourism industry, databases are used for reservation sites, they store room availability, air and train tickets, and more.

Also, the use of data banks is possible in currently popular neural networks. Neural networks are one of the varieties of machine learning, where the program works like a human brain. The main advantage of neural networks is the self-learning of the system based on past experience or learning with the help of a person when recognizing commands.

Neural networks were first formed in 1943, but at the end of 2022, the use of neural networks became massive due to the creation of the ChatGPT bot. The data set that the neural network uses must be prepared, since it will be used to train the neural network and, in general, the quality of neural networks depends. A set for a data set is called a dataset, it is essential for the training model and its further use in certain tasks. Dataset is processed and structured information in a tabular form, where rows are objects, and columns are features (Okunev, 2020).

Databases can also be used when building chatbots. Chatbots are programs that allow you to interact with a computer through a regular chat. 6 They work according to the following principles:

- Query Processing. When a new message appears in the chatbot, the program analyzes its content, recognizes the keywords and understands what type of request was received;
- search for answers. After processing the request, the chatbot looks for the appropriate answer in its knowledge base. If such a response is found, the chatbot responds to the request;
- additional processing. As part of the work of the chatbot, additional processing of requests may be provided. For example, it can run third-party programs, access databases, generate unique responses, etc.;
- education. Chatbots can learn and improve as they interact with people. They are used to automate many tasks, including technical support, sales, advertising, etc.

Tourism chatbots can be very useful tools to facilitate the travel planning process and provide a better experience for travelers. Some of the possible applications of chatbots in tourism are:

- search for tourist routes and attractions in the selected city or region;
- booking of hotels and campsites;
- selection of tours and offers from tour operators;
- formation of a travel plan taking into account the preferences and budget of the traveler;
- support in solving problems that have arisen during the trip, for example, lost luggage or reservations;
- providing recommendations on places to eat and what to see, taking into account the personal preferences of the traveler (Shumilina & Korobko, 2022).

The use of chatbots in tourism can significantly reduce the time it takes to plan and organize a trip, especially for people who do not have experience in this field. In addition, chatbots can help improve the traveler experience and improve customer satisfaction for tour operators and hotels.

2. CONCLUSION

Thus, the use of geographic databanks in the field of tourism is of increasing importance, since they can be used to implement various modern services that will make it easier for tourists to use them. The introduction of such data banks will make it possible to create a multifunctional ecosystem in tourism, which will allow developing domestic tourism, attracting investments and recreants, which will have a positive effect on the economy of the region. The use of geographic databanks can improve the quality of information provided on travel portals and make the trip of tourists more comfortable and safer. Geobanks can be integrated with other services such as online maps and navigation applications, allowing users to quickly and easily find the information they need and get to the right place. In addition, the use of geographic banks will help save time and simplify the process of finding the right information, which in turn will lead to increased user satisfaction.

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PRIVATE LABELS OF RETAIL CHAINS: PROSPECTS OF GREEN MARKETING APPROACH

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Abstract: This paper examines the role of green marketing approach as a possible way to develop private labels of retail chains. The authors first discuss theoretical approaches to understanding the phenomenon of private labels and highlight the new trends that boost the development of smart and sustainable private labels. Then they present and discuss the empirical data obtained through a series of expert interviews with retail chain managers, and through online survey conducted in March 2023. The used questionnaire consists of both questions based on the relevant literature, and questions elaborated by authors based on the insights gained by means of expert interviews. This allowed to adapt the questionnaire to the social and cultural characteristics of the Russian retail market. The main findings from expert interviews show that business ethics, social responsibility, sustainable development and environmental issues have become important strategic objectives for Russian retail chains. The analysis of survey results leads to the conclusion that there is a segment of sustainability-driven consumers who intend to buy retail chain PLs due to their green characteristics. Therefore, retail chains should change their strategy concerning PLs and balance different segments’ needs by offering both improved PLs that meet special needs and PLs as low-cost products

Keywords: private labels, PLs, retail chains, green marketing, Russia

1. INTRODUCTION

Currently, academics and practitioners pay growing attention to issues of private labels (PLs) of retail chains. These are brands sold under the retail banner’s name, or under a separate name created exclusively by retailer (Keller et al., 2016). One should admit that the terms store brand, private label, own brand, retailer brand, and home brand are used interchangeably in both practice and research (Keller et al., 2022). In this paper, we use the term private label to mark goods fully owned, controlled and sold exclusively in a particular retail chain (Kumar & Steenkamp, 2007). In other words, the retail chain in this case takes full responsibility for its private label, including the product itself, its positioning, packaging design, production, pricing, shelf placement, and promotion.

Based on the empirical research in the literature, we can see that in contemporary markets private label is no longer “just another word for a low-quality generic product that might not even carry a retailer’s name, or a copycat product shamelessly plagiarizing innovations and features developed by brand manufacturers” (Kumar & Steenkamp, 2007) as it was a couple of decades ago. In contemporary world, private labels are rapidly transitioning to brands in their

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own rights (Seenivasan et al., 2016; Keller et al., 2022). At the same time, there are stereotypes concerning PLs that root mainly in the fact that consumers are not sufficiently aware of benefits got from purchasing these products (Cherenkov et al., 2022). Many buyers count such products as «low-cost or tolerable products at a low price», and this perception anchors rather deeply in the minds (Kumar & Kothari, 2015; Valaskova et al., 2018). Therefore, there is a need to understand how to cope with this issue and find a way to differentiate PLs with improved quality from “no name” products.

The Russian FMCG retail is currently undergoing a significant transformation. Buying habits and preferences are changing. Some multinational companies have exited the market in 2022, leaving empty shelf space. In this situation, retail chains are quickly changing their business strategies and looking for new ways to stay competitive. In October 2022, Nielsen IQ conducted a survey among top management of Russian retail. As part of this survey, a question was asked as to what areas of activity they bet on in order to grow their business. According to the survey results, the development of private labels rates in the top 3 position of planned activities. Therefore, the issues of PL development are worthy of more intensive study.

In this paper, we present the preliminary results of the study conducted in 2022-2023. The main research goal was to identify how Russian consumers perceive the green marketing efforts of retail chains, with the main focus on the prospects of green approach in development and promotion of private labels.

2. LITERATURE REVIEW

2.1. The stages of private labels evolution

According to most researchers, private labels development started from the idea of generics, “no name” products, that is, the cheapest, undifferentiated products (Laaksonen & Reynolds, 1994). The main task of such goods is to enable customers to purchase the products they need at the lowest prices (Corstjens et al., 1995). These products have a large difference (up to 50%) in prices as compared to national brands. As a rule, “no name” products are located on the lowest shelves, retail chains do not bother to promote them, due to the lack of economic feasibility (Kumar & Steenkamp, 2007).

Initially, when creating private labels, retail chains focused specifically on the low-price segment. However, they realized soon that labelling with brand name helps to increase the level of product quality perception and opens the opportunity to compete with traditional national brands (Laaksonen & Reynolds, 1994). Still, private labels at this stage had no correlation with retailer and thus not yet associated with the retail chain itself. Private labels of this type still exist today, they successfully help retailers to imitate wider assortment and to push minor brands off the shelf.

At the next stage, private labels appeared that imitated national manufacturer brands. Products of acceptable quality and packaging, at low prices, put by retailers on their shelves as PLs, appeared to be an alternative to buying well-known brands of manufacturers. By developing such PLs, retailers became quite demanding, looking for suppliers that offer higher quality. Accordingly, the difference in price between such PLs and national brands is not very high, usually 5 to 20% (Kumar & Steenkamp, 2007).

Private label imitators are ready to compete in those product groups where there are serious leaders in sales. Still, such imitation strategy though helps in the competition with national brands but does not ensure the authenticity and differentiation of the retail chain itself. Therefore, retailers started introducing premium PLs that offered quality equal or even surpassing manufacturer brands' quality (Keller et al., 2022). Such PLs are located on the best

shelves. Retail chains are actively involved in advertising support of new competitive private label products with additional useful properties, with the aim to improve retailer's image, achieve customer loyalty, and increase sales marginality (Sgroi & Salamone, 2022). This approach also provokes the entrepreneurs to develop different models of their growth on the base of their own trademark rights (Rasheva, 2022).

At present, a number of new studies have appeared that highlight the transition to a new stage in the evolution of this phenomenon. Modern PLs have gained the opportunity to evolve from economy brands to sustainability-oriented eco-brands (Chkanikova & Lehner, 2015), futuristic smart brands (Gielens et al., 2021).

2.2. Smart and sustainable private labels

A number of modern trends influence the transformation of modern private labels.

First, rapid technological progress equips retail chains with new marketing tools to meet new consumer needs and enables retailers to develop sophisticated digital marketing campaigns (Graesch et al., 2021).

Second, new technologies allow retail chains to collect timely and detailed data, and provide machine learning and artificial intelligence modelling to analyse data and make more grounded decisions regarding the target segments, product offerings and marketing mix for PLs (Gielens & Steenkamp, 2019).

Third, retail competition has increased significantly with the advent of e-commerce and the expansion of traditional retail chains into multi-channel retail. E-commerce giants even are pushing into private label brand offerings (Martínez-López et al., 2020). While national brands have traditionally been the main competitor for private labels, new online offerings are further changing consumer perceptions of value. Online direct-to-consumer (D2C) initiatives are pushing the boundaries of price and quality by systematically eliminating intermediaries between company and customer. Digital D2C competitors are trying to create premium brands at discount prices by cutting out resellers and reaching out directly to consumers digitally. These new digital pop-up retail brands are disrupting value for money, creating yet another level of competition for private labels (Gielens et al., 2021).

New D2C models give consumers the ability to interact directly with producers, providing those with important high-volume data that only retail chains possessed before (Leimstoll & Wöfle, 2021; Schacker & Stanoevska-Slabeva, 2023). Further, D2C models allow brands to engage the most loyal customers in co-creation (both pre-digital and digital) to drive future innovation and new product development. (Gielens & Steenkamp, 2019).

All this is forcing experienced traditional retailers to realize that diversity and market turbulence require products that meet needs beyond price and quality to differentiate their store and increase loyalty (Keller et al., 2020), and to work harder on product range and PLs (Gielens et al., 2021). As a result, radically new smart PLs arise that:

- are multifaceted, multilevel;
- are supported by innovative information technologies;
- use internal and digital communication;
- apply dynamic and even individual prices;
- may be offered outside of the retail outlets.

Fourth, the attitudes, preferences, selection process and behaviour of modern consumers has changed drastically. As to younger generations, Gen Z consumers tend to be less brand loyal and more inclined to buy products that best suits their needs rather than brand name products (Sharma, 2019). Gen Z shoppers are also more concerned about whether a product is

in line with their beliefs. As part of their more holistic approach to life, these consumers are more inclined towards responsible shopping and conscious consumption. Concepts such as inclusiveness, transparency, sustainability, fair value products resonate with this consumer segment. In addition, demographic and behavioural changes are taking place for older consumers, including Gen X, Millennials, and Baby Boomers (Namin & Dehdashti, 2019). These generations are reformulating their expectations about what value really means. In general, buyers no longer simply want products of acceptable quality at affordable prices. They want products that are both affordable and practical, accessible and sustainable, affordable and health-conscious, yet convenient (Geyskens et al., 2010; Amaldoss et al., 2015).

In this regard, the role of green marketing in retail has increasingly attracted academic interest (Gustavo Jr et al., 2021). At the same time, the prospects of green approach in development and promotion of PLs in emerging markets are not yet well studied.

Based on the academic literature, one can conclude that there is no unified concept of green marketing. In addition, the difference between green marketing, environmental marketing, and sustainable marketing is still not defined (Katrandjiev, 2016). These terms are often treated as synonyms. Nevertheless, from the literature the common, most widespread features characterizing of the "green marketing" concept are clearly visible. Most researchers emphasize minimizing the negative impact on the environment, meeting consumer needs in a sustainable way, as well as development and promotion of environmentally friendly products (Dangelico & Vocalelli, 2017; Kar & Harichandan, 2022). Therefore, our research used these particular features as basic.

3. MATERIALS AND METHODS

Our research hypotheses were as follows:

H1. PLs of retail chains in the Russian market go through the same stages of evolution as in other countries where PLs' development in retail began earlier.

H2: Price is not the only criterion for Russian consumers to choose PLs.

H3: There are segments of Russian consumers who prefer private label retail chains due to their green characteristics

To obtain empirical data, we first conducted semi-structured (both online and personal) expert interviews with representatives of Russian FMCG retail chains responsible for the development and management of PLs. A semi-structured interview is a tool that provides insights, learning from experience regarding the issue under study (Fawcett et al., 2014). During the interview, direct, indirect, guiding, clarifying questions were asked to unveil the main trends in the market that impact PLs of Russian retail chains. The selection criteria were as follows: representatives of FMCG retail chains (various formats, to exclude the specifics of a certain format); at least 5-years expertise in the field of development / management of private label within the category. The average interview duration was 50 minutes. The interviews were audio recorded and then transcribed; the content analysis was performed.

Based on the results obtained by means of expert interviews, a questionnaire for an online survey was developed. The online survey platform anketolog.ru was chosen to conduct the survey. Questionnaires were distributed by sending direct links to respondents. The information was collected anonymously and did not imply the processing of the respondent's personal data. Respondents were informed that the results of the survey would only be used in an anonymous form as part of the study.

373 completed questionnaires were received. In the sample, 69.2% of the respondents are women, 30.8% are men. 40.2% are 24-39 years old. 57.1% of respondents have children. The largest share of respondents (43.4%) are residents of the megacities (Moscow and St. Petersburg). 41.6% (155 people) assessed their financial situation as falling under the generally accepted average.

4. PRELIMINARY RESULTS

The results of semi-structured expert interviews with representatives of Russian FMCG retail chains responsible for the development and management of PLs are consistent with the results of previous studies and confirm the hypothesis H1. PLs of retail chains in the Russian market go through the same stages of evolution as in other countries where PLs' development in retail began earlier. What is worth to underline is that in Russian retail, all these stages have been shorter. As a result, at the current stage of PL development, at least in Russian megapolises, both retailers and consumers are ready to perceive PLs not only as designation of cheap products but also as high quality smart and sustainable store brands.

Nowadays, business ethics, social responsibility, sustainable development and environmental issues have become important strategic objectives for Russian retail chains. The importance and use of "green trends" is noted by retail representatives. For example, Sergey Filippov, Technology and Efficiency Director for Private Labels of the Perekrestok retail chain, indicated that: *“Zelenaya Liniya private label is one of the most promising and rapidly growing brands for us, because it meets all the rules of a healthy lifestyle, which we're making a strategic focus”*.

The preliminary results of the survey confirm the hypotheses H2 and H3.

We can conclude that price is not the only criterion for all Russian consumers to choose PLs, though for some of them low price plays a vital role. There is a segment of sustainability-driven consumers who intend to favor retail chain PLs due to their green characteristics. In addition, there is correlation between health problems and readiness to buy safe or least environmentally harmful products. Most Moscow and St.Petersburg high-income citizens are interested in green characteristics of PLs regardless of income level. As to consumers from small towns in Russian regions, they tend to neglect green characteristics and perceive PLs as low-cost or tolerable products at a low price that helps to save money in the conditions of economic uncertainty. In some cases, they even have no idea that the low-cost products they prefer and purchase systematically belong to the PL category.

5. CONCLUSIONS

After conducting a series of expert interviews and a survey, we can conclude that the trend to invest in improving the quality of PLs is a quite promising way to differentiate retail chains and increase customer loyalty in a changing social and cultural paradigm. It makes sense to develop products that are sold under PLs and meet special needs beyond price and quality. Responsible shopping and conscious consumption grow in importance, therefore green characteristics of PLs can help to build confidence and attract sustainability-driven consumers. This is quite true also for Russia where “new rules of green marketing” increasingly characterize the purchasing sensibilities of new generations, like of “billions of consumers around the world” (Ottman, 2011). Since such lack of knowledge about PLs and their attractive points is largely due to the cost-saving specificity in retailers' branding strategies (Cherenkov et al., 2020), retail chains should change their strategy concerning PLs and actively use smart PL options that have become available to them thanks to the digitalization. At the same time,

Russian retail chains should balance different segments' needs by offering not only improved PLs that meet special needs but also PLs as low-cost products. PL alignment with retail chain positioning is crucial for niche retailers, and PL portfolio targeting all key segments can be fruitful for big pan-Russia retail chains.

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CHINESE ELECTRIC CARS PRODUCERS' STRATEGIES IN GLOBAL MARKET

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Abstract: Automotive industry is one rare capital and technology intensive industry. It was considered that this type of industry faced with incremental changes of competitive relations. Emerge of Tesla as pioneer in electric vehicle segment has resulted in disruptive changes in the industry. Technological, ecological and institutional factors have triggered restructuring of business ecosystem in the industry. These changes have created business opportunities for late followers from China. Chinese late followers have couple sources of competitive advantage. First, strong position in large and fast-growing domestic market enable them to achieve economy of scale. Economy of scale is important to created competitive advantage, due to capital and technology intensive industry. Second, Chinese natural resources companies have internationalized their operations, which result in safe and constant access to necessary natural resources for Chinese electric vehicle producers. Third, Chinese electric vehicle producers have created strategic alliances with tier suppliers from China and Asia-pacific region. Due to that, their supply chains have been sustainable and flexible even during the Covid-19 pandemic. Four, demand for “value for money” products grow during a crisis and these companies have capabilities to design and produce this type of products. Finally, these companies use foreign alliances, minority and full acquisitions to obtain access to embedded knowledge and intangible resources.

Keywords: electric vehicles, strategy, late followers, China

STRATEGIJE KINESKIH PROIZVOĐAČA ELEKTRIČNIH AUTOMOBILA NA GLOBALNOM TRŽIŠTU

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Rezime: Auto industrija predstavlja jednu retkih grana koje su po svojoj suštini kapitalno i tehnološki intenzivne. Dugo se smatralo da su ove vrste industrija podložne samo inkrementalnim promenama konkurentskih odnosa. Međutim, pojava kompanije Tesla kao pionira u razvoju električnih vozila izazvala je radikalne promene u grani. Promene poslovnog ekosistema u okviru grane su posledica delovanja tehnoloških, ekoloških i institucionalnih faktora. Ove promene su otvorile prostor za pojavu kasnih sledbenika iz Kine. Ove kompanije svoju konkurentsku prednost grade na nekoliko izvora. Prvo, veliko i rastuće domaće tržište,

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na kome su dobro pozicionirane, pruža ovim kompanijama mogućnost ostvarivanja ekonomije obima, koja je od suštinskog značaja zbog kapitalne i tehnološke intenzivnosti grane. Drugo, internacionalizacija kineskih kompanija koje se bave eksploatacijom prirodnih resursa je obezbedila sigurnost snabdevanja prirodnim resursima. Treće, strateška partnerstva sa dobavljačima iz Kine i azijsko-pacifičkog regiona su učinile lanac održivim, čak i tokom pandemije Covid-19. Četvrto, kompanije su posedovale kompetencije u proizvodnji *value for money* proizvoda, za kojima raste tražnja tokom kriznih perioda. Konačno, ove kompanije su kroz akvizicije, partnerstva i manjinske investicije obezbedile pristup znanju i nematerijalnim resursima iz razvijenih zemalja.

Ključne reči: električna vozila, strategija, kasni pratioci, Kina

1. UVOD

Proces globalizacije se ubrzao poslednjih nekoliko decenija. Ovaj proces nije doveo do pune globalizacije već do tzv. poluglobalizacije (Ghemawat, 2003), pri čemu je stepen globalizacije različit u različitim aspektima (Ghemawat & Altman, 2019). Globalizacija je omogućila da mnoga tržišta u nastajanju postanu deo globalnih ekonomskih tokova. Kako bi iskoristile mogućnost efikasnijeg poslovanja veliki broj multinacionalnih kompanija je preselio deo svojih poslovnih aktivnosti na tržišta u nastajanju, što je doprinelo brzom rastu standarda u ovim zemljama (Milanović, 2016). Kompanije sa tržišta u nastajanju su iskoristile prisustvo MNK kompanija iz razvijenih zemalja kako bi se integrisali u njihove lance snabdevanja, čime su usled preliivanja stekle određene kompetencije da kasnije nastupaju i samostalno. Međutim, na početku ovog procesa ove kompanije su stekle samo sposobnosti da proizvode tzv. frugale proizvode odnosno proizvode sa niskom dodatom vrednošću, zbog čega su bile uglavnom fokusirane na domaće ili ostala tržišta u nastajanju (Panand, 2016). Tek poslednjih nekoliko godina kompanije iz ovih zemalja su razvile sposobnosti da kreiraju ponudu koja može da parira i konkurentima sa razvijenih tržišta. Treba napomenuti, da se ova vrsta kasnih izazivača pojavljuje i u tehnološki intenzivnim granama gde su dominirale velike inovativno orijentisane multinacionalne kompanije.

Proces globalizacije je direktna posledica tehnoloških inovacija, naročito onih u oblasti transporta i komunikacije. Proces je naročito intenziviran pojavom disruptivnih inovacija, koje dovode do propadanja ili restrukturiranja pojedinih grana, odnosno pojave novih lidera (Downes & Nunes, 2013). Dugo se smatralo da u tehnološki i kapitalno intenzivnim industrijama, sa visokim stepenom lojalnosti brendova može doći samo da inkrementalnih promena u konkurentskim odnosima. Međutim, pojavom disruptivnih tehnoloških inovacija i u ovim granama dolazi do rekonfiguracije konkurentskih odnosa (Abbosh et al., 2017). Jedna od poslednjih grana u kojoj usled disruptivnih inovacija dolazi do rekonfiguracije konkurentskih odnosa je auto industrija. Disruptivne inovacije u auto industriji se odnose na procese digitalizacije i razvoja autonomnih i električnih vozila. Proces rekonfiguracije grane je i posledica delovanja eksternih faktora, na koje konkurenti nemaju uticaj, kao što su pooštavanje ekoloških standarda i rast političkih rizika usled „razdvajanja“ ekonomija SAD i Kine.

Ovaj rad analizira strateške odgovore kasnih sledbenika u uslovima visoke neizvesnosti, usled nepredvidivog delovanja većeg broja eksternih faktora. U radu će se na primeru kineskih kasnih sledbenika u grani, dokazivati teza da kasni sledbenici kroz internacionalizaciju poslovanja nastoje da kreiraju kompetencije kako bi ugrozili lidere koji nisu još uspeli da standardizuju tehnologiju na novom segmentu. Rad popunjava prazninu u

prethodnim istraživanjima koja nisu adekvatno objasnili strategije kasnih sledbenika u granama koje se suočavaju sa disruptivnim inovacijama. Rad se sastoji iz dva poglavlja i zaključnog razmatranja. U prvom poglavlju se daje pregled tenedencija u auto industriji, koji će u budućnosti definisati konkurentske odnose. Drugo poglavlje na primerima kineskih kasnih sledbenika na segmentu električnih vozila, identifikuje i analizira specifičnosti njihovog strategijskog odgovora.

2. PROCESI RESTRUKTURIRANJA AUTO INDUSTRIJE

Decenijama se auto industrija smatrala stabilnom, tehnološki i kapitalno intenzivnom industrijom, kojom dominiraju multinacionalne kompanije iz razvijenih zemalja. Ubrzanjem procesa globalizacije došlo je i do brzog razvoja ove industrije, a istovremeno se otvorio prostor za opsluživanje lokalnih tržišta putem investicionih strategija ulaska. Ulazak na nova tržišta doveo je do konsolidacije u okviru grane, gde su velike MNK preuzimale lokalno orijentisane konkurente ili su oni prestali da postoje usled gubitka nacionalnih pozicija (npr. Dacia, Lada, Zastava, Škoda, Seat, itd.). Na ovaj način stvorio se prostor da auto kompanije postepeno naprave zaokret od globalne ka regionalnim strategijama, kako bi u većem stepenu uvažavale lokalne preferencije potrošača i tržišnog ambijenta, dok bi očuvale efekte standardizacije i ekonomije obima (Schlie & Yip, 2000).

Proces rekonfiguracije auto industrije je vezan za početak 21. veka. Naime, u ovom periodu auto kompanije su se suočile sa disruptivnim procesima po više osnova. Nastanak Velike recesije 2007. godine doveo je do promene strukture grane koja do tada nije zabeležena. Uzrok Velike recesije leži u ekspanzivnoj monetarnoj politici u SAD. Ekspanzivna monetarna politika u SAD, dovela je do viška likvidnosti na tržištu, a banke su u cilju traženja novih poslovnih mogućnosti počele da odobravaju kreditne linije i visoko rizičnim klijentima. Na ovaj način su mnogi kupci, koji to nisu mogli u realnim uslovima, stekli mogućnost da sebi priušte nekretnine i skuplja vozila. Istovremeno, to je dovelo do rasta finansijskog leveridža u industriji. Međutim, kada je došlo do „pucanja balona“ na finansijskom tržištu, došlo je do pada tražnje i rasta krize poverenja. Kriza se prelila na ostale zemlje, a naročito je pogodila industrije koje su usmerene na proizvodnju trajnih potrošnih dobara, kao što je auto industrija.

U analizi promene strukture auto industrije opredelili smo se da koristimo alat koji je razvio i kasnije dopunjavao Porter (2008), pet konkurentskih sila. Ovaj model obuhvata aktivnosti postojećih konkurenata, mogućnost ulaska novih konkurenata u granu, snagu kupaca i dobavljača, i pojavu supstituta. Velika recesija je delovala na pojedine konkurentske sile, ali je istovremeno promenila i njihove odnose.

Velika recesija je dominantno uticala na pad tražnje za vozilima, ali i promenu preferencija potrošača. Naime, prethodni radovi su pokazali da u krizna vremena potrošači nemaju dovoljno sredstava za kupovinu trajnih potrošnih dobara, ali i da oni potrošači koji mogu da ih kupe odlažu njihovu kupovinu usled visokog stepena neizvesnosti (Flatters & Willmott, 2009). Kada su u pitanju potrošači u zapadnom svetu smanjena kreditna aktivnost, pad zaposlenosti i visoka neizvesnost su rezultovali visokim padom prodaje vozila. Taj, pad je u SAD iznosio skoro 50%, dok je u Zapadnoj Evropi pad bio postepen ali dugotrajniji (www.oica.net pristupljeno 04.04.2023). Evropske vlade, naročito zemlje sa velikim auto kompanijama, su obezbedile značajne subvencije kupcima, tako da je pad tražnje bio postepen i dugotrajan. Takođe, u zapadnim zemljama se usled krize povećala tražnja za manjim, energetske efikasnijim i vozilima prihvatljivog kvaliteta, odnosno došlo je do brzog rasta *value for money* segmenta (Rakita et al., 2017). Sa druge strane Kina je iskoristila visoke devizne rezerve, i sa oko 600 milijardi USD, subvencionisala domaću tražnju jer se tokom

krize pokazalo da kineska ekonomija u velikoj meri zavisi od inostrane tražnje. Uz nizak stepen razvoja tržišta i visoke subvencije, tržište vozila i tokom krize nastavilo da vrtoglavo raste i postalo najveće svetsko tržište za par godina. Prodaja je na ovom tržištu u periodu od 2007. do 2011. godine, porasla sa 6 miliona na preko 16 miliona vozila.

Promene tražnje su se odrazile na nivo i tip konkurencije. U SAD domaće kompanije su se bile specijalizovale za proizvodnju većih i manje efikasnih modela, koji su odgovarali potrebama američkih potrošača. Kada je otpočela kriza, preferencije potrošača su se pomerile ka manjim i energetski efikasnijim vozilima, američki proizvođači su se našli u problemu. Umesto da probaju da naprave radikalni zaokret ka manjim modelima, oni su nastavili da nude već postojeće modele sa diskontom, što je dodatno umanjilo finansijske performanse (Schulze et al., 2015). Na kraju su GM i Chrysler proglasili bankrot, dok je Ford morao da se spasava prodajom delova imovine i pojedinih brendova. Sa druge strane kompanije koje su posedovale kompetencije u opsluživanju *value for money* segmenta su prosperirale. Konačno, multinacionalne auto kompanije koje su imale jaku poziciju na kineskom tržištu su prosperirale od rastuće kineske tražnje. Zahvaljujući kineskom tržištu VW i Toyota su zauzeli lidersku poziciju u auto industriji, dok se BMW izborio za lidersku poziciju na premium segmentu.

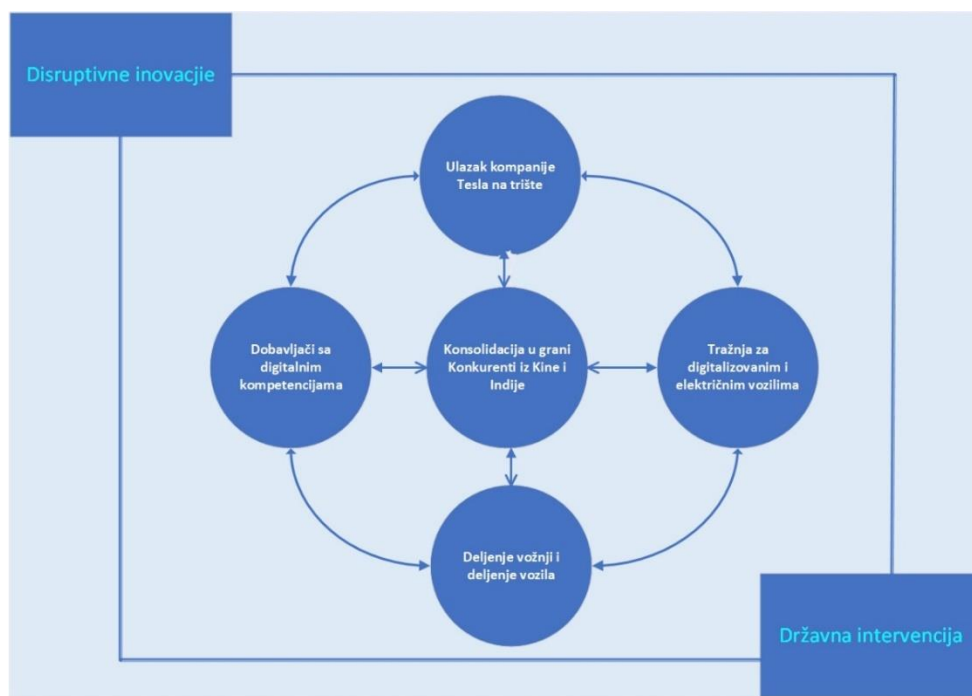
Kada su u pitanju dobavljači, tokom krize je porasla njihova pregovaračka snaga, a neki su pokušali da iskoriste svoju poziciju kako bi se integrisali unapred. Proizvođač auto delova kanadska Magna je pokušala da iskoristi bankrotstvo GM i otkupi diviziju Opel, ali je usled protivljenja državnih organa u SAD i pritiska svojih velikih kupaca, koji su pretili da će prekinuti saradnju ako dođe do transakcije, odustala od preuzimanja. Sa druge strane kineski auto dobavljači su profitirali od rasta domaćeg tržišta, tako da su postali relevantni partneri i liderima iz razvijenih zemalja.

Finansijski kolaps kompanija iz SAD je otvorio prostor za preuzimanja i ulazak konkurenata na tržišta na kojima nisu poslovali do tada. Kineski *Geely* i indijska *Tata* su uz finansijsku pomoć matičnih država preuzeli divizije Forda Volvo iz Švedske, odnosno Jaguar Land Rover iz Velike Britanije. Volvo i Tata su u preuzete kompanije uneli svež kapital i sposobnosti proizvodnje po niskim troškovima, dok su sa druge strane stekli pristup novim tehnologijama, brendu i reputaciji koje ne bi mogli da izgrade sami. Fiat je iskoristio bankrot Chryslera i preuzimanjem stekao pristup tržištu severne Amerike.

Supstituti pre krize nisu predstavljali jaku pretnju auto kompanijama. Tako je ostalo i u periodu nakon krize.

Izlazak iz krize nije doneo neophodnu stabilnost auto industriji. Naime, nakon izlaska iz krize auto kompanije su se suočile sa disruptivnim inovacijama. Disruptivne inovacije u auto industriji se odnose na razvoj autonomnih, digitalizovanih i električnih vozila, ali i usluga mobilnosti (Marković & Mijušković, 2022). Na promene odnosa u grani se odnosi i rastući značaj pitanja održivosti, odnosno državnih mera po ovom pitanju. Primenjujući ponovo Porterov pristup analizi odnosa u grani videćemo da se konkurentski odnosi u grani radikalno menjaju.

U ovom periodu se tražnja veoma promenila. Naime, razvijena tržišta su se oporavila od pada tražnje tokom krize, dok se kinesko tržište brzo razvijalo, postavši ubedljivo najveće pojedinačno tržište. Istovremeno usled ubranog razvoja digitalizacije, potrošači od kompanija očekuju da vozila obezbede zabavne digitalne sadržaje i dodatne digitalne usluge (npr. slobodna parking mesta, prepreke na putu itd), ali često nisu spremni da dodatno plate za njih (Xu & Liu, 2018). Kada je u pitanju penetracija električnih vozila stavovi potrošača o ovim vozilima su pozitivni, ali ekološki stavovi nisu dovoljni da bi se održao visok nivo tražnje (Higueras-Castilo et al. 2020), već su potrebni državni finansijski podsticaji.



Slika 1. Konkurentna struktura auto industrije (Autori)

Kada je u pitanju stepen konkurencije u grani, treba imati u vidu da se u grani nastavlja proces konsolidacije. Naime, francuski PSA je preuzeo Opel sa sedištem u Nemačkoj, da bi se par godina kasnije PSA spojio sa kompanijom Fiat-Chrysler, čime nastaje kompanija Stellantis. Sva ova spajanja realizovana sa ciljem da se ostvari ekonomija obima u oblasti istraživanja i razvoja, ali i da se udruže resurse kako bi se napravili proboji u razvoju autonomnih i električnih vozila (Marković, 2021).

Tehnološke inovacije i državna regulativa su uticali i na pojavu novih konkurenata u okviru grane. Naime, američka kompanija Tesla je prva kompanija koja je odlučila da krene u masovnu proizvodnju električnih vozila. Kompanija, je primenila mikro pristup ulaska na tržište, tako što se fokusirala na mali brzo rastući i veoma profitabilni segment koji je bio zapostavljen od strane glavnih konkurenata u grani (Markman & Waldran, 2014). Zahvaljujući ovome Tesla je imala dovoljno vremena da unapređuje svoja tehnološka rešenja i da gradi mrežu dobavljača koji poseduju kompetencije neophodne za podizanje efikasnosti električnih baterija.

Disruptivne inovacije su takođe uticale na lanac snabdevanja. Naime, u skladu sa promenama tražnje, auto kompanije su bile prinuđene da u svoje lance snabdevanja integrišu kompanije koje poseduju kompetencije u razvoju električnih baterija i digitalnih rešenja u auto industriji (Ferrás-Hernández et al., 2017). Uključivanje dobavljača sa ovim kompetencijama u lanac snabdevanja znači da će i njihov uticaj u budućnosti biti sve veći, zbog čega se pretpostavlja da će softver u bliskoj budućnosti činiti oko 60% vrednosti vozila (Xu & Liu, 2018). Pojedine od ovih kompanija imaju cilj da se vertikalno integrišu unapred i uđu u proizvodnju automobila, iako su se pokušaji Google i Uber na razvoju autonomnih vozila u prethodnom periodu pokazali neuspešnim.

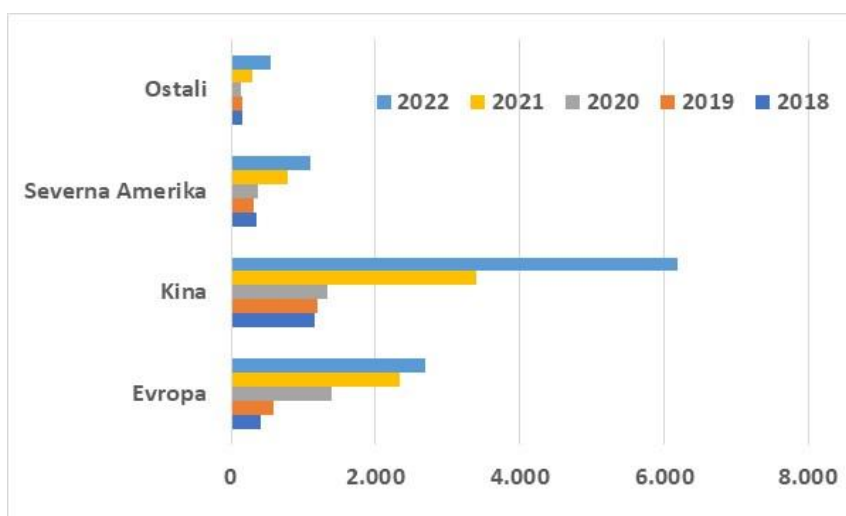
Konačno, na tržištu su se pojavili i realni supstituti posedovanju svog vozila. U pitanju su tzv. usluge deljenja vožnje i deljenja vozila. Stepem prihvatanja ove vrste usluga zavisi od otvorenosti potrošača da koriste inovacije, pozitivnom stavu o zaštiti životne okoline i proceni o korisnosti ove vrste usluge (Wang et al, 2020). Takođe, u pojedinim zemljama ova usluga

nije u potpunosti zaživela zbog neadekvatnog zakonskog okvira. S obzirom na brojna ograničenja i lokalne specifičnosti, ova vrste usluge na pojedinim tržištima ima lokalni karakter, a stepen iskorišćenja vozila i profitabilnost nisu adekvatni.

Promene poslovnog ekosistema su bile radikalne, zbog čega su tradicionalni konkurenti morali da promene svoje poslovne modele i konkurentske strategije. Međutim, istovremeno su ove promene pozitivno uticale na kasne sledbenike iz Kine, koji svoje međunarodne konkurentske strategije grade i na značaju domaćeg tržišta.

3. KONKURENTE STRATEGIJE KASNIH SLEDBENIKA NA TRŽIŠTU ELEKTRIČNIH VOZILA

Razvoj segmenta električnih vozila je u prethodnom periodu bio veoma dinamičan. Tehnološke inovacije koje su u prethodnom periodu bili pokretači razvoja segmenta su bile unapređenje efikasnosti razvoja baterija, odnosno broja kilometara koji se mogu preći sa punom baterijom. Tek od skora su pojedine kompanije su napravile značajne tehnološke prodore po ovom pitanju. Drugo tehnološki bitno pitanje je razvoj punjača za baterije, sa ciljem da se vreme punjenja smanji na prihvatljiv nivo. Međutim, konkurentske borba, oko standarda punjača, dovodi do toga da nema jedinstvenog rada na razvoju mreže javnih punjača, što usporava razvoj segmenta. Kada je u pitanju državna intervencija na polju razvoja ovog segmenta ona je više dimenzionalna. Sa jedne strane država nameće regulativu koja destimuliše razvoj i upotrebu vozila sa unutrašnjim sagorevanjem (pooštavanje standarda emisije gasova, zabrana ulaska u gradska jezgra itd.), dok sa druge strane obezbeđuje direktne i indirektno podsticaje za kupovinu električnih vozila (direktno subvencije, besplatna parking mesta, razvoj mreže brzih punjača itd.). Iako, nisu ostvareni puni potencijalni segmenta u pitanju je segment koji nije prestao da raste ni tokom pandemija Covid-19. Naime, na kraju 2022. godine u svetu je prodato ukupno 10.522 hiljada električnih vozila, zbirno čisto električnih i hibridnih, što je činilo 13% globalnog tržišta. Sa slike 2 je vidljivo da je najznačajnije kinesko tržište koje čini skoro 60% tražnje. Veliko domaće tržište je bilo i značajna odskočna daska za kineske kompanije. Tako se danas među pet najvećih globalnih proizvođača električnih vozila nalaze 2 kompanije iz Kine. BYD kao lider na segmentu je tokom 2022. godine prodao 1,85 miliona vozila, dok je Geely -Volvo grupa kao peta u grani prodala preko 530 hiljada vozila u istoj godini.



Slika 2. Broj prodatih električnih vozila u 000 (www-ev-volumes.com)

Segment električnih vozila se odlikuje čestim i radikalnim promenama tehnoloških rešenja i preferencijama potrošača, što otvara prostor za pojavu kasnih sledbenika (Suarez & Lanzola, 2007). Naime, u ovakvim uslovima pioniri nemaju dovoljno resursa niti znanja da izgrade barijere ulaska koje će sprečiti pojavu sledbenika. Koristeći ovakva kretanja u grani BYD i Geely -Volvo grupa su pronašle načine da probiju u sam vrh ovog segmenta. Videli smo da je kinesko tržište najveće auto tržište i ubedljivo najveće tržište električnih vozila. Prethodna istraživanja su pokazala da konkurentna prednost kineskih multinacionalnih kompanija u velikoj meri zavisi od *specifičnih prednosti* matične zemlje, koja nije dostupna stranim kompanijama koje posluju na kineskom tržištu. To može biti pristup jeftinim izvorima finansiranja, relativno jeftinoj, a produktivnoj radnoj snazi, saradnji sa domaćim državnim institucijama i državnim preduzećima. Kineske kompanije su razvile sposobnost da pristup ovim resursima sa domaćeg tržišta pretvore u konkurentnu prednost na inostranim tržištima (Hennart, 2012).

Kineska država je kroz intervenciju u auto industriji želela da reši pitanje zagađenja, ali i da unapredi konkurentnost domaćih kompanija na inostranom tržištu (Altenburg et al., 2022). Kada je u pitanju auto industrija i segment električnih vozila državna intervencija se odvijala na nekoliko koloseka. Naime, država je direktnom intervencijom podstakla konsolidaciju domaćih kompanija u grani, kako bi se ostvarili efekti ekonomije obima (Eun & Lee, 2002). Pored toga državni organi su obezbedili značajne subvencije za kupovinu novih električnih vozila, dok su istovremeno investirali u razvoj infrastrukture neophodne za razvoj stanica za punjenje vozila. Na ovaj način se podstiče domaća tražnja koja, omogućava ostvarivanje ekonomije obima, koja je kritična za komercijalizaciju inovacija. Konačno, domaćim kompanijama se daju na raspolaganje inovacije do kojih su došla državna preduzeća, a koja mogu biti od koristi za unapređenje efikasnosti električnih vozila.

Izrada električnih vozila se u velikoj meri bazira na novim materijalima, a od posebnog značaja je pristup litijumu, koji je neophodan za proizvodnju baterija. Iako je Kina bogata prirodnim resursima, naročito tzv. retkim metalima, njene rezerve nisu dovoljne kako bi se odgovorilo na veoma visoku industrijsku proizvodnju. Stoga je jedan od glavnih pravaca kineske industrijske politike pristup prirodnim resursima u inostranstvu. Na ovaj način kineska država čuva svoje resurse na dugi rok, smanjuje troškove njihove eksploatacije i konačno razvija dugoročne odnose sa zemljama domaćinima. Kineske kompanije su spremne da realizuju i investicije u zemlje sa višim političkim rizikom, jer im matična država omogućava političku podršku i obezbeđuje osiguranje od investiranja u ove projekte (Rugman et al., 2014). Takođe, kineske kompanije kroz ulaganje u infrastrukturu (npr. Put svile) podižu efikasnost ovih investicija.

Razvoj modernih vozila zahteva poslovne eko – sisteme koji su veoma fleksibilni. Naime, poslovni eko-sistemi prevazilaze granice jedne industrije i podrazumevaju zajednički rad na razvoju novih proizvoda, unapređenju zadovoljstva kupaca ili kreiranje novih, odnosno unapređenje efikasnosti postojećih poslovnih procesa (Moore, 1993). Stvaranje poslovnih eko-sistema je u Kini posledica delovanja države koja podstiče saradnju kompanija u oblasti visokih tehnologija. Takođe, u Kini je razvijen sistem Guanxi mreža, koje olakšavaju članicama da kroz saradnju ostvaruju svoje poslovne ciljeve. Kada su u pitanju proizvođači električnih vozila saradnja sa drugim članovima poslovnog eko-sistema je naročito značajna u oblasti digitalizacije, elektrifikacije i pristupa mikro – čipovima. U Kini su se već stvorili tehnološki klasteri i aglomeracije, npr. Šenžen, koje kreiraju inovacije neophodne za modernu industrijsku proizvodnju. Takođe, pojava relevantnih digitalnih i drugih vrsta domaćih dobavljača učinila je kineske proizvođače električnih vozila manje osetljivim na eksterne šokove u odnosu na auto kompanije iz razvijenih zemalja. Ovo se odnosi kako na situaciju nastalu tokom pandemije kada se pojavio nedostatak delova i mikro čipova, tako i sada na

situaciju kada vlada SAD uvodi različite vrste sankcija kineskim kompanijama. Naime, u prvom slučaju strategija *nearshoringa* je omogućila sigurnost snabdevanja zbog koncentracije proizvodnje na domaćem tržištu. U slučaju sankcija domaća vlada je investirala velike svote i pružila različite vrste podrške kako bi domaće kompanije unapredile konkurentnost u proizvodnji mikro čipova. Zahvaljući tome danas kineske kompanije poseduju znanja i kapacitete da domaćim kompanijama obezbede standardne mikro-čipove, do 7 nanometra, što garantuje kontinuitet proizvodnje.

Većina kineskih proizvođača električnih vozila je na početku svoga poslovanja u fokusu imala segmente potrošača sa ograničenim budžetskim sredstvima. S obzirom da su usmerene na ove segmente kompanije su razvile sposobnost razumevanja potreba cenovno osetljivih potrošača, odnosno prilagođavanja performansi proizvoda njihovim potrebama. Biznis model se uglavnom bazirao na inverznom inženjeringu i visokoj efikasnosti lanca snabdevanja koji se bazirao na obilju jeftine radne snage i kontroli kanala distribucije koji vode ka siromašnijim potrošačima. Vremenom se pokazalo da nije moguće graditi konkurentsku prednost samo na tome, pa su se ove kompanije pomerile ka *value for money* segmentu. Na ovom segmentu se ove kompanije takmiče tako što: 1. nude tehnološki intenzivne proizvode po umerenim cenama, 2. nude dodatne usluge i modifikacije proizvoda po cenama za masovno tržište i 3. proširuju premijumske niše u masovna tržišta (Williamson & Ming, 2009). Usled visoke domaće tražnje i državnih podsticaja razvoju tehnoloških inovacija, pojedine kineske kompanije su uspele da budu konkurentne i u tehnološki intenzivnim segmentima. Kineska kompanija BYD je svoje poslovanje otpočela kroz razvoj električnih baterija. Svoju strategiju je bazirala na državnim podsticajima, tehnološkim rešenjima sa domaćeg tržišta po prihvatljivim cenama, oslanjanjem na domaće tržište koje je brzo rastuće i konačno sopstvenim inovacijama. Kada je ovladala proizvodnjom električnih baterija kompanija se vertikalno integrisala unapred i uz širenje mreže dobavljača ušla u proizvodnju vozila, da bi danas bila lider u proizvodnji električnih vozila. Snižavanjem cene proizvoda BYD je doprineo tome da segment električnih vozila iz premijum pređe u masovni segment, što je povratno dodatno uticalo na smanjenje troškova. Konačno, BYD ima sposobnost da usled kombinacije automatizacije i relativno jeftine radne snage, obezbedi dodatne usluge za kupce, odnosno modifikacije i prilagođavanje proizvoda.

Oslanjanje isključivo na domaće tržište nije strategija koja garantuje dugoročnu konkurentnost kineskih proizvođača električnih vozila. Kod ovih kompanija kao motiv internacionalizacije poslovanja dominira motiv pristupa strateškoj imovini koja nije na raspolaganju na domaćem tržištu. Kroz tržišne transakcije kompanije stiču nematerijalnu imovinu koju zatim kombinuju sa sopstvenim kompetencijama. Ove kompanije kroz tržišne transakcije kupuju dizajnerska rešenja, angažuju pojedince sa specifičnim znanjima ili kupuju tehnološke licence (Barnard, 2010). Takođe, kineski proizvođači električnih vozila često koriste manjinske investicije kako bi stekli pristup pojedinoj imovini u inostranstvu. BYD je prodao manjinski paket akcija investicionom fondu iza koga stoji Warren Buffett. Ova investicija je pomogla kompanije da stekne kredibilitet na razvijenim tržištima, ali i da uspostavi saradnju sa tehnološkim kompanijama u kojima ovaj investitor ima svoje udele. Sa druge strane Geely-Volvo je preuzeo manjinski paket akcija u kompaniji Daimler. Osim reputacije, ovaj paket akcija je poslužio kao osnova za strateško partnerstvo u oblasti razvoja „pametnih vozila“.

U odnosu na lidere sa razvijenih tržišta kasni pratioci iz Kine često ne poseduju stratešku nematerijalnu imovinu, neophodnu za ulazak na više platežne segmente ili na razvijena tržišta. Kako bi nadomestili ove nedostatke kasni pratioci iz Kine se često odlučuju da realizuju međunarodne akvizicije kompanija sa razvijenih tržišta ili delova njihove imovine. S obzirom da se matično tržište odlikuje visokom tržišnom i institucionalnom

neizvesnošću, kineske kompanije su razvile sposobnost brzog usvajanja novih kompetencija i njihove kombinacije sa postojećim znanjima (Pattnaik et al., 2021). Ova karakteristika je veoma bitna za uspešnu realizaciju međunarodnih akvizicija na razvijenim tržištima. Nakon preuzimanja Volvoa kineski Geely se okrenuo ka prezimanju startapova sa razvijenih tržišta koji su radili na razvoju električnih vozila. Kroz ove manje akvizicije kompanija je sticala iskustvo poslovanja na razvijenim tržištima, a nije se izlagala velikom riziku. Istovremeno ove akvizicije su omogućile pristup poslovnim eko sistemima na razvijenim tržištima, odnosno pojedincima sa specifičnim znanjima, dobavljačima sa posebnim ekspertizama i naučno istraživačkim centrima u razvijenim zemljama. Sa druge strane BYD je u pregovorima oko otkupa proizvodnog pogona Forda u Nemačkoj. Ova transakcija bi BYD omogućila brzu penetraciju na tržište EU, sticanje kvalifikovane radne snage i pristup dobavljačima koji su saradivali sa velikom multinacionalnom kompanijom.

4. ZAKLJUČAK

Dugo su postojeći konkurenti u auto industriji bili zaštićeni od pojave novih igrača u grani, visokim barijerama ulaska kao što su kapitalna i tehnološka intenzivnost, i brend lojalnost. Međutim, u poslednjih 15 godina nekada stabilna struktura grane se „odmrzla“ usled Velike recesije i disruptivnih inovacija u oblasti digitalizacije i elektrifikacije vozila. Ovi procesi su olakšali pojavu kasnih sledbenika iz Kine, koji su se fokusirali na segment električnih vozila. Danas Kina ima lidera u proizvodnji električnih vozila, ali i četvrtog proizvođača na ovom segmentu. Ove dve kompanije i veći broj manjih pratilaca svoju konkurentnost grade na nekoliko faktora. Domaće tržište, najveće globalno tržište, se razvija pod uticajem državnih mera, što ovim kompanijama omogućava ostvarivanje ekonomije obima što je veoma bitno kod poslovnih modela koji se baziraju na inovacijama. Državni organi ovim kompanijama obezbeđuju pristup relativno jeftinom kapitalu, prirodnim resursima iz inostranstva ali i podstiču saradnju sa kompanijama koje čine poslovni eko-sistem proizvođača električnih vozila. Za sticanje konkurentnosti je naročito bitna saradnja sa kineskim dobavljačima koji poseduju digitalne kompetencije i kompetencije u elektrifikaciji vozila. Na ovaj način lanci snabdevanja postaju fleksibilniji i otporniji na eksterne šokove. Konačno, kako bi stekli pristup strateškim resursima sa razvijenih tržišta ove kompanije koriste kupovinu manjinskih paketa akcija inostranih kompanija, ali i potpuna preuzimanja. Ipak, ove kompanije još uvek dominantno zavise od domaćeg tržišta dok će uspeh na razvijenim tržištima zavisiti od sposobnosti da izgrade prepoznatljive brendove, razbiju predrasude o svojoj zemlji porekla, ali i da upravljaju političkim rizikom usled zaoštavanja odnosa između Kine i zemalja zapada.

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ANALYSIS OF THE ELECTRONIC BUSINESS MODEL FOR IMPROVING THE QUALITY OF SERVICE IN RAILWAY PASSENGER TRANSPORT

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Abstract: The development and application of technologies is increasingly common in companies. The commercialization of the Internet caused the development of a large number of electronic systems based on advanced Internet technologies. Railway companies improve their operations every day in order to increase revenue and at the same time reduce expenses. Today, in addition to trains and high-speed railways, the railway company applies innovative technologies in its offer. This paper presents a comparative analysis of the traditional way of buying a transport ticket, ticket vending machines installed in railway stations, as well as the purchase of an electronic ticket via an application on a computer, tablet, laptop or smart phone. The applied and analyzed methods of purchasing a transport ticket in the railway company include parameters related to human resources participating in the process, physical or virtual proctor in which the process is realized, applied technology which is the basis for the functioning of the electronic business system, organizational processes where the flow is foreseen in advance activities based on available technologies And finally, as a final product, the realization of the activity of purchasing transport tickets in digital form.

Keywords: electronic business, comparative analysis of services, user, railway, electronic ticket

1. INTRODUCTION

The commercialization of the Internet and the application of electronic business has caused the creation of different business models based on information technologies. Companies implement innovative business models in accordance with their purpose of existence, but also orientation towards the user, where real needs are considered. In this way, the company digitally approaches the user in order to realize his needs as well as achieve a certain monetary profit. Various electronic business models that have been developed and applied involve planning and managing business in the company to increase profits.

The application of different business models of electronic business has conditioned the development of companies that base their business on the development of infrastructure, services and new business models. The basic task of such companies includes the development of computer and network equipment, adaptable operating systems, business databases, etc., all in order to support processes in electronic business (Pavlović et al., 2020,

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2021, 2022a, 2022b). Traditional business models are being replaced by new technologies. The changes in business that are presented in this paper include ticket machines where users purchase tickets independently or with the assistance of an employee, and a model based on online purchases from their homes or wirelessly from smart phones, laptops and tablets.

2. RELATED RESEARCH

Today, in the implementation of a large number of activities related to the improvement of the quality of transport services, railway transport undertakings apply innovative technologies. The replacement of traditional models of purchasing transport tickets has been reduced to a minimum today. Electronic business is increasingly available and accessible to a wide user mass of people. It is necessary for the user to have basic knowledge about the application of the service provider (in this case, the railway carrier) and to have a suitable device (desktop or laptop computer, smart phone) that has an internet connection for obtaining a transport ticket from anywhere and at any time days of the week.

Queuing time is a common problem in all service disciplines and some people may be reluctant to join the queue due to the long wait. These phenomena can also be seen in the case of train ticket services. A well-crafted model is needed so that management can better understand the circumstances. Based on the data collected from the train station for one day, a normal distribution for the service rate was fitted and the fit was found to be statistically good. The obtained performance measures were found to show significant agreement with the observed data in the field (Nair et al., 2021).

After the reform and opening, the railway continuously improved the transformation and construction of transport systems and achieved the expected results. However, looking at the entire transportation system, there is still a lack of foresight in conceptual design and planning. This article focuses on the status of the high-speed rail station service system, using big data to measure the number of passengers arriving per unit time, the ticketing service system, the automatic ticket collection system, the system security inspection service, and the number of ticketing system equipment and facilities. , an effective waiting area and conduct statistical research on service possibilities, establish a model for assessing the reliability of the high-speed rail service system. For subsequent analysis of system problems, the station's service system can be analyzed. Optimization provides a theoretical basis (Huidi & Xiwen, 2022).

With the constant increase in the flow of passengers at railway stations in modern life, the service needs of passengers tend to be computerized. Traditional service methods such as physical presence of passengers and ticket checking at the railway station cannot meet the needs of passengers. In order to diversify the service content of the railway station, to improve the efficiency of the management of the services of the accompanying railway stations, a multifunctional intelligent system applied to trains was designed. The system combines embedded development and web development, expands many hardware and software functions, and forms a controllable system that combines intelligent algorithms and manual control, which can be well applied to training service systems (Zhu et al., 2020).

Tickets in all ticketing systems are becoming scarcer as more people travel during the holidays. Therefore, a multi-channel data based railway ticketing system approach structure is proposed, which also helps to achieve convergent application of rules and models. Through the data service platform, the use of external and offline data in real time is realized and the accuracy of strategy and rule models is improved. The joint statistical output of the model's rules and features reduced memory usage (Chunme et al., 2020).

High-speed rail, which offers train services with affordable prices and favourable quality, plays a key role for intercity travel in many districts. Noting that the time-dependent price measure is too aggregated to satisfy individualized demand, this study proposes a new ticketing scheme. Assuming that this ticketing scheme is implemented in the operation of high-speed rail services, this study aims to determine optimal operational strategies, including fleet size and timetable to optimize certain objectives from operator and passenger perspectives (Di et al., 2022).

Rail service is a convenient and inexpensive mode of transportation, widely used by both domestic and foreign travellers. The main railway lines cover unique and very different areas of the country. When passengers book tickets, although they can reserve seats in advance, they cannot reserve a specific seat. Also, there is no process to identify the most suitable seat for them in the midst of many other passengers, especially if they are travelling alone. Considering the above, the authors propose a more innovative and simpler system for the Railway Department. Depending on the different attributes of the passengers, the system is able to propose a travel plan with train lines that cover the most suitable destination proposals; identifying the best seats with a relaxing atmosphere; providing an interactive response to user inquiries about certain location information; and the ability to interact with users 24×7. An itinerary can save travellers time and enable them to identify their desired train line and relevant attractions without much hassle. Machine learning and deep learning technologies are used in the development of the proposed system (Mihiranga et al., 2021).

In this study, we propose a method that combines structural equation modelling and importance-performance analysis to evaluate and improve the service quality of congested subways from the point of service components. The use of service components is more practical for metro managers to improve service quality than the factor analysis methods used in previous studies. Second, a hybrid method combining network and structural equation modelling is proposed to establish the relationship between service quality and these service components and factors. This hybrid method can learn the uncertain relationship directly from the data, explain the psychological element and determine the key component of the service. With the help of importance and performance analyses, some practical suggestions (eg themed stations, women-only carriages and one-day ticket) are proposed to optimize the bottleneck service components and thereby improve the service quality of daily metro operation (Xu et al., 2020).

3. ELECTRONIC BUSINESS MODELS OF THE RAILWAY CARRIER

In the first part of the paper, the services and the importance of digitized processes in railway traffic related to increasing the quality of transport services are presented. Research shows that modern business operations based on digitalized processes in companies can greatly improve the overall orientation towards the user with the aim of increasing income and at the same time reducing expenses. This paper presents a set of services of a railway provider for passenger transport that is currently applied in railway traffic. A comparative analysis of the traditional and digitalized way of buying a transport ticket is presented, as well as the role of the participants in the activities (Table 1).

The traditional way of purchasing includes the physical presence of the user in the carrier's facilities. The activities that comprise this process require a certain time interval for departure, waiting in line, talking to an employee at the passenger ticket office, selecting available and free seats, printing the transport ticket, paying and finally the departure of the user.

The application of electronic business is the next step in the improvement of business through the application of card machines. Card machines are a means through which the user can select certain offered parameters in the appropriate touch-sensitive monitor and receive a transport ticket by paying. In particular, it should be noted that the ticket machine can completely replace an employee at the passenger ticket office.

The most advanced model of electronic business includes the purchase of a transport ticket using an installed application. The application can be installed on a smart phone where the acquisition of an electronic ticket is enabled by wireless communication, and another method includes the installed application on a desktop computer in the user's home.

Table 1. Comparative analysis of traditional and digital business models

| Model / Parameter | Traditional model User / Employee | A model of the card machine application User / Card machine | Model Online - application User / Application |
|---------------------------------|---|---|---|
| Human Resources (communication) | Users and employees in business facilities for ticket sales and direct communication | User and card machine in business establishments for ticket sales | Virtual cash register based on digital business (selection and payment of service, receiving a digital record representing an e-ticket on the user's device) |
| Environment (space) | Physical user access to the passenger ticket office / employee workspace | Physical access of the user to the ticket office / the place where the card machine is installed | Virtual space for electronic business between the user of the service and the railway carrier for choosing, paying and receiving a ticket in a digital record |
| Applied technology | Service user with the need for a ticket / employed service implementer on all hardware and software devices | Selection and payment of the service through the card machine (cash or payment card / provision of the card machine for the implementation of the request | Hardware, software and Internet users for ordering and delivering the requested service through the company's service |
| Organizational processes | The user of the service in f-f communication with the cashier in all transactional activities | User communication by selecting the appropriate buttons on the display of the card machine | Wired and wireless communication between the user of the service and the company in the transactional activities of ordering, paying and obtaining a transport ticket in a digital record |
| Service Product | Printed transport ticket in the official premises of the carrier | After paying the amount of the transport ticket, the user of the service receives a printed e-ticket at the ticket machine | Obtaining an electronic ticket without going to the premises of the company and without direct communication |

The basic difference between the traditional and digital business model is the organization of activities that the user can realize digitally with the help of electronic business. The analysed parameters (Figure 1) represent the starting point for the realization of the service, the procurement of the transport ticket.

The application of digital technologies connects and organizes activities related to the purchase of a transport ticket. Human resources in the electronic business model include the needs of the user and are the initiator of the initiation of the procedure. It can be said that it is the most important participant among other parameters of the system. The second in

importance can be the system administrator, who makes sure that the system of electronically procured transport tickets functions smoothly and is available to the user at all times, regardless of spatial distance.

The environment or space where procurement is carried out by the user of services means a virtual place made possible by devices, technologies and the application of the Internet. That is why it stands out because the user can use the available devices that have the ability to connect to achieve the process of digital communication with the service of the service provider in this case for the railway carrier.

The applied technology can be viewed in two ways. The first method includes the technology that the user must have at the time of the activity of purchasing a transport ticket. The second and perhaps more important segment of electronic business includes the railway company, which must invest certain funds for the purchase of computer equipment with accompanying components in order to ensure the functioning of the system. The railway company must follow current trends because technology is constantly developing and thus affects electronic business as well.

Organizational processes in the electronic business model must foresee in advance the steps that the user must follow in the realization of the process of purchasing an electronic ticket. The railway company is responsible for the functionality of the electronic business system, which must enable the user to choose appropriate items, the flow of activities, coordination with the bank through which the electronic payment of the requested service is made...

The last element of the system includes an electronic ticket that the user receives on his device and with which he can be validated by an employee in the means of transport (train) and make the intended trip. In this way, the user through the digital process of electronic business chose, paid and obtained an electronic ticket without going to the service provider's point of sale or obtained a transport ticket at a ticket machine without waiting in line.

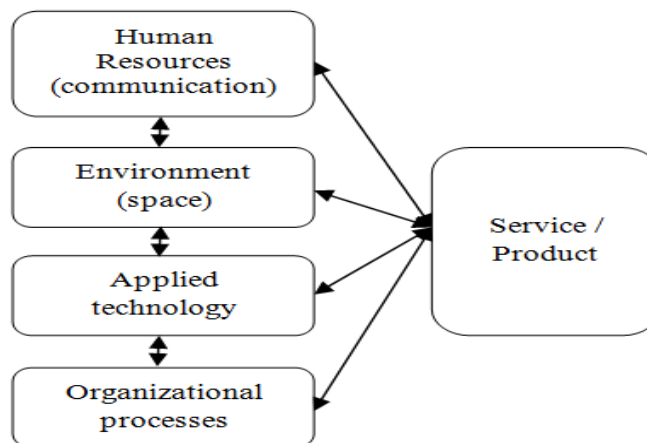


Figure 1. Basic parameters for the functioning of the electronic business system

4. CONCLUDING REMARKS

This paper presents a comparative analysis of the services that are applied in railway traffic in the segment of the need for transportation as well as the way of purchasing a transportation ticket. The analysed parameters, which are integral parts of electronic business,

describe the basic advantages provided by the functioning of the entire system for the procurement of electronic tickets. User needs are realized in a digital way using the computer system and services of the railway carrier service provider. The basis of the analysed system for obtaining an electronic ticket makes the entire process easier for the user in saving the time needed to leave, wait, pay and get the ticket, because with the help of a certain number of selected buttons, he gets an electronic ticket from anywhere and at any time of the day. Future research could include an analysis of the utilization of available systems for electronic ticketing versus the traditional model that is widely applied.

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WHY TO USE SHORT SELLING ON ELECTRONIC TRADING MARKETS

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Abstract: A trading or investment method known as short selling makes predictions about the price drop of a stock or other security. Investors or portfolio managers may use short selling as a hedge against the downside risk of a long position in the same security or a comparable one, while traders may use it for speculation. In short selling, a position is established by obtaining borrowed shares of a stock or other asset, the value of which the investor anticipates falling. Hedging and speculating are the two most frequent justifications for short selling. A speculator is betting exclusively on the price, predicting that it will fall in the future. They will have to buy the shares back at a higher price and a loss if they are mistaken.

Keywords: Electronic trade, short selling strategy, short position, profit, price

1. INTRODUCTION

Short selling is a trading strategy used by investors to profit from the decline in the price of a security. In short selling, an investor borrows shares of a security from a broker or another investor, sells them in the market, and then buys them back at a lower price to return to the lender. The investor profits from the difference between the price at which they sold the shares and the lower price at which they bought them back.

Short selling is typically used when an investor believes that the price of a security will fall in the future. Short selling can be risky because there is no limit to how high the price of a security can rise, meaning that losses can be significant if the price rises instead of falling. In addition, short selling can sometimes be restricted by brokers or regulators, particularly during periods of market volatility.

A method of trading or investing known as short selling makes predictions about a decline in the price of a stock or other security. Only seasoned traders and investors should use this complex strategy. Investors or portfolio managers may use short selling as a hedge against the downside risk of a long position in similar or comparable securities, while traders can be used for speculative purposes. Speculation is a complex form of trading with high risks.

A more common trade is hedging, which involves taking a reverse position to reduce risk. In short selling, a position is established by borrowing shares of a stock or other asset that the investor expects will decrease in value. The investor then sells these borrowed shares to buyers willing to pay the prevailing price. The trader bets that the price will continue to fall and that he can buy the stock at a lower price before returning the borrowed stock. Since the

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price of any asset can increase indefinitely, the risk of loss when short selling is essentially unlimited.

Key points that you have to keep in mind are:

- When an investor borrows a security, he sells it on the open market with the intention of buying it later at a lower price.
- Short sellers bet and profit from falling stock prices. Contrast that with long-term investors who want prices to rise.
- Short selling has a high risk/reward ratio as it can yield substantial profits but also cause significant losses due to margin calls.

2. KNOWLEDGE OF SHORT SELLING

When a seller enters a short sale, he opens a short position by borrowing shares, usually from a broker, with the intention of buying them back for a profit. Profit if the price falls. Because you can't sell stock that doesn't exist, you have to borrow shares. A trader looking to liquidate a short position buys back shares on the open market, hopefully at a lower cost than they borrowed, and then returns it to a lender or broker. Any interest or commission received by a broker of must be reviewed by the trader.

A trader needs a margin account to initiate a short position, and while the position is open, he usually has to pay interest on the value of the borrowed shares. In addition, minimum values have been established for the amount that the margin account must maintain (known as maintenance margin) by the Federal Reserve, the New York Stock Exchange (NYSE) and the Financial Industry Regulatory Authority (FINRA), which enforces the rules and regulations governing registered brokers and brokerage firms in the United States (Financial Industry Regulatory Authority. Margin Regulation). More funds are needed if the investor's account value falls below the maintenance margin or the broker can sell the position.

The broker is responsible for finding stocks that can be borrowed and returned at the close of a transaction. With most brokers, trades can be opened and closed using standard trading interfaces. However, each broker will have requirements that a trading account must meet before allowing margin trading.

2.1. Why are you short?

Hedging and speculation are the two most common justifications for short selling. A speculator bets entirely on the price, predicting that it will fall in the future. They will have to buy back the shares at a higher price and suffer a loss if they buy the wrong one. Since short selling involves more risk due to the use of margin, it is usually done for a shorter time and is therefore more likely to be done for speculative purposes.

Alternatively, a short sale can be made to protect long positions. For example, you may want to go short on a long call position to lock in your profits. Alternatively, you can short a closely related or related stock if you want to cut your losses on the price drop without actually selling your long position on that stock.

An illustration of short selling for profit Consider a trader who predicts that stock XYZ at \$50/share will fall over the next three months. They sell 100 borrowed shares to another investor. Because the trader sold something he didn't own but borrowed, he is currently "short selling" 100 shares. Only by borrowing the stock, which is not always possible if the stock has been heavily sold short by other traders, can make a short sale possible. After the company whose stock was shorted released dreadful quarterly financial data a week later, the stock fell

below \$40. To replace borrowed shares, a trader chooses to close a short position and buy 100 shares at \$40 on the open market. Trader earns \$1,000 short selling ($\$50 - \$40 = \10×100 shares = \$1,000), minus commissions and interest on margin accounts.

2.2. Illustration of Short Selling at a loss

To illustrate, let's say that an investor believes that the price of Company XYZ's stock is overvalued and will decline in the coming weeks. The investor borrows 100 shares of Company XYZ's stock from a broker and sells them in the market at the current market price of \$50 per share, which gives them \$5,000 in cash. If the price of the stock declines as expected, the investor could buy back the shares at a lower price in the future and return them to the lender, pocketing the difference as profit.

However, if the price of Company XYZ's stock rises instead, the investor could potentially experience a loss. For example, let's say that the price of the stock increases to \$60 per share. If the investor were to buy back the 100 shares of Company XYZ's stock at the higher price, they would need to pay \$6,000 to return the shares to the lender, which would result in a loss of \$1,000 ($\$6,000 - \$5,000$).

In addition to potential losses, short selling can be subject to restrictions and regulations, particularly during periods of market volatility. For example, some brokers may limit the availability of stocks available for short selling, or regulators may implement short selling restrictions to prevent excessive market volatility.

2.3. An example of protection with a Short Selling

Short selling can be used as a form of protection or hedging against potential losses in a portfolio. By short selling a security, an investor can profit from a decline in its price, which can offset losses in other securities in the portfolio. This strategy is particularly useful in bearish market conditions when many securities may be experiencing a downturn.

For example, suppose an investor holds a portfolio of stocks and is concerned about a potential market downturn. The investor could use short selling to hedge against potential losses in the portfolio. They could short sell an index fund that tracks the overall market or a specific sector that they believe is particularly vulnerable to a downturn.

If the market or sector experiences a decline, the short position will increase in value, providing a profit that can offset losses in the investor's long positions. This can help limit the overall losses in the portfolio.

In addition to speculation, short selling serves as a useful hedge, which is generally considered the safer and more reliable variant of short selling. The primary purpose of hedging is protection, as opposed to the sole purpose of speculation, which is to make a profit. Hedging is used to protect gains or limit portfolio losses, but because it's expensive, the majority of retail investors don't think about it often.

The insurance covers two costs. Add to this the actual cost of hedging, including a short sale or premium for hedging option contracts. As the market continues to grow, there is also a missed opportunity cost that limits the portfolio's gain. For a simple illustration, assume that 50% of the portfolio is roughly the size of the Standard & Poor's 500 (S&P 500) hedged index. If the index gains 15% over the next 12 months, the wallet will only earn about half of that profit, or 7.5%.

3. PROS AND CONS OF SHORT SELLING

If the seller of a short position misanticipates price movements, he can lose money. When an investor buys stocks, the only way they can lose their entire investment is if the stocks go to zero. However, a trader who shorts a stock risks losing more than his original investment. The risk stems from the fact that the stock price has no limits and can go "infinity and beyond.". Also, the trader must fund the margin account while holding the stock. Even if all goes according to plan, investors should factor margin rates into their earnings estimate. Here are some of the main advantages and disadvantages of short selling.

Advantages:

Profit from market declines: Short selling allows investors to profit from declining market conditions. In other words, it allows investors to make money even when the overall market is experiencing losses.

Hedging: Short selling can be used as a form of portfolio protection against potential losses. Investors can use short selling to offset potential losses in long positions or to hedge against market downturns.

Diversification: Short selling provides investors with an additional tool to diversify their portfolio. This can help to reduce overall portfolio risk and increase returns.

Increased liquidity: Short selling can increase market liquidity, making it easier for investors to buy and sell securities.

Disadvantages:

Unlimited risk: Unlike buying stocks, short selling has unlimited risk since the price of a stock can rise indefinitely. If an investor's short position rises in price, their potential losses are unlimited.

Timing risk: Short selling requires precise timing since predicting market movements can be difficult. If the investor is wrong about the direction of the market, they may suffer significant losses.

Borrowing costs: Short selling requires borrowing shares of stock from a broker, and the investor must pay a fee for this privilege. These borrowing costs can increase the overall cost of the trade and reduce potential profits.

Regulatory restrictions: Short selling can be subject to restrictions and regulations that limit the availability of stocks available for short selling or impose restrictions during periods of market volatility.

If many other traders are also shorting the company, or if the stock price is undervalued, it may be difficult for the short seller to find enough shares to buy when closing the position. On the other hand, if the market or stock starts to recover, sellers could be in a short-term tightening cycle. On the other hand, high-risk tactics also bring high returns. Short selling is no exception. Traders who use margin to initiate trades can achieve a high return on investment (ROI) by correctly predicting price movements. Leverage is done via margin, which means the investor has to deposit less money initially. Short selling can be a low-cost, conservative hedging strategy that acts as a counterbalance to other assets in the portfolio. In general, beginners should refrain from short selling until they gain more trading experience. However, since the risk of shorting is lower, shorting ETFs is a slightly safer technique.

4. ADDITIONAL THINGS TO KEEP IN MIND

Shorting Investors should be aware of the additional dangers associated with shorting in addition to the previously mentioned risk of losing money in trading due to rising stock prices. Short selling using borrowed funds. Margin trading also refers to short selling. By

opening a margin account and using your investment as collateral, short selling allows you to borrow money from the broker. Losses can easily get out of control because you have to meet the minimum maintenance requirement of 25%, just like when you make a long-term margin. You will face a margin call and will need to replenish your funds or liquidate your trades if your account falls below this level (Financial Industry Regulatory Authority. Margin Regulation).

Wrong timing

Although a company may be overvalued, it can take a while for its stock price to drop. You are likely to incur interest charges, margin requirements and be called back in the meantime.

Quick Squeeze

What is a squeeze? Due to the fact that short trades are offered with margin, even very small losses can lead to increased margin calls. The owner of the short position must buy back his shares at a higher price than ever if the margin call is not executed. That way, the stock price is even higher.

A company is also vulnerable to a squeeze if it is oversold and has a high intraday cover ratio and short float. When a stock starts to rise in price, short sellers hedge their trades by buying up their short positions, resulting in a short sale. This purchase can cause a feedback cycle. More buyers were attracted to the stock due to increased demand, which pushed the stock price higher and encouraged other short sellers to buy back or cover their positions.

Regulatory risks

To avoid panic and excessive selling pressure, regulators may sometimes impose short-selling bans in a particular industry or even the entire market. The stock price can suddenly increase as a result of such activity, forcing short sellers to cover large losses on their short-term holdings.

Unlike Flow

History shows stocks with an average uptrend. Most stocks increase in value over time. In fact, the rate at which prices increase in the economy or inflation will increase a company's stock price, even if it increases only slightly over time. This means short selling as a bet against the overall trend of the market.

Short selling fees

Unlike buying and holding stocks or assets, short selling incurs significant costs in addition to the normal trading commissions payable to brokers. Expenses include: Discounted Interest When trading stocks on margin, margin interest can be a significant expense. Interest paid on short sales can accrue over time, especially if short positions are open for a long period of time, as short selling can only be done through a margin account.

Cost of borrowing to buy shares

Expensive "hard-to-borrow" stocks can be very expensive due to factors such as high short-term interest rates, low variable interest rates, or other issues. The rate-based annual fee is proportional to the number of days the trade is open and can range from a very small percentage to over 100% of the value of a short trade. The exact amount of the fee may not be known in advance as the level of difficulty can vary greatly from day to day and even from day to day.

After the short sale is completed, the broker typically deducts a commission from the client's account. If the cost is high, it can significantly reduce the profit of a short-term trade or increase its loss.

Other payments and dividends

A stock borrower must receive dividends from short sellers on stocks sold short. In addition, the short seller is responsible for paying other contingencies associated with the act of short selling, such as stock splits and issuance of bonus shares.

Short Selling Shares are tracked using the following two indicators:

1. The Short Sale Interest Rate (SIR), commonly referred to as a short-term variable, calculates the number of shares currently traded based on the amount available or shares "floating" in the market. Stocks with a very high SIR are likely to fall or be overvalued.

2. The short interest-to-volume ratio, often referred to as the days-to-coverage ratio, is calculated by dividing the total number of shares sold short by the shares' typical daily turnover. A high daily delivery rate is another sign of an organization's underperformance.

An investor can determine whether the general sentiment about a stock is positive or negative by applying one of two short selling criteria. For example General Electric Co. (GE) started to have a negative impact on the company's overall performance after the fall in oil prices in 2014. As short sellers began to anticipate lower share prices by the end of 2015, the short rate went from less than 1% to over 3.5%. GE's stock price peaked at \$33 per share in mid-2016. when it started falling. Short sellers who was lucky to sell stocks near the top in July 2016. was reportedly earning \$23 per share until GE dropped to \$10 per share in February 2019 (General Electric. GE Stock).

5. IDEAL CIRCUMSTANCES FOR SHORT SELLING

When it comes to shorting, timing is everything. A company's large gains can be wiped out in days or weeks in the event of shortages or other adverse events, as stocks often fall much faster than they rise. Therefore, the short seller must time a near-perfect short-term trade. Considering that a significant portion of a stock's decline may have already occurred, entering a trade too late can result in a significant opportunity cost of missed profits.

On the other hand, if the trade is entered too soon, it can be difficult to maintain a short position due to the costs involved and potential losses, which would skyrocket if the stock rallied faster. Sometimes, as in the following situations, the chances of a successful short selling increase:

During a bear market - During a bear market, the main trend in the stock market or industry is down. As a result, traders who adhere to the "trend is your friend" mantra are more likely to make money short selling in a bear market than in a bull market. As in the global bear market of 2008-2009, short sellers thrive in situations where market downturns are fast, wide, and steep because they have the ability to make unexpected profits. As stock or market fundamentals deteriorate several factors, including slower revenue or earnings growth, escalating business problems, high input costs cause stress for profits, etc., can cause the stock's fundamentals to deteriorate. For the broader market, deteriorating fundamentals could be characterized by a series of weaker data points that suggest a potential recession, adverse geopolitical developments such as the threat of war competition or bearish technical indicators such as new highs due to reduced volume and reduced market breadth. Qualified short sellers will choose not to place short trades until a negative trend is established rather than doing so in anticipation of a downtrend. This is due to the possibility that a company or market can continue to rise despite weakening fundamentals for several weeks or months, as is often the case during the closing stages of a bull market.

The downtrend is confirmed by technical indicators. When various technical indicators favor the negative trend, short selling can also have a higher chance of success. A breakout below a key long-term support level or a bearish moving average crossover such as a dead

game point are examples of such signs. When a stock's 50-day moving average falls below its 200-day moving average, that's illustrating a bearish moving average crossover. A moving average is nothing more than the average price of a stock over a predetermined period. A new price trend may be indicated if the current price is above the average, bullish or bearish. Valuations are rising due to abundant optimism at that time, valuations of specific industries or entire markets can reach extremely high levels due to unrestrained optimism about the long-term prospects of industry or the global economy.

Market experts call this stage of the investment cycle the "price of perfection" because they know that investors will be disappointed if their high expectations are not met. Experienced short sellers can wait for the market or region to turn around and initiate a negative phase before jumping to the sell side. The economic theories developed by the famous British economist John Maynard Keynes are still in use today. Keynes phrase that "the market can go irrational longer than you can stay solvent" applies especially to short selling (The New York Times, 1999). In other words, the market can continue to behave in unpredictable ways, and investors must be prepared for this and not put all their financial resources at risk. When all of the above factors are present, short selling is the most profitable.

6. REPUTATION OF SHORT SELLING

Short selling is sometimes vilified and short sellers are portrayed as ruthless businessmen trying to destroy businesses. The reality is that shorting brings liquidity to the market - there are enough buyers and sellers - and can help prevent bad stocks from skyrocketing due to overconfidence and hype. Market disruptions caused by asset bubbles are proof of this advantage. Assets that caused bubbles, such as the mortgage-backed stock market (MBS) prior to the 2008. financial crisis, can be difficult or impossible to sell short.

A reliable source of data on market mood and demand for stocks is short selling. Investors may be caught off guard by adverse fundamental trends or unexpected news without this information. Unfortunately, due to the unethical methods of speculators, short selling has a bad reputation. These dishonest people artificially inflate prices and carry out bearish attacks on vulnerable stocks using short selling techniques and derivatives. Although much of this type of market manipulation is banned, it does happen from time to time. Put options are a great alternative to short selling because they allow you to make money when the stock price falls without using margin or leverage.

7. EXAMPLES OF REAL-WORLD SHORT SELLING

Unexpected developments in the news can cause a short-selling squeeze, which can force short sellers to buy at any price to meet their escrow obligations. For example, after a massive short-selling squeeze in October 2008, VW quickly overtook Apple as the world's most valuable publicly traded company (Reuters. Short Sellers Make VW the World's Priciest Firm). Investors learned in 2008 that Porsche was trying to expand its stake in VW and take a majority stake. Short sellers sold a lot of the stock short because they believed it would lose value if Porsche took control of the institution. Porsche's surprise revelation that it had surreptitiously purchased more than 70% of the company's shares through derivatives triggered a massive feedback cycle in which short sellers bought shares to compensate for their position (Porsche. Porsche Heads for Domination Agreement). Since Porsche still controls 70% of VW and a government entity that owns 20% of the company is not interested in selling, there are relatively few shares available on the market (floating) for redemption, which makes puts short sellers at a disadvantage. Essentially, the stock went from the mid-

€200 to just €1,000 overnight, as short-term interest rates and cover days ratio skyrocketed (The New York Times, 2008). Short-term pullbacks tend to dissipate quickly, and in just a few months Volkswagen stock is back in its normal range

8. CONCLUSION

Why are we talking about short selling?

A short position is a bet against the market that makes money when the price falls. Such bets are made when short selling. This is in contrast to a long position, buying an asset in anticipation of the price going up. Why are stocks lent to short sellers? What does not exist cannot be sold. The short seller must first find some outstanding shares of the company, as there are only so many. Thus, the short seller borrows those shares from an existing long position and pays interest to the lender. Its broker usually handles this process in the background. The interest fees associated with short selling will be higher if there are fewer shares available for short selling (i.e. if borrowing is difficult). Is short selling securities bad? While some consider it unethical to bet on the market, the majority of economists and financial experts agree that short sellers bring liquidity to the market and price discovery and increasing its efficiency.

Short selling allows traders and investors to take advantage of a bear market. Those with a pessimistic outlook can borrow stocks on margin and sell them on the market with the intention of buying them back later at a cheaper price. Although some see short selling as a bet against the market, many economists believe that it actually improves market efficiency and acts as a stabilizing effect. To generate trading ideas, technical traders and analysts often look at a stock's short-term interest rate and other short-term holding ratios. However, large short positions may be under pressure from margin calls. The purchases needed to cover short positions could push the price up and accelerate the uptrend, with growing losses from short positions.

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ALTMAN'S Z-SCORE MODEL OF ANALYSIS

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Abstract: Every year in the United States approximately 1% of all companies declare bankruptcy. As a result of an attempt to define the factors that lead to a company's bankruptcy, there have been a large number of scientific papers dealing with this problem over the last few decades. A number of techniques and models for business failure prediction have also been developed in order to implement preventive measures to avoid the negative consequences of failure at the level of companies and the economy as a whole. In this context, Altman's model is the most popular model in this area in the world. It has served as the inspiration and basis for a number of authors to develop their own models of analysis using the same statistical techniques. This paper presents the most popular model for the prediction of business failures of companies, the so-called Altman's model of analysis.

Keywords: Z-score, bankruptcy, ratio indicators, multipliers

ALTMANOV Z-SCORE MODEL ANALIZE

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Apstrakt: Svake godine u SAD približno 1% svih preduzeća proglasi bankrot. Kao rezultat pokušaja da se definišu faktori koji dovode do bankrota preduzeća, u poslednjih nekoliko decenija napisan je veći broj naučnih radova koji se bave ovom problematikom. Takođe, razvijen je i određeni broj tehnika i modela za predviđanje poslovnog neuspeha, u cilju sprovođenja preventivnih mera i sprečavanja negativnih posledica neuspeha, na nivou preduzeća i privrede u celini. U tom kontekstu, Altmanov *Z-score* model predstavlja najpoznatiji model iz ove oblasti u svetu. On je poslužio kao inspiracija i osnova brojnim autorima, da koristeći istu statističku tehniku kasnije razviju svoje modele analize. U ovom radu, dat je prikaz najpoznatijeg modela za predviđanje poslovnog neuspeha preduzeća, tzv. *Z-score* model analize.

Ključne reči: Z-score, bankrot, racio indikatori, multiplikatori

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1. UVOD

Interesovanja za empirijsko istraživanje neuspeha preduzeća datiraju iz 80-ih godina XX veka. Do tada su istraživanja bila uglavnom orijentisana na opstanak i rast preduzeća. Međutim, treba imati u vidu da su empirijska istraživanja poslovnog neuspeha daleko složenija od istraživanja uspešnih preduzeća. Pri tome, treba imati u vidu da poslovni neuspeh preduzeća i likvidacija nisu sinonimi, što znači da se ova dva pojma ne mogu izjednačavati. Naime, pristup definisanju poslovnog neuspeha zavisi od perspektive posmatranja. Posmatrano sa ekonomskog aspekta, neuspeh predstavlja situaciju u kojoj se stopa prinosa na investirani kapital kontinuelno smanjuje. Posmatrano sa pravnog aspekta, neuspeh se izjednačava sa formalnim bankrotstvom. Međutim, preduzeće može biti relativno neuspešno u odnosu na konkurenciju, ali to ne znači da će doći i do njegove likvidacije. Na primer, mala privatna preduzeća čije se akcije ne kotiraju na berzi ostvaruju ograničene profite i rast manji od proseka grane, ali su vlasnici takvih preduzeća zadovoljni i posluju sve dok je preduzeće solventno. Prema tome, ne postoji opšte prihvaćena definicija poslovnog neuspeha, ali opseg svakako počinje od nemogućnosti da se ostvari prihod od investiranog kapitala pa do legalnog bankrotstva praćenog likvidacijom preduzeća.

Istraživanja u oblasti predviđanja poslovnog neuspeha permanentno zaokupljaju pažnju mnogih teoretičara i praktičara u poslednjih nekoliko decenija. Konsekventno tome, nastao je veći broj tehnika i modela za predviđanje poslovnog neuspeha preduzeća. Međutim, najpoznatiji model je Altmanov Z-score model analize. Naime, profesor na Stern School of Business na Njujorškom Univerzitetu, Edward Altman, prvi je uspešno primenio jedan statistički model u predviđanju bankrota preduzeća. Njegov tzv. Z-score model predstavlja najpoznatiji model iz ove oblasti u svetu. U vezi sa tim, polazna pretpostavka Altmanovog modela bila je da ograničen broj ekonomskih kategorija predominantno utiče na finansijsko stanje preduzeća, pa se njihovom analizom i stavljanjem u logičke odnose putem racio brojeva može doći do saznanja o tome da li se i u kojoj meri konkretno preduzeće nalazi u finansijskim problemima. Kako je njegov model imao zadatak, pre svega, da otkrije rizike od nastupanja bankrota preduzeća, u obzir su uzeti uglavnom oni racio brojevi koji ukazuju na solventnost, likvidnost i rentabilnost poslovanja (Kontić, 2006).

U samom definisanju modela, Altman je pomoću statističkih tehnika testirao 22 racio broja. Pri tome, testiranje je rađeno na uzorku od 66 preduzeća, od čega 33 preduzeća koja su bankrotirala i 33 uspešna preduzeća. Testiranje je sukcesivno ponavljano i svaki put je izostavljan onaj pokazatelj koji se najslabije pokazao u predviđanju bankrota. Primena ovakve „multiple discriminate“ tehnike imala je za cilj da se dodele odgovarajući ponderi racio pokazateljima koji su najviše doprinosili pravljenju razlike između uspešnih preduzeća i onih preduzeća koja su proglasila bankrot. Rezultat ovakvog Altmanovog testiranja bio je definisanje pet relevantnih odnosa (pokazatelja) i izračunavanje indeksa poznatog kao Z-score koji se koristi za predviđanje potencijalnog neuspeha preduzeća. Dakle, od početnih 22 finansijska odnosa, Altman je na kraju izabrao 5 odnosa tj. pokazatelja (Vukasović & Vojinović, 2011).

2. FORMA Z-SCORE MODELA

U skladu sa prethodno navedenim, treba istaći da se Z-score model analize bazira u stvari na ponderisanom zbiru više pojedinačnih pokazatelja. Naime, na osnovu ponderisanog zbira više pojedinačnih pokazatelja određuje se finansijsko zdravlje preduzeća. Pri tome, veći zbir znači veću finansijsku stabilnost preduzeća, i obrnuto manji zbir upozorava na moguće finansijske nepravilnosti. Rezultati Z-score modela analize zavređuju posebnu pažnju, budući da

podaci kojima se ovaj model služi imaju veliku upotrebnu i analitičku vrednost. Ovaj model se zasniva na definisanju pet pokazatelja, odnosno varijabli diskriminatorne funkcije. Shodno tome, originalni Altmanov Z-score indeks može se izračunati pomoću funkcije koja ima sledeće osnovne komponente (Ivaniš, 2019):

$$Z = 1,2 \cdot X_1 + 1,4 \cdot X_2 + 3,3 \cdot X_3 + 0,6 \cdot X_4 + 1,0 \cdot X_5 \quad (1)$$

gde je:

X_1 = Odnos obrtnog kapitala i ukupnih sredstava;

X_2 = Odnos akumulirane zadržane zarade i ukupnih sredstava;

X_3 = Odnos zarade pre odbitka kamata i poreza i ukupnih sredstava;

X_4 = Odnos tržišne vrednosti kapitala i ukupnih obaveza;

X_5 = Odnos prihoda od prodaje i ukupnih sredstava.

$X_1 = \text{obrotni kapital} / \text{ukupna sredstva}$ (*working capital / total assets*). Obrtni kapital se često sreće pod nazivom neto obrtni kapital i on predstavlja računsku veličinu koja se često koristi pri oceni kreditne sposobnosti preduzeća. Pri tome, preferira se pozitivna i visoka vrednost obrtnog kapitala jer ona ukazuje na to da je veći deo obrtnog kapitala finansiran dugoročnim izvorima finansiranja. Ovaj relativno retko korišćen ratio odnos pokazao se kao odličan pokazatelj finansijskih poteškoća preduzeća. On se svrstava u pokazatelje likvidnosti preduzeća. Pri analizi finansijskih izveštaja, u obrascu bilansa stanja od pozicije obrtna imovina oduzima se pozicija kratkoročnih obaveza, što znači da se ovaj pokazatelj može dobiti na osnovu sledećeg jednostavnog obrasca:

$$X_1 = (\text{Tekuća imovina} - \text{Tekuće obaveze}) / \text{Ukupna imovina}$$

$X_2 = \text{Akumulirana zadržana zarada} / \text{ukupna sredstva}$ (*retained earnings / total assets*). Akumulirana zadržana zarada je u stvari neraspoređeni dobitak. Međutim, ako je u bilansu stanja iskazan i gubitak, onda se uzima razlika između neraspoređenog dobitka i gubitka. Ova razlika može da bude i negativna, što se događa kada je neraspoređeni dobitak manji od gubitka. Dakle, za veću vrednost ovog racia neophodno je pozitivno poslovanje. Ovaj ratio odnos svrstava se u pokazatelje profitabilnosti preduzeća, s tim što treba imati u vidu starost preduzeća, jer ukoliko je preduzeće mlado, veličina u imeniocu može umanjiti preciznost ovog ratio pokazatelja. Pri analizi finansijskih izveštaja, ovaj pokazatelj se može dobiti na osnovu sledećeg jednostavnog obrasca:

$$X_2 = \text{Neraspoređeni dobitak} / \text{Ukupna imovina}$$

$X_3 = \text{Zarada pre odbitka kamata i poreza} / \text{ukupna sredstva}$ (*earnings before interest and taxes / total assets*). Zarada pre odbitka kamata i poreza predstavlja kategoriju koja veoma dobro odražava prinosnu sposobnost preduzeća. Ona se dobija kada poziciji dobiti pre oporezivanja iz bilansa uspeha dodamo finansijske rashode, što znači da ova kategorija u stvari predstavlja bruto dobitak uvećan za rashode finansiranja. Međutim, ako je umesto bruto dobitka ostvaren gubitak, onda se od rashoda finansiranja oduzima gubitak. Pri tome, ovaj rezultat može da bude i negativan što će se dogoditi kada je gubitak veći od rashoda finansiranja. Ovaj ratio odnos je jedan od najčešće upotrebljivanih pokazatelja. On se svrstava u pokazatelje profitabilnosti preduzeća. Pri analizi finansijskih izveštaja, ovaj pokazatelj se može dobiti na osnovu sledećeg jednostavnog obrasca:

$$X_3 = (\text{Neto dobitak} + \text{Troškovi kamata} + \text{Troškovi oporezivanja}) / \text{Ukupna imovina}$$

$X_4 = \text{Tržišna vrednost kapitala} / \text{ukupne obaveze}$ (*market value of equity / book value of total liabilities*). Kod korporativnih preduzeća čije se akcije prodaju na berzi, tržišna vrednost kapitala je jednaka umnošku tržišne vrednosti njihovih akcija ostvarene na berzi na dan bilansa, i broja akcija koje se nalaze kod akcionara. Kod korporativnih preduzeća čije se akcije ne prodaju na berzi, kao i kod svih drugih preduzeća, umesto tržišne vrednosti kapitala uzima se knjigovodstvena vrednost kapitala. Pri tome, ukupne obaveze obuhvataju sve obaveze preduzeća na dan bilansa. Ovaj racio pokazatelj svrstava se u pokazatelje solventnosti, jer stavljanjem u odnos tržišne vrednosti kapitala i knjigovodstvene vrednosti obaveza dobija se uvid u strukturu izvora finansiranja preduzeća. Pri analizi finansijskih izveštaja, ovaj pokazatelj se može dobiti na osnovu sledećeg jednostavnog obrasca:

$$X_4 = \text{Tržišna vrednost običnih i preferencijalnih akcija} / \text{Tekuće obaveze i dugoročni dugovi}$$

$X_5 = \text{Prihodi od prodaje} / \text{ukupna sredstva}$ (*sales / total assets*). Prihodi od prodaje obuhvataju prihode od prodaje robe, proizvoda i usluga, dok su ukupna sredstva ravna zbiru aktive umanjene za gubitak iznad kapitala iskazanog u aktivi. Ovaj racio odnos pokazuje sposobnost preduzeća da plasira svoje proizvode i usluge na tržištu. Stavljanjem u odnos prihoda od prodaje prema ukupnoj imovini preduzeća, stiče se prava slika o efikasnosti preduzeća, pa se zbog toga ovaj pokazatelj svrstava u pokazatelje efikasnosti. Pri analizi finansijskih izveštaja, ovaj pokazatelj može se dobiti na osnovu sledećeg obrasca:

$$X_5 = \text{Prihodi od prodaje} / \text{Ukupna imovina}$$

3. VREDNOVANJE POKAZATELJA U Z-SCORE MODELU

Na osnovu vrednovanja X_1 do X_5 zanimljivo je videti značaj koji se pridaje pojedinim odnosima u Z-score modelu, odnosno pojedinim pokazateljima. Prikaz je dat u tabeli 1.

Tabela 1. Vrednovanje pokazatelja u Z-score modelu (Ivaniš et al., 2021)

| Racio pokazatelji | Ponder kojim se vrednuje X | % |
|--|----------------------------|--------|
| $X_1 = \text{Obrtni kapital} / \text{Ukupna sredstva}$ | 1,2 | 16,00 |
| $X_2 = \text{Zadržana zarada} / \text{Ukupna sredstva}$ | 1,4 | 18,67 |
| $X_3 = \text{Zarada pre odbitka kamata i poreza} / \text{Ukupna sredstva}$ | 3,3 | 44,00 |
| $X_4 = \text{Tržišna vrednost kapitala} / \text{Ukupne obaveze}$ | 0,6 | 8,00 |
| $X_5 = \text{Prihodi od prodaje} / \text{Ukupna sredstva}$ | 1,0 | 13,33 |
| Ukupno X_1 do X_5 | - | 100,00 |

Kao što se iz tabele vidi, najveći značaj u modelu ima pokazatelj X_3 (44%). Ovo u stvari predstavlja bruto prinos na ukupna sredstva (kapital). Otuda, ovaj pokazatelj je značajan za rentabilnost ukupnog kapitala. Međutim, po nekim autorima mnogo je značajnija informacija o stopi neto prinosa na sopstveni kapital, jer ona govori o uvećanju (ukamaćenju) sopstvenog kapitala. Takođe, ovde treba imati u vidu činjenicu da stopa bruto prinosa na ukupan kapital

može biti visoka, a da pri tome stopa neto prinosa na sopstveni kapital bude minorna, ili čak i negativna. To se događa onda kada je bruto dobitak minoran ili negativan, a troškovi kamata izrazito visoki (Ivaniš et al., 2021).

Drugi po značaju u modelu je pokazatelj X_2 (18,67%). Međutim, značaj ovog pokazatelja može da bude veoma diskutabilan i to iz najmanje dva bitna razloga. *Prvo*, ako je kompanija dobitak rasporedila u kapital ili ga je konvertovala u dividendne akcije, onda je povećan kapital, a time je povećana i zaštita poverilaca. U takvim okolnostima, akumulirani dobitak može biti izrazito nizak, pa čak i ravan nuli. *Drugo*, ako je kompanija dobitak isplatila vlasnicima, onda pokazatelj X_2 ima logiku jer podstiče vlasnike da u cilju bolje budućnosti kompanije apstiniraju od raspodele dobitka akcionarima (vlasnicima).

Treći po značaju u modelu je pokazatelj X_1 (16%). *Kada je obrtni kapital pozitivan*, ovaj odnos ne govori ništa o finansijskom položaju, odnosno finansijskoj stabilnosti preduzeća. Pri oceni finansijske stabilnosti obrtni kapital se upoređuje sa zalihama. Pri tome, za finansijsku stabilnost je bitno da li je obrtni kapital jednak, veći ili manji od zaliha. *Kada je obrtni kapital negativan*, onda odnos negativnog obrtnog kapitala i ukupnih sredstava, takođe ne govori ništa o finansijskoj stabilnosti preduzeća jer finansijska stabilnost tada zahteva kvantifikovanje nedostatka obrtnog kapitala, a to se utvrđuje po sledećem modelu (Ivaniš et al., 2021):

1. Trajni i dugoročni kapital
2. Dugoročno vezana sredstva (zbir stalne imovine i zaliha)
3. Nedostajući kapital ($1 - 2$) uz uslov da je $2 > 1$.

Četvrti po značaju u modelu je pokazatelj X_5 (13,33%). Ovaj odnos *de facto* izražava koeficijent obrta ukupne imovine, pa analogno tome, predstavlja izuzetno značajan pokazatelj efikasnosti korišćenja imovine preduzeća.

Poslednji po značaju u modelu je pokazatelj X_4 (8%). Ovaj odnos pokazuje pokrivenost dugova kapitalom. Analitička interpretacija ovog pokazatelja je sledeća: što je vrednost ovog odnosa viša utoliko su poverioci zaštićeniji. Razlog za to leži u činjenici što kapital dužnika predstavlja garantnu supstancu za poverioca, jer sve dok je gubitak dužnika manji od njegovog kapitala poverioci su zaštićeni, jer mogu naplatiti svoja potraživanja kad-tad, makar iz stečajne mase. Međutim, kada je gubitak dužnika veći od njegovog kapitala, onda je razlika između gubitka i kapitala, u stvari gubitak poverilaca, pa će poverioci moći naplatiti svoja potraživanja u iznosu koji je manji za iznos gubitka iznad kapitala. Respektujući ovu logiku stvari, veoma iznenađuje to da je odnos tržišne vrednosti kapitala i obaveza u Z-score modelu analize izuzetno nisko vrednovan (Rodić & Filipović, 2011).

4. PRIMENA Z-SCORE MODELA

Na osnovu ponderisanog zbira pokazatelja koje smo prethodno objasnili, procenjuje se finansijsko stanje konkretnog preduzeća. Veći zbir znači veću finansijsku stabilnost preduzeća, dok nasuprot tome, manji zbir upozorava na mogućnost finansijskih problema. Na bazi empirijskih istraživanja, odnosno dobijenih rezultata u originalnom Z-score modelu, klasifikacija preduzeća je izvršena prema sledećem (Ivaniš, 2012):

a) Ako je $Z \geq 3,0$ to znači da je finansijska situacija preduzeća stabilna i da preduzeću ne preti bankrot, odnosno da ono ima dobre kreditne performanse.

b) Ako je $Z \leq 1,8$ to znači da je finansijska situacija preduzeća nestabilna i da preduzeću preti bankrot, odnosno da ono nema dobre kreditne performanse.

c) Ako je $1,8 \leq Z \leq 3,0$ odnosno ako je Z između 1,8 i 3,0 znači da se preduzeće nalazi u tzv. „sivoj zoni“ (rizičnoj zoni) i da postoje izgledi da je finansijska situacija preduzeća nepovoljna, odnosno ono ima minimalne kreditne performanse.

Kao što se vidi, Altman smatra da je donja granična vrednost 1,8 što znači da će preduzeća čiji je Z-score indeks ispod te vrednosti bankrotirati, dok je istovremeno gornja granična vrednost 3,0 što znači da preduzeća koja imaju Z-score indeks iznad te vrednosti neće bankrotirati. Pri tome, valja reći da će po Altmanovoj formuli preduzeća sa jakim imovinskom bazom imati visok Z-score, iako poslovanje može opadati. Altmanov Z-score predstavlja multivarijantni model za predviđanje bankrotstva preduzeća. On se kao model može koristiti u cilju identifikovanja finansijskog zdravlja preduzeća u odnosu na njegovu profitabilnost, produktivnost, tržišnu vrednost i menadžerske sposobnosti, posmatrano sa aspekta mogućnosti u održavanju konkurentnosti preduzeća. Na osnovu empirijskih procena analitičara, primena Z-score modela pokazala se kao tačna u predviđanju poslovnog neuspeha u oko 85% slučajeva u prvoj godini, odnosno u oko 70% slučajeva u drugoj godini, pre objavljivanja bankrota. Međutim, Z-score je najpodesniji za upotrebu u prve dve godine pre bankrotstva preduzeća, kada iskusni finansijski analitičari mogu jasno da uoče suočavanje preduzeća sa značajnim teškoćama i problemima u opadanju poslovanja (Kontić, 2006). U vezi sa tim, treba naglasiti da tačnost prognoziranja pomoću Altmanovog modela opada ako se povećava broj godina. Zbog toga, prilikom ocene poslovanja preduzeća potrebno je da se ovaj model koristi za vremenski period od najmanje tri godine, jer će se tako dobiti realnija slika o tendenciji kretanja poslovnih performansi preduzeća (Malešević & Čavlin, 2020).

Z-score model analize svoju praktičnu primenu može naći u svakoj analizi finansijskog stanja preduzeća, od analize kreditnog rizika i zahteva za obezbeđenjem kod odobravanja sredstava, investicionog rizika pri kupovini dela ili celog preduzeća, ocene kreditnog rejtinga preduzeća, do ocene ispunjenosti tzv. *going concern* pretpostavke. Otuda, među mogućim korisnicima rezultata Z-score modela mogu biti: banke, investicioni fondovi, potencijalni kupci akcija preduzeća, dobavljači preduzeća, njegovi strateški partneri, agencije za ocenu kreditnog rejtinga, revizorske firme itd. Naravno, postoji i grupa internih korisnika rezultata ovog modela koji su vitalno zainteresovani za sudbinu preduzeća kao što su: zaposleni radnici, vlasnici preduzeća, menadžment preduzeća i drugi. Sve to navodi na zaključak da spisak potencijalnih korisnika rezultata Z-score modela nije moguće lako kompletirati. Pri tome, treba imati u vidu činjenicu da sudbina bankrota ne zaobilazi ni najveća preduzeća kao ni sisteme od posebne važnosti za čitavu privredu. Zbog toga, među potencijalnim interesentima za rezultate Z-score modela mogu se naći i predstavnici državne vlasti, kao i šire javnosti (Stanišić, 2006).

5. IZRAČUNAVANJE Z-SCORE INDEKSA

Na osnovu prethodno navedenog, vidi se da je Edward Altman koristio tzv. višestruku diskriminacionu analizu za predviđanje bankrotstva preduzeća. On je od 22 finansijska pokazatelja odabrao 5 koji su po njemu bili reprezentativni, odnosno najbolji za predviđanje bankrotstva. Na bazi odabranih 5 pokazatelja, Altman je formulisao Z-score model koji je sa određenom verovatnoćom mogao predvideti bankrot (stečaj) preduzeća za vremenski period 1-5 godina. U istraživanje su bila uključena preduzeća iz iste delatnosti koja su bankrotirala i koja nisu bankrotirala. Pri tome, bilansi ovih preduzeća uzimani su za iste godine i to za godine pre bankrotstva preduzeća koja su bankrotirala. Zbog toga, neki autori i analitičari Z-test popularno nazivaju „predskazivač bankrotstva“ jer se ovim testom procenjuje finansijsko stanje preduzeća, odnosno verovatnoća njegove likvidacije. Međutim, imajući u vidu činjenicu da se Z-score model koristi ne samo za procenu poslovnog neuspeha privatnih preduzeća, već i javnih preduzeća, mišljenja smo da popularni naziv „predskazivač bankrotstva“ ipak nije najadekvatniji, budući da je u našim domicilnim uslovima bankrotstvo

javnih preduzeća malo verovatno, bez obzira na njihovo finansijsko stanje. Inače, samo izračunavanje Z-score indeksa vrši se u sledeća 4 koraka:

1. Izračunava se pet racio brojeva;
2. Dobijeni racio brojevi se množe sa unapred određenim multiplikatorima;
3. Sabiraju se multiplikovani racio brojevi;
4. Upoređuje se dobijeni zbir multiplikovanih racio brojeva sa određenim standardom.

Respektujući sve prethodno navedeno, moguće je prezentovati i praktičnu primenu Z-score modela analize na hipotetičkom primeru dva preduzeća (A i B). Pri tome, moraju se imati u vidu prethodno navedene vrednosti pokazatelja iz Z-score modela, sa jedne strane, kao i podaci iz bilansa stanja i bilansa uspeha hipotetičkih preduzeća, sa druge strane. Shodno tome, mogu se izračunati vrednosti Z-score indeksa za oba preduzeća (A i B). U vezi sa tim, primena Altmanovog Z-score modela na hipotetičkom primeru preduzeća data je u tabeli 2.

Tabela 2. Z-score model analize (Ivaniš, 2019)

| Racio pokazatelj | Preduzeće „A“ | Preduzeće „B“ |
|--|------------------------------|------------------------------|
| $X_1 = \text{Obrtni kapital} / \text{Ukupna sredstva}$ | $8.573 / 290.078 = 0,0296$ | $37.039 / 269.213 = 0,1376$ |
| $X_2 = \text{Zadržana zarada} / \text{Ukupna sredstva}$ | $120.586 / 290.078 = 0,4157$ | $45.132 / 269.213 = 0,1676$ |
| $X_3 = \text{Zarada pre odbitka kamata i poreza} / \text{Ukupna sredstva}$ | $28.037 / 290.078 = 0,0967$ | $9.432 / 269.213 = 0,0350$ |
| $X_4 = \text{Tržišna vrednost kapitala} / \text{Ukupne obaveze}$ | $239.494 / 50.584 = 4,7346$ | $204.263 / 64.629 = 3,1605$ |
| $X_5 = \text{Prihodi od prodaje} / \text{Ukupna sredstva}$ | $297.069 / 290.078 = 1,0241$ | $223.393 / 269.213 = 0,8298$ |

Preduzeće A:

$$Z = 1,2 * 0,0296 + 1,4 * 0,4157 + 3,3 * 0,0967 + 0,6 * 4,7346 + 1,0 * 1,0241$$

$$Z = 0,0355 + 0,5820 + 0,3191 + 2,8408 + 1,0241$$

$$Z = 4,8015$$

Preduzeće B:

$$Z = 1,2 * 0,1376 + 1,4 * 0,1676 + 3,3 * 0,0350 + 0,6 * 3,1605 + 1,0 * 0,8298$$

$$Z = 0,1651 + 0,2346 + 0,1155 + 1,8963 + 0,8298$$

$$Z = 2,9111$$

Na osnovu dobijenih rezultata Z-score modela analize mogu se izvući određeni zaključci o finansijskoj stabilnosti preduzeća „A“ i „B“. Oni se ogledaju u sledećem:

Preduzeće „A“ ima Z-skor 4,8015 što iznosi više od 3,0 – a to čini najniži skor pri kojem se preduzeće može smatrati finansijski stabilnim. Shodno tome, može se smatrati da ovo preduzeće ima dobre kreditne performanse, odnosno dobar kreditni bonitet.

Preduzeće „B“ ima Z-skor 2,9111 što iznosi manje od 3,0 ali ujedno i više od 1,8. To znači da ovo preduzeće posluje u „sivom“ (rizičnom) području, te zbog toga ono ima minimalne kreditne performanse, odnosno minimalan kreditni bonitet.

Ako se ocenom kreditnog boniteta pomoću Z-score modela analize pokaže da bonitet nekog preduzeća nije zadovoljavajući, onda je neophodno izvršiti projekcije bilansa stanja i bilansa uspeha za narednih pet godina, kako bi se došlo do relativno pouzdanih saznanja

vezano za pitanje: da li će i kada to preduzeće imati relativno dobre poslovne performanse? U vezi sa tim, iskustva iz prakse su pokazala da su neka preduzeća uspeła da poboljšaju svoje poslovne performanse ako su u narednom vremenskom periodu uspeła da ostvare projekcije bilansa stanja i bilansa uspeha i ako nisu vršila isplatu dividendi iz neto dobitka. Po nekim autorima, korišćenjem Z-score modela analize moguće je predvideti stečaj preduzeća za period od godinu dana sa verovatnoćom od 96%, a za period od 5 godina sa verovatnoćom od 70% (Rodić et al., 2012).

6. NEDOSTACI Z-SCORE MODELA

Ograničenja Altmanovog Z-score modela proizilaze iz polaznih pretpostavki linearne diskriminacione analize. Iako je model pokazao dobre rezultate u predviđanju poslovnog neuspeha on ipak poseduje i određene bitne nedostatke koje ćemo ukratko navesti.

Prvo, razlike u zakonskoj regulativi pojedinih zemalja i njihovo definisanje uslova čije ispunjenje dovodi do pokretanja postupka stečaja, predstavlja prvu stavku vezano za ograničenja primene Z-score modela. Naime, regulativa koja je bila aktuelna u vreme konstruisanja modela umnogome je odredila i njegovu strukturu, iz čega možemo izvući zaključak da što su veće razlike između tadašnjih uslova i zakonskih uslova u kojima se testira model, toliko opada i njegova upotrebna vrednost. Pri tome, treba imati u vidu i činjenicu da ne postoji univerzalni zakonski kod za bankrotstvo. Svaki zakon o bankrotstvu pokušava da balansira nekoliko ciljeva, uključujući i zaštitu prava poverilaca, sa jedne strane, i sprečavanje prevremene likvidacije preduzeća, sa druge strane. U vezi sa tim, većina zemalja je menjala zakone o bankrotstvu u skladu sa balansiranjem različitih političkih interesa i strukturnih transformacija ekonomije, kao i istorijskog razvoja društva u celini.

Drugo, stavka koja relativizira univerzalnost Z-score modela analize jeste različitost delatnosti granske pripadnosti testiranih preduzeća u modelu, kao i njihova različita vlasnička struktura. Preduzeća različitih delatnosti su različitih karakteristika po pitanju izvora finansiranja i strukture imovine, pa su bilo kakva uopštavanja po tom pitanju veoma riskantna. Imajući to u vidu Altman je konstruisao i dve podvarijante Z-score modela koje su za razliku od osnovnog oblika koji je primenjiv za javna (državna) proizvodna preduzeća namenjen privatnim proizvodnim i privatnim neproizvodnim preduzećima. Pri tome, za obe varijante struktura diskriminacione formule je ista, što znači da su racio brojevi koji se koriste u modelu identični, ali multiplikatori kojima se oni množe su različiti, što vidimo u tabeli 3.

Tabela 3. Racio brojevi i multiplikatori u Z-score modelu (Paunović & Zipovski, 2005)

| Racio pokazatelji | Multiplikatori za privatna preduzeća | Multiplikatori za javna preduzeća |
|--|--------------------------------------|-----------------------------------|
| $X_1 = \text{Obrtni kapital} / \text{Ukupna sredstva}$ | 0,71 | 1,20 |
| $X_2 = \text{Zadržana zarada} / \text{Ukupna sredstva}$ | 0,84 | 1,40 |
| $X_3 = \text{Zarada pre odbitka kamata i poreza} / \text{Ukupna sredstva}$ | 3,10 | 3,30 |
| $X_4 = \text{Tržišna vrednost kapitala} / \text{Ukupne obaveze}$ | 0,42 | 0,60 |
| $X_5 = \text{Prihodi od prodaje} / \text{Ukupna sredstva}$ | 1,00 | 1,00 |

Treće, stavka koja takođe relativizira primenu Z-score modela jeste složenost i nepredvidivost faktora koji utiču na insolventnost preduzeća. Naime, iako je veliki broj ovih faktora obuhvaćen statističkom optimizacijom modela, jedan broj faktora ipak ostaje neregistrovan, što zbog njihovog nepojavljivanja u testiranom uzorku koji je poslužio za konstruisanje Z-score modela, što zbog potencijalnog velikog uticaja specifičnih okolnosti koje je teško predvideti kao što su: politički događaji, neočekivane administrativne mere, kao i iznenadni kratkotrajni poremećaji na tržištu. U prilog ovome, može se pomenuti činjenica da ponekad opstanak preduzeća može biti ugrožen čak i zbog neuspeha jednog pojedinačnog poslovnog poduhvata, pogotovo ako je preduzeće mlado, a priroda poduhvata je rizična sa aspekta realizacije.

Četvrto, značajna zamerka Z-score modelu analize odnosi se na to što se u modelu koriste isključivo računovodstveni podaci, osim elementa X_4 koji u sebi sadrži po mogućnosti i tržišnu vrednost kapitala. U vezi sa navedenim, poznato je da se podaci koje pruža računovodstvo često ne poklapaju sa stvarnim stanjem, a imajući u vidu da su u modelu korišćene kategorije dobitak, poslovna imovina i sl. onda je nesumnjivo da upotrebljivost modela uveliko zavisi od objektivnosti tih računovodstvenih kategorija. Pri tome, treba imati u vidu činjenicu da su ti elementi često podložni subjektivnom procenjivanju ljudskog faktora. Tamo gde postoje alternative u načinu vrednovanja i priznavanja računovodstvenih pozicija, tu postoji i mogućnost vođenja računovodstvene politike koja sama po sebi relativizira tačnost podataka. Zanemarivanjem nepoklapanja tokova gotovine i tokova vrednosti, kao i upotrebom pozicija prihoda i dobitka kao rezultata isključivo vrednosnih tokova, de facto se zapada u rizik nerealne procene likvidnosti koja je presudna za pokretanje procesa stečaja preduzeća. Dakle, model je više posvećen sposobnosti stvaranja vrednosti, a skoro nikako pitanju tokova gotovine.

Na osnovu navedenih nedostataka, kao i brojnih mogućnosti primene Z-score modela analize, moglo bi se reći da je Altmanov model predviđanja bankrota preduzeća preporučljivo koristiti kao pomoćnu tehniku u oceni finansijskog položaja preduzeća. Pri tome, najbolja upotreba ovog modela verovatno bi mogla biti u funkciji neke vrste „filtera“ pre preduzimanja iscrpnije analize i detaljnije ocene poslovnih performansi preduzeća. Altmanov model je u svoje vreme izazvao veliku pažnju i primljen je sa velikim kredibilitetom. Međutim, danas uživa mnogo manje poverenja i upotrebljava se sa visokim oprezom, upravo zbog ograničenja na koja je prethodno ukazano, a koja su mu inherentna. Dakle, Altmanov Z-score model analize pruža odličan uvid i sintetički pogled na finansijsko stanje preduzeća, ali samostalno on ne može biti pouzdano sredstvo predviđanja. Z-score model ukazuje na probleme, ali samo indikativno, pa je za pouzdaniju dijagnozu neophodno izvršiti niz dopunskih ispitivanja poslovnih performansi preduzeća (Milojević, 2012).

7. ZAKLJUČAK

Imajući u vidu činjenicu da je od konstruisanja Z-score modela do njegovog testiranja prošlo više od 40 godina, moglo bi se reći da Z-score model predviđanja bankrota preduzeća svakako zaslužuje posebnu pažnju, budući da je potvrdio veliku upotrebnost i analitičku vrednost računovodstvenih podataka kojima se služi. U vezi sa tim, valja reći da iako je racio analiza kojom se ovaj model služi bila i od ranije poznata metoda analize, ipak se primenjeni multidisciplinarni pristup pri konstruisanju Z-score modela pokazao veoma uspešnim, što je *de facto* nagovestilo šire mogućnosti primene ovakvog pristupa i u mnogim drugim oblastima ekonomske i finansijske analize.

Z-score model predviđanja poslovnog neuspeha preduzeća analizira sve značajne aspekte finansijske situacije preduzeća: likvidnost, rentabilnost, aktivnost i finansijsku

strukturu. Shodno tome, on omogućava ocenu kako sadašnjeg, tako i budućeg finansijskog zdravlja preduzeća. Međutim, Z-score ima i određenih nedostataka, pre svega, vezano za to što nije imun na računovodstvene greške i što ne uzima u obzir pokazatelje iz novčanog toka. Osim toga, nije najprikladniji za analizu novih preduzeća, budući da ova preduzeća obično nemaju neraspoređenu dobit. Konsekventno tome, Z-score model analize za predviđanje poslovnog neuspeha, odnosno bankrotstva preduzeća, ne treba uzimati kao zamenu za detaljnu finansijsku analizu. Naime, najbolje je ovaj model koristiti za brzu ocenu finansijskog stanja preduzeća, pa ako Z-test ukaže na prisutnost potencijalnih poteškoća u poslovanju preduzeća, onda je poželjno izvršiti detaljnu finansijsku analizu preduzeća. To praktično znači da rezultate Z-score modela analize ipak treba uzimati sa visokim oprezom, pre svega, imajući u vidu bitna ograničenja u primeni modela. Dakle, može se zaključiti da je Z-score odlična tehnika za sintetički uvid u finansijsko zdravlje preduzeća, ali u savremenim uslovima Z-score ipak ne može biti pouzdano sredstvo predviđanja poslovnog neuspeha preduzeća. Model ukazuje na probleme u poslovanju preduzeća, ali samo indikativno, pa je za pouzdaniju dijagnozu finansijskog zdravlja preduzeća, odnosno njegovog finansijskog položaja, neophodno izvršiti i niz dopunskih ispitivanja. Prema tome, tačan i pouzdan metod za predviđanje poslovnog neuspeha preduzeća još uvek nije pronađen. Cilj pronalaženja pouzdanog modela za predviđanje poslovnog neuspeha preduzeća jeste preduzimanje preventivnih i korektivnih akcija.

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LEASING AS A CONTEMPORARY FORM OF ENTERPRISE FINANCING

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Abstract: It is an undeniable fact that people have never before changed the world they live in as rapidly as they do today. These changes are the result of permanent technological innovations and their application in the modern world. Constant technological innovations include not only significant investments in research and development but also major investments in their widespread applications. In this regard, it is logical that large global corporations and multinational companies were able to make investments in research, development and application of new technological innovations. Large global corporations not only had huge owned capital at their disposal but also additional sources of financing by share issuing or loans. However, broad implementation of capital goods as very expensive commodities could not be realized by classical methods of procurement of capital goods or by using own funds and loans. Therefore, the contemporary economic practices are increasingly using leasing arrangements as a modern form of financing of movable and immovable capital goods. Similarly, the aim of this paper is to highlight the growing importance of leasing as a contemporary form of enterprise financing in the market conditions, as well as its advantages and limitations.

Keywords: leasing, seller, buyer, financing, calculations

LIZING KAO SAVREMENI OBLIK FINANSIRANJA PREDUZEĆA

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Apstrakt: Neosporna je činjenica da ljudi nikada do sada nisu tako brzo menjali svet u kome žive. Ove promene su rezultat permanentnih tehnoloških inovacija i njihove primene u savremenom svetu. Stalne tehnološke inovacije podrazumevaju ne samo velika ulaganja u istraživanje i razvoj već i još veća ulaganja u njihovu široku primenu. U vezi sa tim, logično je da su velike svetske korporacije i multinacionalne kompanije bile u mogućnosti da vrše ulaganja u istraživanja, razvoj i primenu novih tehnoloških inovacija. Velike svetske korporacije raspolagale su ne samo ogromnim sopstvenim kapitalom već su im bili dostupni i dodatni izvori finansiranja putem emisije akcija ili putem zaduživanja. Međutim, široka

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implementacija investicionih dobara kao veoma skupih roba nije mogla da se realizuje klasičnim metodama nabavke investicionih dobara, odnosno angažovanjem sopstvenih sredstava i zajmova. Zbog toga, savremena privredna praksa sve više koristi lizing aranžmane kao savremeni oblik finansiranja pokretnih i nepokretnih investicionih dobara. Analogno tome, cilj ovog priloga je da ukaže na sve veći značaj lizinga kao savremenog oblika finansiranja preduzeća u tržišnim uslovima poslovanja, kao i na njegove prednosti i ograničenja.

Ključne reči: lizing, prodavac, kupac, finansiranje, kalkulacije

1. UVOD

Pre pojave lizinga dug je bio jedini eksterni izvor sredstava. Međutim, nastankom lizinga pojavljuju se paralelno dva eksterna izvora sredstava, pri čemu savremena privredna praksa danas sve više koristi lizing aranžmane kao specifičan oblik finansiranja pokretnih i nepokretnih investicionih dobara. Generalno gledano, pod lizing aranžmanom podrazumevaju se takve transakcije u kojima jedno preduzeće, umesto da izvrši kupovinu potrebne opreme, ono od specijalizovane institucije uzima opremu u zakup na određeni rok koji je dovoljno dug da se u tom roku izvrši amortizacija opreme. Otuda, kod lizing aranžmana ne dolazi do promene vlasništva. Naime, lizing se zasniva na shvatanju da vlasništvo nije osnovna i najvažnija kategorija u oblasti savremene proizvodnje i prometa investicionih dobara. U savremenoj tržišnoj privredi mnogo je važnija mogućnost nesmetanog korišćenja investicionih dobara od njihovog vlasništva. Pri tome, lizing ispunjava uslove tzv. „zlatnog pravila finansiranja“ u tržišnoj privredi, prema kome investicija treba da bude finansirana za ceo period njenog korišćenja. Zbog toga, kod lizinga nije potrebno eventualno dodatno finansiranje koje je praćeno sa povećanjem troškova i dodatnim rizicima finansiranja.

Lizingom se u velikoj meri rešavaju finansijski problemi i na strani prodavca i na strani kupca. Prodavac lizingom eliminiše problem kreditiranja kupca, dok se kupac rešava opterećenja da će morati da ide u dužničke odnose. Zbog toga, lizing kao oblik finansiranja najviše koriste mala i srednja preduzeća, kao i novoosnovana preduzeća. Lizing utiče na poboljšanje kreditne sposobnosti preduzeća korisnika lizinga, jer se smanjuje njegova zavisnost od konvencionalnih izvora finansiranja kao što su bankarski krediti. Pri tome, lizing naknada može se otplaćivati iz dela dobiti koji se ostvaruje iz eksploatacije konkretnog lizing objekta. Za sve vreme trajanja lizinga naknade su fiksne. Analogno tome, za preduzeće koje se ovako finansira lizing naknada predstavlja konačnu plansku veličinu sa kojom se lakše ide u sopstvene kalkulacije. Kod dugoročnog lizinga, visina lizing naknade može se regulisati degresivnim ili linearnim putem. Za razliku od kredita gde su pravila veoma stroga, lizing nudi mogućnost da se lizing naknada prilagodi finansijskim prilikama korisnika lizinga. Sa druge strane, u poslovnom bilansu korisnika lizinga plaćanje lizing naknade po osnovu korišćenja lizing objekta ima tretman rashoda, što znači da se tereti troškove poslovanja. Takođe, plaćanje lizing naknade vrši se iz dobiti što znači iz sredstava pre podmirenja svih zakonskih i ugovornih obaveza (Ivaniš, 2019). U kontekstu navedenog, lizing u savremenoj tržišnoj privredi zauzima sve značajnije mesto kao specifičan oblik finansiranja pokretnih i nepokretnih dobara.

2. VRSTE LIZINGA

Kao oblik finansiranja tokova reprodukcije preduzeća lizing se može javiti u više vrsta i sa više sadržaja. Stoga, u poslovnoj praksi postoje različite vrste ugovora o lizingu u zavisnosti od kriterijuma koji se uzimaju prilikom njihove klasifikacije. Prema karakteru i stepenu obaveza, može se reći da se razlikuju dve osnovne vrste lizing aranžmana, to su: *prvo*, operativni ili poslovni lizing, i *drugo*, finansijski lizing.

Operativni ili poslovni lizing – predstavlja lizing aranžman koji je kratkoročnog karaktera. Ugovor o lizingu se zaključuje za period koji je kraći od očekivanog veka trajanja predmeta lizinga (najčešće opreme), dok je naknada koju plaća primalac lizinga uvek manja od vrednosti predmeta lizinga. Pri tome, davalac lizinga snosi rizik zastarelosti i gubitka opreme, plaća osiguranje, takse i troškove licenci. Naravno sve to, kao i troškove održavanja i servisiranja davalac lizinga uračunava primaocu lizinga kroz rate lizing naknade, koja je manja od vrednosti predmeta lizinga. Kod ove vrste lizinga rizici i koristi u vezi sa vlasništvom na predmetu lizinga ne prenose se na primaoca lizinga, već ih zadržava davalac lizinga koji je pravni i ekonomski vlasnik predmeta lizinga. Zbog toga, operativni lizing predstavlja tzv. *non-full-pay-out* ugovor, odnosno ugovor preostale knjigovodstvene vrednosti zato što davalac lizinga za vreme trajanja ugovora može amortizovati samo deo svojih investicionih troškova iz naknade koju plaća primalac lizinga (Pavićević & Stakić, 2003). Bitna karakteristika operativnog (poslovnog) lizinga jeste da se ugovor o lizingu može u svako doba opozvati.

Finansijski lizing – predstavlja lizing aranžman koji je dugoročnog karaktera. Ugovor o finansijskom lizingu utvrđuje osnovni rok u kojem ni jedna strana nema pravo da raskine ugovor. Taj rok redovno odgovara uobičajenom vremenu korišćenja predmeta lizinga (najčešće opreme). Za razliku od operativnog, finansijski lizing je po svojim karakteristikama tzv. *full-pay-out ugovor* gde je ukupan iznos ugovorene naknade redovno veći od nabavne cene predmeta lizinga, tako da davalac lizinga ovde može amortizovati svoje investicione troškove. Osim toga, kod ove vrste ugovora primalac lizinga snosi sve troškove i rizike opreme uzete u lizing, koje inače snosi davalac lizinga kod operativnog lizinga. Dakle, kod finansijskog lizinga primalac lizinga je u obavezi da snosi rizike i koristi koje prate vlasništvo, iako nema zakonsko pravo vlasništva. Prema MRS 17 (međunarodnom računovodstvenom standardu 17), da bi lizing aranžman mogao imati karakteristike finansijskog lizinga neophodno je da bude ispunjen najmanje jedan od sledećih uslova (Petrović & Denčić-Mihajlov, 2007):

- (1) Da se po završetku trajanja lizinga vlasništvo nad sredstvom prenosi na primaoca lizinga;
- (2) Da primalac lizinga ima opciju kupovine predmeta lizinga po ceni koja će biti znatno niža od fer vrednosti predmeta lizinga na dan njenog ostvaravanja, tako da je na samom početku lizinga izvesno da će ova opcija biti realizovana;
- (3) Da period zakupa predstavlja veći deo korisnog veka trajanja sredstva;
- (4) Da na početku lizinga sadašnja vrednost minimalnih lizing rata iznosi najmanje onoliko kolika je fer vrednost sredstva koje se daje u lizing;
- (5) Da je predmet lizinga specifične prirode, tako da ga samo primalac lizinga može koristiti bez većih modifikacija;
- (6) Da primalac lizinga snosi gubitke davaoca lizinga zbog otkaza ugovora;
- (7) Da primalac lizinga snosi dobitke i gubitke od fluktuacije fer vrednosti ugovorenog ostatka vrednosti;
- (8) Da primalac lizinga ima mogućnost da nastavi lizing u narednom periodu uz lizing nadoknadu nižu od tržišne.

Imajući u vidu da se kao oblik finansiranja tokova reprodukcije preduzeća lizing javlja ne samo u više vrsta, već i više sadržaja, pored prethodno navedene osnovne podele na operativni i finansijski lizing, treba imati u vidu da postoji i podela lizinga na tzv. *direktni i indirektni lizing*. To ujedno znači da svaki operativni i finansijski lizing može biti direktni i indirektni. Po mnogim autorima, *indirektni lizing* (lizing u užem smislu) predstavlja pravi lizing u kojem učestvuju tri strane: (a) proizvođač tj. isporučilac investicionog dobra koje je predmet lizinga, (b) finansijer tj. lizing društvo kao davalac lizinga, i (c) primalac lizinga koji je zainteresovan za korišćenje određenog dobra koje je predmet lizinga. Međutim, *direktni lizing* (lizing u širem smislu) predstavlja takav lizing aranžman gde učestvuju samo dve strane: (a) proizvođač tj. isporučilac investicionog dobra, i (b) primalac lizinga. Treba pomenuti, da se direktni lizing često u literaturi označava i kao proizvođački lizing kojim proizvođači pokrivaju trenutne potrebe da bi svojim korisnicima pružili dodatne usluge ili da bi na taj način plasirali nove proizvode na tržište. S tim u vezi, proizvođač redovno preuzima i obaveze servisiranja i isporuke rezervnih delova. Takve dodatne obaveze proizvođača ne daju ugovoru o proizvođačkom lizingu drugačiju kvalifikaciju od one koja važi za sve ugovore sklopljene preko lizing društva, jer se time de facto ne narušava osnovni posao zakupa koji u stvari predstavlja osnovni nukleus svake lizing konstrukcije (Pavićević & Stakić, 2003).

U okviru navedenih osnovnih podele na operativni i finansijski lizing, odnosno direktni i indirektni, postoji još podela na nekoliko vrsta lizinga koje ćemo ovde samo kratko naznačiti, ne upuštajući se u precizna pojašnjenja svake od njih. S tim u vezi, treba reći da se pojedine vrste lizinga mogu diferencirati sa aspekta veoma različitih kriterijuma. Međutim, za naše potrebe ovde je dovoljno pomenuti nekoliko sledećih kriterijuma za klasifikaciju lizing aranžmana: (1) prema dužini perioda, (2) prema predmetu lizinga, (3) prema vrsti ugovornih obaveza po isteku ugovora o lizingu, (4) prema vrsti obaveza vezano za održavanje opreme date u lizing, i (5) prema zemlji u kojoj se nalazi davalac i primalac lizinga.

Prema dužini perioda, na koji se predmet lizinga uzima u zakup postoji nekoliko vrsta lizinga, a to su: (1) kratkoročni lizing, sa rokom do tri godine, (2) srednjoročni lizing, sa rokom tri do sedam godina, i (3) dugoročni lizing, sa rokom preko sedam godina. Međutim, rokovi lizinga mogu biti i duži (na primer 15-20 godina) kada su u pitanju kompletna postrojenja i investiciona dobra velike vrednosti.

Prema predmetu lizinga, razlikuje se lizing opreme i postrojenja, mada se ovde može govoriti i o lizingu pokretnih i nepokretnih stvari. Predmet lizinga je obično nova oprema, mada to može biti i korišćena tj. polovna oprema, s tim da ona mora biti upotrebljiva što znači da nije prethodnim korišćenjem u potpunosti amortizovana tako da ne može biti predmet lizinga.

Prema vrsti ugovornih obaveza po isteku ugovora o lizingu, razlikuju se sledeće vrste lizinga: (1) terminski lizing, (2) kupovni lizing, (3) revolving (obnovljivi) lizing, i (4) lizing sa opcijom kupovine. *Kod terminskog lizinga*, rok na koji se oprema daje u lizing precizno je utvrđen i nakon toga se oprema obavezno vraća davaocu lizinga. *Kod kupovnog lizinga*, u ugovoru je predviđena izričita obaveza korisnika lizinga da kupi opremu koja se daje u lizing po isteku ugovorenog perioda lizinga. *Kod revolving lizinga*, u ugovoru se izričito precizira da će lizing po isteku osnovnog (baznog) perioda biti produžen. *Kod lizinga sa opcijom kupovine*, ugovorom se izričito precizira da će oprema koja je predmet lizinga biti kupljena od strane korisnika lizinga u toku ili na kraju ugovorenog perioda, mada ima gledišta da se time daje samo opcija (pravo) kupovine, ali ne i obaveza kupovine predmeta lizinga (Ivaniš, 2019).

Prema vrsti obaveza u pogledu održavanja opreme date u lizing, može se razlikovati tzv. *neto i bruto lizing*. Kod *neto lizinga*, davalac lizinga ne preuzima nikakve obaveze u smislu popravke, održavanja i servisiranja opreme date u lizing. Međutim, kod *bruto lizinga*, davalac lizinga preuzima obaveze da vrši servisiranje, snabdevanje rezervnim delovima,

popravke, remont i tekuće održavanje opreme, kao i da izvrši obuku radnika korisnika lizinga za rukovanje opremom. Takođe, davalac lizinga ima i obavezu da osigura opremu za vreme trajanja ugovora o lizingu. Za ove dodatne poslove, korisnik lizinga plaća određenu naknadu koja može biti uključena u lizing naknadu ili se posebno plaćati.

Prema zemlji u kojoj se nalaze davalac i primalac lizinga, razlikujemo domaći i međunarodni lizing. Domaći lizing imamo kada se davalac i korisnik lizinga nalaze u jednoj zemlji. *Međunarodni lizing*, imamo kada se davalac lizinga nalazi u jednoj zemlji dok se korisnik lizinga nalazi u drugoj zemlji. Međunarodni lizing aranžmani se odnose na investiciona dobra velike vrednosti (brodovi, avioni, računarska oprema, i sl.). Takvi aranžmani se sklapaju radi razvoja preduzeća i prenošenja savremenih tehnoloških dostignuća iz razvijenih zemalja u zemlje u razvoju, ali uz minimalno angažovanje kapitala domicilnih preduzeća (Ivaniš, 2012).

3. ELABORAT I KALKULACIJE LIZINGA

Za donošenje odluke o nabavci opreme putem lizinga veoma je bitan tzv. elaborat o lizingu koji ima tri osnovna dela, a to su: tehničko-tehnološki deo, ekonomski deo i finansijski deo. *Tehničko-tehnološki deo* elaborata o lizingu sadrži podatke o opremi koja se želi zakupiti sa proizvodnim karakteristikama i ocenom svrsishodnosti njene nabavke. *Ekonomski deo* elaborata o lizingu sadrži podatke o proizvodnim efektima korišćenja lizing opreme kao što su: povećanje obima proizvodnje, povećanje usluga, povećanje produktivnosti rada, povećanje ekonomičnosti rada, veći stepen kompletiranja asortimana ponude i sl. *Finansijski deo* elaborata o lizingu sadrži elemente putem kojih će se utvrditi vrednost opreme, troškovi zakupa, prihod od lizinga i sl.

Završni deo elaborata o lizingu predstavlja ugovor o lizingu, putem kojeg se bliže određuju svi elementi dati u elaboratu. Svaki ugovor o lizing aranžmanu treba da sadrži sledeće elemente: (1) ugovorne strane u lizing poslu, (2) detaljan opis predmeta lizing posla, (3) naziv i količinu opreme, (4) ukupnu vrednost zakupljene opreme, (5) rok isporuke opreme, (6) rok zakupa opreme, (7) vreme, mesto i način plaćanja rata zakupnine, (8) garanciju zakupca zakupodavcu opreme, (9) način preuzimanja opreme, (10) pravo svojine na opremu, (11) pravo kontrole nad opremom, (12) osiguranje opreme, (13) gubitak i oštećenje opreme, (14) kamate pri docnji plaćanja rata zakupa, (15) način vraćanja opreme po isteku roka lizinga, (16) pravo zakupodavca da raskine ugovor o lizingu, (17) arbitražu u vezi spora oko lizing aranžmana, (18) bankarske troškove, (19) specifikaciju opreme, (20) vreme stupanja na snagu ugovora o lizingu (Vunjak & Kovačević, 2002).

Za sve vrste lizing aranžmana karakteristično je to da ih prate lizing kalkulacije. Praktična iskustva pokazuju da se kalkulacije prave kod lizing poslova do godinu dana i kod lizing poslova preko godinu dana. Primera radi, kalkulacija (cene koštanja) lizinga uvozne opreme *sa rokom do godinu dana* sadrži uglavnom sledeće elemente: godišnju vrednost zakupnine, iznos carine, iznos uvozne takse, iznos uvoznih troškova, proviziju uvoznika, cenu koštanja lizinga, broj rata (od 2 do 12), vreme plaćanja zakupnine i način plaćanja zakupnine. Isto tako, kalkulacija (cene koštanja) lizinga uvozne opreme *sa rokom preko godinu dana* trebala bi da sadrži sledeće elemente: ukupnu vrednost zakupa opreme, iznos carine, iznos uvozne takse, iznos uvoznih troškova, proviziju uvoznika, ugovoreni rok otplate, mesečne ili šestomesečne rate otplate, godišnju stopu amortizacije opreme, vreme plaćanja zakupa i način plaćanja zakupa (Vunjak & Kovačević, 2002).

Svaki lizing aranžman preko godinu dana smatra se materijalnim ulaganjem. Nakon otplate ugovorene cene opreme koja je predmet lizinga, ista postaje vlasništvo korisnika lizinga, te se unosi u njegove poslovne knjige kao oprema i ostala osnovna sredstva

(materijalna ulaganja). Međutim, treba imati u vidu da ako lizing zakupnina ne obuhvata i otkup ostatka vrednosti opreme, onda se najčešće ona vraća vlasniku ili se otkupljuje po ugovorenoj ceni. Analogno navedenom, proizilazi da samo plaćeni deo ugovorenog iznosa zakupnine predstavlja nematerijalno ulaganje. Ostatak vrednosti opreme tretira se kao vrednost osnovnih sredstava (materijalno ulaganje) koje podleže mesečnoj, odnosno godišnjoj amortizaciji. Osnovna karakteristika lizing kalkulacije jeste da se svaki njen element mora bazirati na elementima iz elaborata o lizing aranžmanu. Ukoliko između proizvođača tj. davaoca lizinga i korisnika lizinga postoji posrednik (najčešće lizing organizacija), onda kalkulacija lizing aranžmana obavezno mora da ima i svoje posebne elemente, kao što su: provizija lizing organizacije, iznos poreza na promet, otkupna cena ostatka opreme i sl.

Kada se sačini kalkulacija cene koštanja lizinga u zavisnosti od vrste lizing aranžmana, onda se vrši njeno poređenje sa kalkulacijom ostalih raspoloživih izvora sredstava. Po pravilu, porede se alternative nabavke opreme na lizing i njene kupovine na kredit. Ukoliko je u pitanju kupovina opreme na kredit, onda se radi klasična kalkulacija vezano za kupovinu opreme na kredit na određeni rok, sa avansom, kreditiranim delom vrednosti opreme, troškovima po osnovu kamate i drugim troškovima. Nakon utvrđivanja cene kredita i lizinga, vrši se utvrđivanje novčanog toka, odnosno priliva i odliva sredstava koja ova dva oblika finansiranja imaju.

U kontekstu navedenog, moguće je projektovati konkretan primer u kojem se polazi od pretpostavke da domicilno preduzeće ne raspolaže sa odgovarajućim osnovnim sredstvima neophodnim za proces proizvodnje. Analogno tome, po logici stvari to će se preduzeće odmah naći pred spornim pitanjem: da li osnovno sredstvo nabaviti putem kredita ili putem lizinga? Na osnovu ovakvog postavljanja analitičkog okvira posmatranja lizinga, moguće je izvesti uporednu kalkulaciju i na osnovu nje definitivno odlučiti o načinu rešavanja pomenutog spornog pitanja.

Primera radi, pretpostavimo da je reč o garnituri mašina elektronskih računara čija je amortizaciona stopa 20%, dok je vek korišćenja 5 godina. Marketing procena ekonomskog korišćenja je samo 2-3 godine, imajući prvenstveno u vidu tehnički progres i ponudu ovih mašina na tržištu. U cilju pravilnog opredeljenja menadžmenta konkretnog preduzeća vezano za nabavku opreme, takođe se prezentuju i sledeći dodatni podaci:

- (1) Visina ulaganja putem kredita iznosi 160.000 evra, kamata je 12%, rok otplate je tri godine, godišnji anuiteti su jednaki, diskontna stopa je 12%, porez i doprinosi iz dobitka su 15%.
- (2) Visina lizing zakupnine iznosi 70.000 evra godišnje. Pri tome, lizing ugovor obezbeđuje rezervne delove kao i tehničko starenje opreme u visini do 3% od vrednosti godišnje zakupnine. Ovi troškovi idu na teret davaoca lizinga, a nakon tri godine korišćenja ugovor se može obnoviti (alternativno) i oprema se može otkupiti, s tim što se zakupnine tretiraju kao avansi.
- (3) U oba slučaja likvidaciona vrednost je zanemarljiva.

U cilju pravilnog opredeljenja menadžmenta konkretnog preduzeća vezano za način nabavke opreme, izvršene su određene kalkulacije, kako bi se dobijeni proračuni mogli komparirati i kako bi na osnovu dobijenih podataka menadžment preduzeća mogao doneti racionalnu odluku o načinu finansiranja nabavke opreme (Tabela 1 i 2).

Tabela 1. Kalkulacija nabavke opreme putem kredita (Ivaniš, 2013)

| Veličina | I godina | II godina | III godina |
|------------------------------|----------|-----------|------------|
| 1. Anuitet | 66.944 | 66.944 | 66.944 |
| 2. U tome – samo kamata | 13.611 | 12.800 | 8.033 |
| 3. Amortizacija | 32.000 | 32.000 | 32.000 |
| 4. Uštede [(2 + 3) * 15%] | 6.841 | 6.720 | 6.005 |
| 5. Neto izdatak (1 - 4) | 60.103 | 60.224 | 60.939 |
| 6. Diskontni faktor | 0,8928 | 0,7972 | 0,7118 |
| 7. Sadašnja vrednost (5 * 6) | 53.660 | 48.010 | 43.376 |

$$Sd = 145.046 \quad (\text{u trenutku obračuna } t = 0)$$

Tabela 2. Kalkulacija nabavke opreme putem lizinga (Ivaniš, 2013)

| Veličina | I godina | II godina | III godina |
|--------------------------------------|----------|-----------|------------|
| 1. Troškovi zakupa | 70.000 | 70.000 | 70.000 |
| 2. Uštede poreza (1 * 15%) | 10.500 | 10.500 | 10.500 |
| 3. Rezervni delovi i tehnički servis | 2.100 | 2.100 | 2.100 |
| 4. Uštede ukupno | 12.600 | 12.600 | 12.600 |
| 5. Neto izdatak (1 - 4) | 57.400 | 57.400 | 57.400 |
| 6. Diskontni faktor | 0,8928 | 0,7972 | 0,7118 |
| 7. Sadašnja vrednost (5 * 6) | 51.246 | 45.759 | 40.857 |

$$S'd = 137.862 \quad (\text{u trenutku obračuna } t = 0)$$

Imajući u vidu da je suma diskonta putem kredita (Sd) veća od sume diskonta putem lizinga ($S'd$), s obzirom da je $145.046 > 137.862$, i to za +7.184 evra, po logici stvari proizilazi zaključak da je nabavka predmetne opreme putem lizinga prihvatljivija, budući da je ulaganje po tom osnovu niže za 7.184 evra. Analizirajući prethodno dati primer može se zaključiti da su osim navedenog, prisutne još i neke druge prednosti kupovine opreme putem lizing aranžmana, a to su: *prvo*, nema rizika od tehnološkog zastarevanja opreme nakon treće godine, *drugo*, veća je stopa rentabilnosti jer se lizingom ne povećava obim angažovanih sredstava, i *treće*, ne povećava se stepen zaduženosti preduzeća. Imajući u vidu činjenicu da postoji razlika u veku korišćenja (amortizacije) i trajanju lizing ugovora odnosno bankarskog kredita, karakteristično je da posle treće godine korišćenja opreme ostaje i dalje njena likvidaciona vrednost od 64.000 evra, odnosno $160.000 - 96.000 = 64.000$.

Na kraju, treba imati u vidu i to da, pod pretpostavkom da se oprema može realizovati prodajom tj. da ima kupca i nakon tri godine korišćenja, odnosno pod pretpostavkom da se ona treba rentabilno koristiti bar još dve godine, onda bi lizing aranžman izgubio svoju prednost u odnosu na kreditni aranžman. Međutim, ako bi se u četvrtoj godini eksploatacije računarske opreme na tržištu pojavila nova generacija računarske opreme, onda je nesumnjivo da bi prethodne dve pretpostavke bile apsolutno neodržive. Naime, one bi bile neodržive iz najmanje dva osnovna razloga, i to: *prvo*, zbog toga što prodaja likvidacione vrednosti pretpostavlja nabavku računarske opreme nove generacije, pa bi lizing aranžman ponovo imao prednost, i *drugo*, zbog toga što nastavak rada sa starom računarskom opremom ne obezbeđuje konkurentnost na tržištu usluga u odnosu na nove računare. S tim u vezi, sasvim

je opravdano da se sačini više alternativnih uporednih kalkulacija, posebno u uslovima inflacije i rastućeg trenda negativnih kursnih razlika (Vunjak & Kovačević, 2002).

4. PREDNOSTI I NEDOSTACI LIZINGA

Lizing (zakup) kao izvor finansiranja ima zadatak da ubrza proces finansiranja tokova reprodukcije preduzeća pa je njegova primena višestruka, budući da lizing nije kredit već samostalni izvor finansiranja. Lizing omogućava korisniku povećanje kapaciteta proizvodnje i dobiti i to bez povećanja stepena zaduženosti. Generalno gledano, lizing nudi niz prednosti kada su u pitanju finansijske i druge mogućnosti, a koje nisu svojstvene tzv. tradicionalnim metodama finansiranja preduzeća. S tim u vezi, kao osnovne prednosti finansiranja putem lizinga može se navesti sledeće (Ivaniš & Stakić, 2003):

1. Mogućnost da se nabavkom opreme na bazi lizinga ne angažuju sopstvena sredstva već da se ista sačuvaju za druge poslovne poduhvate, budući da lizing omogućava 100% angažovanje tuđih sredstava i ne zahteva plaćanje avansa, kao što je slučaj kupovine na kredit.

2. Nabavka opreme putem lizinga omogućava preduzeću veću likvidnost, pri čemu, preduzeće plasmanom sredstava koje nije angažovalo za kupovinu opreme može ostvariti i određenu dobit, ulažući ta sredstva u određene profitabilne projekte.

3. Nabavkom opreme putem lizinga korisnik lizinga ne umanjuje svoju kreditnu sposobnost, pošto lizing nije kredit, a nabavka opreme putem lizinga evidentira se vanbilansno, tako da se korisnik lizinga može zaduživati kod finansijskih institucija za druge investicione poduhvate.

4. Nabavkom opreme putem lizinga korisnik lizinga može koristiti određene olakšice koje mu pružaju poreski, carinski i drugi propisi. Naknada po osnovu lizinga ima tretman operativnih (tekućih) troškova čime se umanjuje osnovica za oporezivanje kod korisnika lizinga.

5. Lizing pruža mogućnost korisniku lizinga (preduzeću) da dinamiku plaćanja naknade za lizing uskladi sa predviđenim prilivom sredstava po osnovu realizacije robe i usluga proizvedenih opremom koja je uzeta u lizing, te da na taj način znatno poboljša svoj gotovinski tok (*cash flow*).

6. Nabavkom opreme putem lizinga smanjuje se rizik korišćenja tehnološki zastarele opreme i nedovoljnog korišćenja proizvodnih kapaciteta. Pri tome, kod proizvodnje sezonskog karaktera ili one koja je izložena konjunktornim fluktuacijama, lizing omogućava da se smanji imobilizacija kapitala kroz kupovinu opreme koja bi u dužem periodu bila neangažovana.

7. Davalac lizinga, u zavisnosti od ugovora, obezbeđuje servisiranje, remont i tekuće održavanje opreme date u lizing, kao i snabdevanje rezervnim delovima. Samim tim, kod korisnika lizinga se smanjuje potreba za stalno zaposlenom radnom snagom ukoliko lizing uključuje i obavezu održavanja, popravke i remonta sredstava.

Zbog navedenih pogodnosti lizinga, finansiranje investicija putem lizinga je od velikog značaja prvenstveno za mala i srednja preduzeća, što svakako ne znači da velika preduzeća manje koriste ove mogućnosti. Sa druge strane, lizing je posebno interesantan oblik finansiranja ako se posmatra sa aspekta projektnog finansiranja. U tom kontekstu, on se može smatrati kao najsavremeniji oblik finansiranja transfera tehnologije i to kroz visoko komponentnu opremu koja je po svojoj ceni nedostupna da se kupuje za gotov novac, a ne prodaje se na kredit (Stakić & Stamatović, 2003).

Međutim, finansiranje putem lizinga ima i svojih nedostataka. Pri tome, ključni nedostatak lizinga je to što je on relativno skup način finansiranja nabavke opreme (Zdjelar, 2008). Štaviše, lizing je po pravilu skuplji od bilo kog načina finansiranja jer se naknada koju

anuitetima plaća primalac lizinga sastoji od dela amortizacije finansiranog dobra i dobiti davaoca lizinga. Drugim rečima, proizilazi da davalac lizinga od primaoca lizinga dobija čitav investirani kapital (cena opreme), kamate, opšte troškove koje je imao vezano za sklapanje ugovora o lizingu i plus još jedan deo profita. Prema nekim procenama, opšti iznos lizing naknade kreće se u rasponu od 130% do 160% u odnosu na cenu po kojoj je oprema kupljena, odnosno koja je bila kada je ona data u lizing (Jović, 2008). U svakom slučaju, kao i svi izvori sredstava lizing podleže kalkulaciji cene koštanja lizinga, gde se sa jedne strane uzimaju u obzir troškovi pribavljanja sredstava na bazi lizinga i troškovi njihovog korišćenja, a sa druge strane prihodi koje korisnik lizinga postiže lizing aranžmanom, na koji način se u stvari dobija finansijski rezultat lizing posla.

5. ZAKLJUČAK

U savremenim tržišnim uslovima, pridaje se sve veći značaj lizingu kao obliku finansiranja i faktoru efikasnosti poslovanja preduzeća. Zbog prisustva tehnološkog progressa, savremena preduzeća imaju potrebu za permanentnim investicionim ulaganjima kako bi zadovoljila sve strožije proizvodne standarde, rigidne ekološke zahteve kao i zahteve sve probirljivijih potrošača. Konsekventno tome, radi široke primene novih tehnoloških rešenja, poslovna praksa je morala da iznađe adekvatne, brze i fleksibilne tržišne instrumente. Jedan od tih instrumenata je svakako i lizing kao savremeni oblik finansiranja preduzeća, koji omogućava nabavku investicionih dobara bez sticanja vlasništva nad njima.

Pre pojave lizinga, dug nije imao eksternu konkurenciju, pa je kod investicionog odlučivanja bilo dovoljno utvrditi sadašnju vrednost duga, a zatim je uporediti sa sadašnjom vrednošću očekivanih prihoda od investicionog projekta. Kako lizing i dug predstavljaju dva alternativna vida izvora sredstava, po logici stvari, proizilazi da pre upoređivanja budućih prihoda i rashoda (investicionog odlučivanja) obavezno treba izvršiti izbor između njih. Analogno tome, u radu smo pored ostalog, polazeći od korisnika lizinga prezentovali i pojednostavljen postupak upoređivanja lizinga i duga. Međutim, smatramo da bi primena sličnih ali složenijih modela mogla dati znatno potpunije pojašnjenje u vezi dileme – kada i pod kojim pretpostavkama lizing može biti povoljnija alternativa kao izvor sredstava. Ovo utoliko pre, jer je lizing nominalno skuplji izvor finansiranja od duga, pa su shodno tome, dosadašnja istraživanja lizinga uglavnom bila fokusirana u pravcu nastojanja da se kombinovanjem nekoliko najznačajnijih prednosti lizinga taj njegov nedostatak minimizira (100% finansiranje po fiksnoj stopi, plaćanje lizing naknada iz zarade, fleksibilnost lizinga, poreske beneficije, manji troškovi finansiranja, vanbilansno finansiranje – što znači da se lizing ne prikazuje kao obaveza u bilansu stanja i ne utiče na finansijske pokazatelje).

U današnjim uslovima opšte krize, kada su investiciona sredstva mnogim privrednim subjektima znatno ograničena nemogućnost investiranja dovela bi do relativnog i apsolutnog zaostajanja, pada produktivnosti i sniženja finansijskih efekata poslovanja. Zato lizing aranžmani privrednim subjektima omogućavaju korišćenje savremenih investicionih dobara uz ispoljavanje svih pozitivnih efekata koji po tom osnovu dolaze, a oni se prostiru na dva osnovna nivoa: mikroekonomski i makroekonomski. Na mikroekonomskom planu, poslovi lizinga omogućavaju mnogim firmama korišćenje savremenih investicionih dobara u uslovima nedovoljnosti i oskudice investicionih sredstava, a da se pri tome sačuva kreditna sposobnost preduzeća za druge profitabilne aktivnosti, čime se otklanjaju uska grla, pokreće proces proizvodnje, povećava zaposlenost, likvidnost, produktivnost i profitabilnost, i sve to bez potrebe hipotekarnog obezbeđenja zajmova (kredita). Na makroekonomskom planu, poslovi lizinga omogućavaju aktiviranje proizvodnih kapaciteta, osavremenjavanje opreme, povećanje globalne produktivnosti rada i konkurentnosti nacionalne privrede, kao i povećanje

izvoza i profitabilnosti globalne ekonomije. Analogno navedenom, za Srbiju kao zemlju u tranziciji posebno je značajan razvoj i dalja primena lizing aranžmana u svim segmentima poslovanja, kako bi u periodu koji je pred njom Srbija mogla dostići nivo razvoja ovih poslova koji je svojstven zemljama u njenom okruženju, pre svega zemljama Evropske unije.

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SUSTAINABLE DEVELOPMENT OF CULTURAL HERITAGE IN NIŠ: LEVERAGING VISITOR MANAGEMENT STRATEGIES

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Abstract: Space management involves a series of planned, legally regulated activities aimed at preserving space while also promoting its economic development. In this regard, visitor management represents one of the significant “tools” in managing a tourist destination, helping to valorize space in a responsible and sustainable manner. This paper uses SWOT and benchmarking analyses on the example of cultural tourism in Niš, as a tourist destination, to show how visitor management can be applied. At the same time, the paper presents examples of technological innovations and activities that can be implemented at a destination to promote sustainable tourism development, as feasible proposals for not only promoting, but also improving and preserving cultural heritage in Serbia.

Keywords: visitor management, cultural tourism, tourism destination, cultural heritage, Niš

PRIMENA VISITOR MANAGEMENTA U FUNKCIJI ODRŽIVOG RAZVOJA I OČUVANJA KULTURNE BAŠTINE NA PROSTORU NIŠA

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Apstrakt: Upravljanje prostorom podrazumeva niz planiranih, zakonski regulisanih aktivnosti u funkciji očuvanja prostora, ali i ekonomskog razvoja istog. S tim u vezi, u aktivnostima upravljanja turističkom prostornom celinom/destinacijom jedan od značajnih „alata“, kako bi se na odgovaran način i održivo valorizovao prostor, jeste *visitor management*. U ovom radu, na primeru analize i potencijala kulturnog turizma na prostoru Niša, kao turističke destinacije, primenom SWOT i benčmarking analize biće prikazan način primene visitor managementa. Istovremeno, u radu su prezentovani primeri ideja implementacije tehnoloških inovacija i aktivnosti na destinaciji u funkciji održivog razvoja turizma, kao mogućih predloga za promovisanje, ali i unapređenje i očuvanje kulturnog nasleđa na prostoru Srbije.

Ključne reči: upravljanje posetiocima, kulturni turizam, turistička destinacija, kulturna baština, Niš

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1. UVOD

Turizam je privredna delatnost koja pruža veliki broj mogućnosti za napredak i razvoj svih područja u svetu, a primenom principa održivog razvoja i očuvanja prostora i resursa na istom, utiču na mogućnost, kako valorizacije turističkih vrednosti, tako i na njihovo očuvanje i za naredne generacije. Važan deo upravljanja turističkom destinacijom i resursima na njoj jeste upravljanje posetiocima u prostoru, tzv. visitor management, u cilju optimizacije uticaja turizma. Primenom ovog alata ostvaruje se: informisanje posetilaca o uslugama u prostoru, kao i o turističkoj infra i suprastrukturi, minimiziranje negativnih uticaja prekomernog broja posetilaca prilikom posete turističkom lokalitetu, unapređenje kvaliteta turističkih proizvoda na destinaciji, kao i pozitivnom utisku turista nakon boravka na destinaciji.

Štekerová et al. (2022) ukazuju na to da visitor management koristi različite pristupe modeliranja i predviđanja turističkih aktivnosti i promena u ekosistemima, kulturnom i turističkom prostoru za posetu u zaštićenom turističkom području. Prema Leung et al. (2018), to se realizuje primenom nekoliko aktivnosti: proaktivnim planiranjem turističkih aktivnosti; prostorno-vremenskim zoniranjem teritorije u odnosu na turističku valorizaciju prostora; praćenjem, modeliranjem i predviđanjem tokova posetilaca; analizom motivacije, ponašanja i uticaja posetilaca; analizom pritiska/broja posetilaca na turistički kapacitet teritorije; informisanjem posetilaca i tumačenjem kulturno-istorijskog nasleđa i td.

Imajući u vidu specifičnosti koja se odnosi na starost tj. period nastanka brojnih kulturnih resursa materijalne baštine, a kako bi se resursi očuvali od degradacije, neophodna je primena visitor managementa. Takođe, da bi se očuvao kulturni identitet turističke destinacije, mora se izbegavati prekomerni turizam jer može da izazove štetne posledice po same resurse, ali i lokalnu zajednicu (Santos et al., 2022). Uz atraktivnost i autentičnost resursa, veoma je važno voditi računa o održivosti u cilju izgradnje konkurentske prednosti destinacije (Ranković et al, 2022). S tim u vezi, značajno je ukazati na specifičnost prostora Srbije sa aspekta slojevitosti prema periodima nastanka raznih kulturnih resursa, od perioda praistorije, pa do danas. Primenom različitih aktivnosti koje primenjuje visitor management ostvaruje se bolje prezentovanje kulturno-istorijskog nasleđa, uz istovremeno očuvanje, ali i pozitivniji utisak posetilaca. Takođe, uz implementaciju inovacija, podstiče se sveukupno bolji doživljaj turista, a samim tim javlja se i veća tražnja za destinacijom. Ukazujući na snage, slabosti, mogućnosti i šanse koje pruža prostor Niša kao turističke destinacije, uz osvrt na specifičnosti kulturnog nasleđa ovog prostora ideja je da se ukaže na neophodnost pravilnog i sistematičnog upravljanja turističkim prostorom u funkciji unapređenja, ali i očuvanja prostora i turističkih resursa za naredne generacije. Prema Radović et al. (2017), uz primenu savremenih informacionih tehnologija, koje na interaktivan način dopunjuju ponudu i sadržaje kulturnog turizma, možemo podići nivo atraktivnosti i autentičnosti Srbije kao destinacije na svetskom turističkom tržištu.

2. VISITOR MANAGEMENT I KULTURNO NASLEĐE

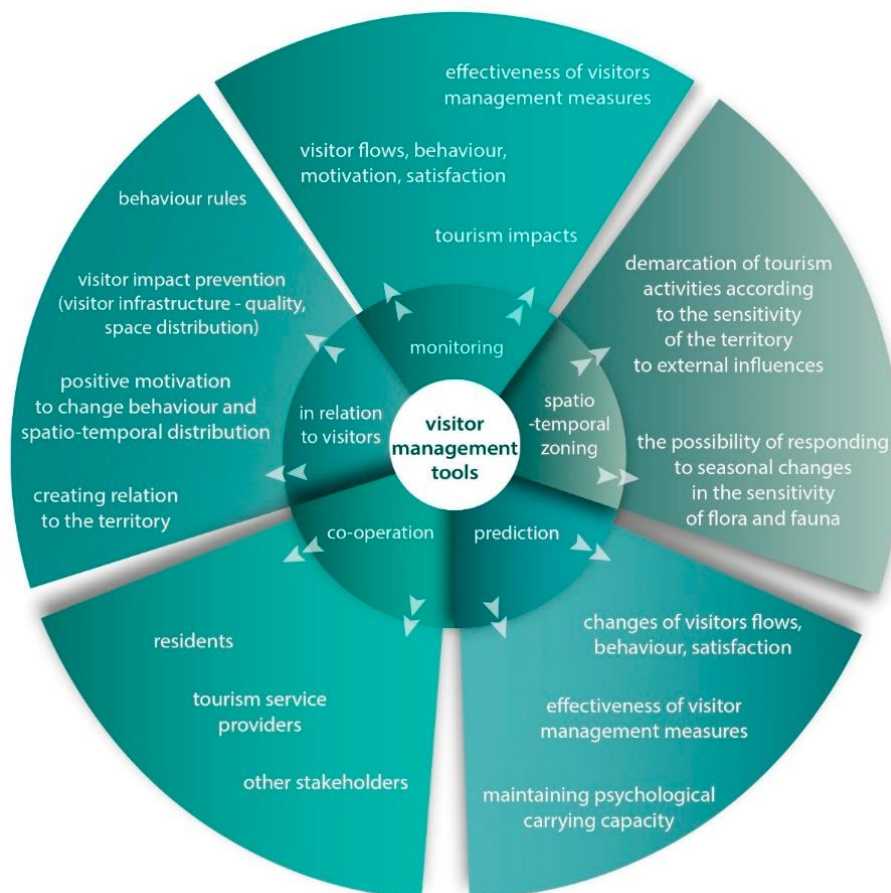
Pojam visitor managementa proučavalo je više autora, analizirajući opšti pojam, ali i sagledavajući ih iz ugla prirodnih i kulturnih resursa ponaosob. Glasson et al. (1995) analizirajući prirodna dobra i lokalitete ukazuju da aktivnosti visitor managementa uključuju regulisanje broja posetilaca, veličina grupe i dužine boravka, komunikaciju sa posetiocima, uz obezbeđivanje edukacije. McArthur&Hill (1996) ukazuju da primena visitor managementa predstavlja praksu da se obezbedi da posetioci ostvare kvalitetno održivo iskustvo posetom kulturnom resursu.

Visitor management može biti predmet aktivnosti u zaštićenim područjima, upravljanje rizikom u avanturističkom turizmu ili na prostoru UNESCO lokaliteta svetske baštine i

zakonski ili statutarno regulisan. Prema Albrecht (2017) moguće koristi od implementacije visitor managementa su podizanje imidža i unapređenje kvaliteta turističkih proizvoda na destinaciji, informisanje posetilaca o objektima, uslugama i infrastrukturi turističke destinacije, da upravlja i/ili modifikuje ponašanje posetilaca. Prilikom formiranja aktivnosti visitor managementa na prostoru resursa kulturne baštine mogu biti uključene organizacije javnog sektora kao što su lokalne vladine agencije ili regionalne turističke organizacije, lokalno stanovništvo, kao i nevladine i organizacije drugih sektora.

Prema Zelenka i Kactl (2013) mogu se izdvojiti sledeći alati visitor management-a:

- a) Praćenje – Uticaj razvoja turizma na destinaciju, odnosno na adekvatno zadovoljavanje turističkih potreba turista, motivaciju za posetu određenih znamenitosti kao i ponašanje i kretanje posetilaca
- b) Prostorno – vremensko planiranje – Adekvatno planiranje turističkih aktivnosti shodno internim i eksternim uticajima na destinaciju, prirodne i antropogene resurse destinacije, kao i sposobnost da se u svakom trenutku odgovori na potencijalne probleme koji mogu da nastanu



Slika 1. A mind map of selected visitor management tools
(Štekerová et al., 2022)

- c) Predviđanja – Promene u kretanjima turista, potrebama, željama i ponašanju turista
- d) Saradnja – Uključivanje lokalnog stanovništva i pružaoca usluga u razvoj destinacije i njenih turističkih resursa

- e) Posmatranje u odnosu na posetioce - visitor management bi poboljšao kontrolu kretanja turista na destinaciji uvođenjem određenih pravila ponašanja i aktivnim učešćem u očuvanju resursa

Interesantan primer primene visitor managementa predstavljaju turističke city card koje imaju pozitivan efekat kako za upravljače destinacijom/turističkim lokalitetom, tako i za korisnike usluga/turiste. Primenom ovih kartica omogućava se fleksibilnija kupovina ulaznica za objedinjenu posetu nekoliko lokaliteta, integrisana saradnja sa prevoznicima u javnom saobraćaju, saradnja sa ugostiteljskim objektima na destinaciji, kao i objektima turističke infrastrukture, prezentovanje preglednih informacija o lokalitetima, mogućnost uvida u broj prodatih ulaznica tj. broj posetilaca po lokalitetima na destinaciji, pregled interesovanja posetilaca i formiranja ponude prema ciljnim grupama, vremenska fluktuacija posetilaca po lokalitetima ponaosob. Turističke kartice postoje kao besplatne aplikacije za mobilne telefone, ali i u fizičkom obliku.

Postoji dosta primera dobre prakse kao što su: *I Amsterdam City Card, Copenhagen Card, Berlin Welcome Card, Rome City Card, Belgrade Card.*

I Amsterdam City Card – je turistička kartica koja pruža različite mogućnosti turistima. Uključuje posetu preko 70 turističkih atrakcija, besplatan gradski prevoz, besplatno krstarenje kanalom i iznajmljivanje bicikli. Kartice su vremenski ograničene, najjeftinija je kartica za 24 časa koja košta 60 evra, dok je najskuplja kartica 125 evra i može se koristiti 120 sati. Takođe, postoji i aplikacija putem koje turisti mogu imati na raspolaganju sve neophodne informacije koje će im olakšati boravak u Amsterdamu.

Copenhagen Card – pored svih pogodnosti koje ova kartica nudi, postoji mogućnost kupovine i *Kids card* kartice koja je besplatna za decu od 3 do 11 godina. Za decu od 12 do 15 godina postoji *Copenhagen Card Junior*. Postoje dve opcije za turiste, *Copenhagen Card – Discover*, sa ovom karticom turisti imaju na raspolaganju preko 80 atrakcija, transport do aerodroma i gradski prevoz. Druga opcija je *Copenhagen Card – Hop* koja nudi preko 40 atrakcija u centru grada i panoramsko razgledanje grada autobusom.

Berlin Welcome Card – Berlin nudi različite vrste kartica tokom posete destinaciji. Turistima su na raspolaganju kartice podeljene u nekoliko kategorija u zavisnosti od toga šta turisti žele sve da posete. Kartice uključuju posete turističkim atrakcijama, korišćenje gradskog prevoza i turistima su dostupni turistički vodič i turistička karta Berlina radi lakšeg snalaženja na destinaciji.

Rome City Card – nudi mogućnost posetiocima da istraže Rim sopstvenim tempom između 6 različitih atrakcija/tura sa liste od preko 35 popularnih aktivnosti. Rome City Card može da se koristi 60 dana od početka prve posete nekoj atrakciji. Instalacijom propusnice na mobilnom telefonu predupređuju se čekanja u redovima prilikom kupovine ulaznica na najposećenijim turističkim lokalitetima u Rimu. Imaoci Rome City Card mogu da posete Koloseum i Vatikanske muzeje, koriste gradski prevoz, uživaju u večeri pice u okrugu Prati, koncertima klasične muzike, u vožnji bicikla među drevnim rimskim ruševinama i još mnogo toga. Uz preuzimanje digitalnog vodiča sa informacijama o atrakcijama i uputstvima za rezervisanje poseta i Rome City Card turistima je obezbeđeno uživanje u toku posete Rimskim kulturnim lokalitetima.

Belgrade Card – još jedna turistička kartica koja ima za cilj da turistima pomogne pri poseti Beogradu. Kupovinom kartice dobija se mogućnost besplatnoj poseti muzejima i drugim atrakcijama u Beogradu, popust u određenim restoranima i barovima i popust za iznajmljivanje brodova za krstarenje Dunavom i Savom. Kartica se kupuje putem aplikacije, mogu se kupiti kartice za 24 časa, 48 sati i 72 sata. Od momenta kupovine kartica je validna 6 meseci i aktivira se tek kada se prvi put iskoristi pogodnost koju kartica nudi.

Turističke kartice mogu obuhvatiti rute poseta turističkim resursima, osmišljene po stepenu atraktivnosti resursa na destinaciji ili tematski, korišćenje ugostiteljskih usluga, usluge javnog gradskog prevoza, popuste kod pojedinih usluga/aktivnosti. Osmišljene su da mogu da se koriste kao online propusnice preuzimanjem QR koda ili fizičkom kupovinom kartice na definisanim prodajnim mestima. Mogućnost korišćenja je vremenski limitirana u trajanju od jednog do šezdeset dana od dana aktiviranja kartice tj. validiranja kartice prvom posetom nekom lokalitetu.

Prednost ovih kartica za turiste je bolje iskustvo i lakše snalaženje na destinaciji, dok je za destinaciju prednost veća kontrola turističkih poseta jer postoji mogućnost ograničenja u boravku, kao i obezbeđenja informacija o broju posetilaca. Na taj način se može obratiti veća pažnja na održivost resursa destinacije i kontrolisati posete turista da ne bi došlo do ugrožavanja resursa na bilo koji način. Na osnovu analize gore navedenih modela, mogu se izdvojiti komponente koje bi dale doprinos održivosti resursa. (Tabela 1).

Table 1. Analiza modela turističkih kartica

| Destinacija | Vremensko ograničenje | Kartice za decu | Kupovina fizičkih kartica |
|-------------|-----------------------|-----------------|---------------------------|
| Amsterdam | ✓ | x | ✓ |
| Beograd | ✓ | x | x |
| Kopenhagen | ✓ | ✓ | x |
| Berlin | ✓ | ✓ | ✓ |
| Rim | ✓ | x | ✓ |

Izvor: Analiza autora

3. OČUVANJE KULTURNOG NASLEĐA NA PODRUČJU GRADA NIŠA UPOTREBOM VISITOR MANAGEMENT-A

Prostor grada Niša karakterišu određene specifičnosti imajući u vidu geografski položaj, odličnu saobraćajnu povezanost i odgovarajuću klimu, pa je, inače na tzv. Balkanskoj raskršnici puteva, kao takav predstavljao važnu tačku u osvajanjima hiljadama godina u nazad. Analizirajući gore navedene karakteristike, kao i prirodnu i kulturnu baštinu prostora grada Niša formirana je SWOT analiza u *Programu razvoja turizma grada Niša sa akcionim planom za period 2018-2020. godine*. SWOT analiza kao menadžerski alat predstavlja komparativni prikaz snaga, slabosti, mogućnosti i pretnji predmeta analize, kako bi se mogao napraviti strateški plan razvoja i definisali ciljevi. Sagledavajući postojeću SWOT analizu napravljen je pregled značajnih elemenata iste i na slici 2 data je agregirana SWOT tabela koja nam ukazuje na potencijalne mogućnosti, ali i probleme u turističkoj valorizaciji ovog prostora.

Na prostoru grada Niša otkriveni su i turistički se valorizuju kulturni resursi koji datiraju iz različitih istorijskih perioda, a time ukazuju i potvrđuju značaj prostora grada Niša, kao istorijski, politički i ekonomski vrlo važno naseljeno mesto. Lokaliteti prema starosti datiraju iz perioda neolita, (*Praistorijski lokalitet Bubanj*), potom rimskih osvajanja (*Mediana, Starohrišćanska bazilika*), perioda osvajanja i vladavine Osmanlija (*Niška tvrđava, Čele Kula, Spomen park Čegar*), Prvog i Drugog svetskog rata (*Spomen park Bubanj i Logor 12. februar*), pa sve do savremenih, iz perioda bombardovanja NATO-a.

| SNAGE | SLABOSTI |
|--|---|
| Povoljan geografski položaj Dobra saobraćajna povezanost Aerodrom „Car Konstantin“ Prirodni i kulturni resursi Rodni grad rimskog cara Konstantina Velikog Banjski turizam Postojanje Turističke organizacije Niša Organizovanje događaja od značaja za atraktivnost grada Niša kao turističke destinacije | Turistička infrastruktura koja nije dovoljno razvijena Zagađivanje okoline, slaba zaštita životne sredine i nepoštovanje mera zaštite područja prirodnih i kulturnih resursa Nedostatak prepoznatljivih turističkih proizvoda (turistički brend) Nedovoljno ulaganje u smeštajne kapacitete najviše kategorije Slabo prilagođena turistička signalizacija Nedovoljno razvijen receptivni turizam Nedovoljno ulaganje u promociju i marketing Nedovoljno ulaganje u održivost i dostupnost resursa od značaja za turističku ponudu Niša |
| MOGUĆNOSTI | PRETNJE |
| Stvaranje uslova na nacionalnom nivou za ulaganje u turističku infrastrukturu i suprastrukturu kao i ulaganje u zdravstveni turizam Razvoj avio saobraćaja Kreiranje regionalnih turističkih proizvoda radi bolje pozicije na tržištu Obrazovne institucije za turizam – formiranje stručnih turističkih kadrova Informacione tehnologije i njihovo korišćenje u promociji turizma Ulaganje u drumski saobraćaj i završetak koridora 10 | Političke tenzije u širem regionu Terorizam Političke tenzije na Balkanu Neadekvatna edukacija o svetskim trendovima promocije i brendiranja turističkog proizvoda Stalne promene u valutnim kursovima |

Slika 2. SWOT analiza prostora grada Niša

Izvor: prilagođeno od strane autora prema Programu razvoja turizma grada Niša sa akcionim planom za period 2018-2020. godine

Mediana je arheološko nalazište iz rimskog perioda, danas arheološki park u okviru kog su pronađeni ostaci objekata građenih u III i IV veku n.e. Ovaj prostor prvobitno je u III veku izgrađen i korišten kao poljoprivredno dobro i značajan distributivni centar *Municipiuma Naiss*. Nakon toga, tadašnjim aktivnostima urbanizacije prostora namena je promenjena i izgrađen je luksuzni letnjikovac sa velelepim objektima koje je koristio Konstantin Veliki i naredni rimski carevi. Danas, arheološko nalazište krasi očuvani mozaici i freske centralne vile, kao i *villa rustica* koju je izgradio Konstantin Veliki. *Mediana* je obeležje grada Niša i jedan od najvažnijih turističkih lokaliteta. (Antonić, et al., 2019) Krajem 2022. godine, nakon deset godina, ovaj značajni kulturni i turistički resurs ponovo je otvoren i dostupan za posete turista. Kako bi se ovaj veoma važan kulturni resurs sačuvao od potencijalnih problema i pratilo kretanje turista na lokalitetu, postoji nekoliko predloga primene aktivnosti Visitor managementa, prema već postojećim primerima dobre prakse iz sveta.

Najpoznatiji kulturni resursi iz perioda Osmanlija u Nišu su: Niška tvrđava i spomenik Čele kula. Niška tvrđava se nalazi u najužem delu grada i predstavlja zaštitni znak grada Niša, a nalazi se na svim značajnijim obeležjima. Izgrađena je na ostacima utvrđenja iz antičkog

perioda, a poslednji put je u okviru njenog prostora građeno 1730. godine. Ovaj lokalitet zakonom je zaštićen kao kulturnim spomenikom od velikog značaja, a 2023. godine obeležava dva veka postojanja. Na prostoru Niške tvrđave postoje brojni objekti koji mogu da se obiđu, a u okviru samog utvrđenja organizuju se različiti kulturni događaji i manifestacije, što neodgovarajućom valorizacijom može nepovoljno uticati na održivost ovog važnog resursa.

Spomenik Čele kula izgrađen je u 19. veku, od lobanja srpskih pobunjenika protiv turske vlasti, a kako bi se zastrašio srpski narod i sprečili dalje pobune srpskog stanovništva. Smatra se jedinstvenim spomenikom u svetu. Imajući u vidu dugogodišnje neadekvatnog očuvanja i brigu o ovom resursu, tj. neblagovremenu fizičku zaštitu spomenika, a što je uslovalo krađu i oštećenje lobanja, može doći do potpunog urušavanja i gubitka istorijske i kulturne vrednosti ovog resursa. (Antonić, et al., 2019)

Analizirajući različite aktivnosti koje se realizuju u okviru visitor managementa uočeno je nekoliko mogućih predloga rešenja u procesu adekvatnog i održivog upravljanja kulturnom baštinom ovog prostora:

- Formiranje *Naisuss Card* – turističke kartice
- Kreiranje *Naisuss Coin*-a – plastičnog novčića – ulaznice/suvenira.

Projekat *Naisuss Card* obezbeđuje posetiocima/turistima u Nišu veliki broj informacija o turističkim lokalitetima, restoranima, hotelima i prenoćištima, kao i interaktivnu kartu grada Niša, uz informacije kako doći do lokaliteta koristeći gradski prevoz, kao i samostalno. Putem aplikacije i QR koda bila bi omogućena opcija da se kupe elektronske kartice za posetu lokalitetima pojedinačno, kao i grupne kartice koje će obuhvatati više lokaliteta i biti vremenski ograničene za posetu (npr. jedna kartica važi od jednog do sedam dana, u zavisnosti od toga koliko se turista zadržava u Nišu). Takođe, *Naisuss Card* bi bilo moguće kupiti u fizičkom obliku u Turističkoj organizacija grada Niša, kao i u pojedinim hotelima, kako bi ovaj vid inovacije bio prilagođen različitim segmentima turističkog tržišta. Osim korišćenja kartice kao jedinstvene ulaznice za turističke lokalitete u Nišu, turisti bi uz *Naisuss Card* aplikaciju mogli da koriste usluge javnog gradskog prevoza, da ostvare popuste u restoranima i hotelima u Nišu.

Naisuss Coin je projekat koji u osnovi predstavlja mogućnost kupovine plastičnog novčića na postavljenim automatima na nekoliko različitih lokacija u Nišu (npr. Niška tvrđava, Mediana, Čele kula), a u zavisnosti od prirode lokaliteta karakterišu ga ilustraciju koja predstavlja lajtmotiv tog mesta, npr. slika Niške tvrđave, lik cara Konstantina, Čele kula. Svaki ovaj novčić bi bio ulaznica za različite lokalitete, a nakon obilaska ostao bi kao originalni suvenir. Na osnovu prodatih novčića moglo bi da se prati: broj posetilaca čekiranjem novčića prilikom ulaska u prostor resursa, kretanje turista u Nišu, interesovanje turista, a to bi doprinelo razvoju strategije za održivost lokaliteta i suzbijanje prevelike fluktuacije turista kako se ne bi ugrozili resursi, dok bi se na kreativan način privukla pažnja turistima i formirao pozitivan utisak nakon boravka na destinaciji.

4. ZAKLJUČAK

Upoznavanjem i implementacijom visitor managementa doprinelo bi se očuvanju i podizanju svesti o kulturnoj baštini Niša koji ima bogato kulturno-istorijsko nasleđe, ali nažalost nije na adekvatan način implementirano i formirano kao svojevrsan brend grada.

Predloženi modeli inovacija u visitor managementu ukazuju na jasne prednosti implementacije novih alata i sistema kako za turiste tako i za destinaciju.

Uvođenje jednog od predloženih modela – *Naisuss Card* ili *Naisuss Coin*, može inovirati i značajno promeniti, poboljšati turističku ponudu grada Niša, uz pozitivan uticaj na lokalnu zajednicu. Pored toga, nadležni u Nišu dobili bi jasniju sliku o kretanju turista na lokalitetima

od značaja (periodi frekvencije turista na lokalitetima, broj posetilaca), što bi pomoglo u kreiranju plana zaštite resursa i ukazalo na potrebe ulaganja u očuvanju tih resursa.

Takođe, ovakav sistem bi doprineo prilagođavanju turističke ponude kako stranim, tako i domaćim turistima, kao i efikasnijem snalaženju turista na destinaciji, uz unapređenu promociju Niša kao turističke destinacije i formiranje turističkog brenda.

Detaljnim formiranjem plana implementacije predloženih rešenja/inovacija, uz definisanje finansijskih aspekata projekta, doprinelo bi efikasnijem praćenju stanja, ali i koraka razvoja turizma u Nišu. Na osnovu podataka dobijenih iz analize resursa destinacije Niš, možemo videti da bi primena visitor managementa imala značajan doprinos u razvoju destinacije i očuvanju njenog kulturnog nasleđa. Iz priloženog, možemo zaključiti da je neophodno obratiti više pažnje na održivost nasleđa kako pojedini resursi ne bi izgubili svoju vrednost i autentičnost.

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HEDGE FUNDS INVESTMENT TRENDS IN TODAY'S UNSTABLE ENVIRONMENT

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Abstract: Hedge funds are pooled private, unregistered partnerships that trade very aggressively and with a lot of risk in order to achieve high returns. They are characterized by a large volume of trading, different investment strategies, high use of leverage and derivatives. They do not operate within standard regulatory frameworks, but their operations are non-transparent and poorly regulated. Hedge funds contribute to making the markets they operate in more liquid and efficient, but in case of wrong business assessments, they act destabilizing. The largest number of hedge funds operate in the United States, Great Britain, the EU and Australia. The crisis caused by the corona virus pandemic and the war in Ukraine stopped the growth of this industry. The year 2022 was very difficult for hedge funds due to rising interest rates and expensive financing, which caused losses in their business. In 2023, losses will probably continue and their business will depend on geopolitical turmoil, war actions, new pandemics, inflation trends and interest rates.

Keywords: Hedge funds, investing, business, losses, interest rates

TRENDVI INVESTIRANJA HEDŽ FONDOVA U DANAŠNJEM, NESTABILNOM OKRUŽENJU

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Rezime: Hedž fondovi su udružena privatna, neregistrovana partnerstva koja trguju vrlo agresivno i sa puno rizika kako bi ostvarili visoke prinose. Karakteriše ih veliki obim trgovanja, različite strategije ulaganja, visoka upotreba leveridža i derivata. Ne posluju u okviru standardnih regulatornih okvira već je njihovo poslovanje netransparentno i slabo regulisano. Hedž fondovi doprinose da tržišta na kojima posluju postanu likvidnija i efikasnija ali u slučaju pogrešnih poslovnih procena deluju destabilizirajuće. Najveći broj hedž fondova posluje u Sjedinjenim Američkim Državama, Velikoj Britaniji, EU i Australiji. Kriza izazvana pandemijom virusa korona i rat u Ukrajini zaustavili su rast ove industrije. Godina 2022. je bila veoma teška za hedž fondove zbog rasta kamatnih stopa i skupog finansiranja, što je izazvalo gubitke u njihovom poslovanju. U 2023. godini gubici će se verovatno nastaviti a njihovo poslovanje će zavisiti od geopolitičkih previranja, ratnih dejstava, novih pandemija, trenda inflacije i kamatnih stopa.

Ključne reči: Hedž fondovi, investiranje, poslovanje, gubici, kamatne stope

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1. UVOD

Hedž fondovi su neregistrovana privatna investiciona partnerstva koja obuhvataju širok rang različitih investicionih ciljeva, strategija, tehnika i sredstava. Najčešće su organizovani kao ograničeno partnerstvo ili kao društvo sa ograničenom odgovornošću u kome investitori poveravaju kapital profesionalnim menadžerima. Partnerstvo ne podleže onoj regulativi kojom inače podležu investicioni fondovi, i u mnogim zemljama ne moraju biti registrovani. Njihova špekulativna priroda ih razlikuje od investicionih fondova. Hedž fondovi su često registrovani u offshore državama radi pogodnosti u plaćanju poreza. U većini zemalja, ovi fondovi nisu u obavezi da dostavljaju izveštaje o poslovanju nadležnim organima. S toga je njihov rad netransparentan i njihovi izveštaji nisu dostupni javnosti.

Akcionari hedž fondova su vrlo bogati pojedinci ili velike korporacije. Najčešći investitori su institucionalni investitori kao što su penzioni fondovi, osiguravajuće kompanije i bogati pojedinci. Često se traži od investitora da ulažu na duži period i do nekoliko godina. Minimalan period ulaganja je jedna godina, poznato kao period blokade. Ostvareni profit se meri u milijardama dolara. Privlačni su špekulativnim investorima budući da koriste najagresivnije tehnike uključujući visoki leveridž, kratku prodaju i kupovinu prodajnih i kupovnih opcija, kako bi se ostvario maksimalan rast kapitala. Većina ovih fondova raspolaže pozajmljenim sredstvima i nameće malo restrikcija na one vrste hartija koje drže u portfolijima. Originalni hedž fondovi nastoje da smanje tržišni rizik kratkom prodajom određenih hartija u isto vreme kada imaju duge pozicije na druge hartije (Lakić, 2005).

Hedž fondovi su povezani sa upotrebom različitih oblika leveridža. Ovo izaziva zabrinutost zbog mogućih sistematskih posledica usled neuspeha hedž fondova. Prema Upravi za finansijske usluge Ujedinjenog Kraljevstva (FSA), postoje dva kanala preko kojih bi hedž fondovi mogli da izazovu sistematski rizik. Prvi „kreditni kanal“ koji se bavi kreditnim ugovornim stranama i mogućnošću da neuspeh hedž fondova može dovesti do gubitaka u bankarskom sektoru. Drugi je „tržišni kanal“ koji se bavi agresivnim strategijama trgovanja velikog obima i često veoma korelirane trgovine. Sistematska opasnost je da hedž fondovi prate slične strategije, ili koriste slične modele upravljanja rizikom, te postoji rizik da će kolektivno ući ili izaći sa tržišta i na taj način poremetiti likvidnost tržišta (Ferran, 2011).

Iako se kritike na račun hedž fondova kao izazivača finansijskih i valutnih kriza možda i previše potenciraju, treba istaći i pozitivne strane ove industrije koja može biti od velike koristi za tržišta. Hedž fondovi utiču na povećanje likvidnosti tržišta na kome posluju i poboljšavaju njihovu efikasnost.

2. FUNKCIONISANJE HEDŽ FONDOVA

Smisao hedž fondova je da se udruže sredstva manjih grupa investitora koji, preko veoma sposobnih menadžera, teže da ostvare nadprosečne stope prinosa. Da bi ostvarili vrlo visoke stope prinosa, menadžeri hedž fondova ulaze u rizična ulaganja. Stoga hedž fondovi sprovode agresivnije investicione strategije nego standardni investicioni fondovi. To je osnova i za potencijalno stvaranje nadprosečnih profita pod uslovom da portfolio menadžeri dobro procene buduća kretanja na finansijskim tržištima (Ćirović, 2007).

Hedž fondovi su posebni, jer obično zahtevaju da ulagači ulože svoja sredstva na prilično dugo razdoblje, neretko i po nekoliko godina. Svrha ove odredbe jeste dati upravicima fondova manevarski prostor pri odabiru dugoročnih strategija (Mishkin & Eakins, 2005). U SAD – u, da bi pojedinci postali investitori hedž fondova, moraju da zarađuju najmanje 200 000 dolara godišnje, ili ako je u pitanju bračni par zajedno 300 000 dolara godišnje. Pri tome, minimalna investicija u fond je između 100 000 i milion američkih dolara. Po svojoj strukturi su vrlo

raznoliki, i koriste razne investicione strategije. Investiraju u širok spektar proizvoda vrlo agresivno i sa puno rizika. Menadžer ulaže u sve što proceni da će doneti profit, uključujući derivate kao što su opcije i fjučersi, devize i hartije od vrednosti kojima se javno trguje, robu, nekretnine, zemljište.

Industrija hedž fondova koristi raznovrsne strategije kako bi obezbedila što veći prinos. Njihovi menadžeri često koriste leveridž kako bi povećali prinose. To rade zaduživanjem kod banaka i kupovinom hartija od vrednosti na margini. Ako koriste leveridž, ukupna vrednost celokupne imovine fonda može biti nekoliko puta veća od kapitala koji je uložen. Leveridž može povećati rizike likvidnosti, tržišta i kreditne rizike, kao i prinose, i jedan je od najvažnijih faktora koji doprinosi ukupnom profilu rizika hedž fonda. Trećina hedž fondova navodno ne pozajmljuje uopšte, a od onih koji pozajmljuju 54% ne pozajmljuje više od iznosa akcijskog kapitala koji su investitori uložili u fond. Među onima koji više pozajmljuju retko leveridž premašuje odnos 10 prema 1 (Lakić, 2005).

Hedž fondovi nastoje da povećaju svoje prinose strategijom kratke i duge prodaje. Prodaju pozajmljene hartije koje se smatraju precenjenim, sa ciljem da te iste hartije kasnije kupe po nižoj ceni. Uspeh zavisi od tačnosti procene menadžera da će hartije konkretne kompanije pasti. Duga prodaja se odnosi na to da menadžer kupuje hartije sa uverenjem da će njihova vrednost porasti. Hedž fondovi koriste i hedžing strategiju i arbitražu. Hedžing strategija podrazumeva oslobađanje od nekih, ili svih rizika kao što je ekonomski, tržišni, valutni, kamatni, politički. Arbitražu uključuje pokušaje fondova da iskoriste povremene neefikasnosti cena, ili koriste nesklad između hartija ili tržišta. Strategija hedž fondova može da uključuje upotrebu derivatnih ugovora kako bi uspostavila sintetičke pozicije.

Iako je procentni udeo neto vrednosti hedž fondova u ukupnim fondovima mali, oni ostvaruju veći uticaj na tržište od svog procentnog tržišnog udela, zato što hedž fondovi kupuju češće. Hedž fondovi koriste vrlo dinamične strategije poslovanja, trguju sa leveridžom, ne kupuju i “drže”, već kupuju i prodaju (Reurink, 2016). Leveridž, kada se kombinuje sa brzim stilom trgovanja, omogućava hedž fondovima da imaju mnogo veći uticaj na promet tržišta nego što bi vrednost njihove imovine sugerisala. Hedž fondovi čine između 30% i 60% tržišnog prometa što je zaista veliko, i ilustruje zašto je razumevanje ponašanja finansijskog tržišta danas bez hedž fondova nemoguće (OECD, 2007)

Hedž fondovi imaju pristup mnogim informacijama koje nisu dostupne drugim investitorima, i zahvaljujući tome dodatno profitiraju. Empirijski posmatrano, korišćenje javnih informacija je snažno pozitivno povezano sa performansama hedž fondova. Vrednost prikupljanja javnih informacija dovoljna je da nadmaši troškove sprovođenja alternativnih strategija ulaganja. Razlika u performansama hedž fondova koji prate javne informacije i onih koji to ne rade je ekonomski velika, oko 1,5% godišnje. Tokom četrnaestogodišnjeg perioda ta razlika se penje na 25% (Crane et al., 2021).

U poslovanju hedž fondova, prisutna je pristrasnost menadžera, pa čak i prevare. Iako su prevare prisutne u svim aspektima finansijske industrije i investiranja, hedž fondovi su ipak ozloglašeni radi prevara koje su se dešavale u prošlosti. Međutim, sve je to proisteklo iz neregulacije funkcionisanja hedž fondova (Duan & Gaurav, 2021).

Uloga hedž fondova u periodima kriza naglasila je potrebu za regulacijom ove industrije. Pogrešno izveštavanje, sumnjivi prinosi i vrednosti NAV-a ukazuju na moguće pristrasnosti ili prevare kako bi se privukao kapital. Više od 75% hedž fondova koji propadaju, to čine zbog neke varijacije prevare. Sve je to posledica nedostatka regulatornog nadzora hedž fondova, koji nisu u obavezi da daju informacije i izveštaje o poslovanju (Vuuren & Vuuren, 2022). Međunarodne institucije pokušavaju da regulišu rad hedž fondova radi njihovih špekulativnih aktivnosti i mogućnosti izazivanja poremećaja. Kontrola se usmerava i na banke, tako što se

usvajaju stavovi sa ciljem uspostavljanja standarda ponašanja banaka u poslovanju sa hedž fondovima.

3. MENADŽERI HEDŽ FONDOVA

Autori Lu et al. (2021) su se bavili sastavom tima koji upravljaju hedž fondovima i došli do rezultata da je raznolikost tima povezana sa superiornijim rezultatima. Raznovrsni timovi nadmašuju homogene za 3,24% do 7,96% godišnje. Heterogeni skupovi veština članova tima, pruža širi spektar ulaganja.

Međutim, timovi hedž fondova nisu veliki. Od ukupnog broja fondova kojima upravljaju timovi, sa 40,61% fondova upravljaju dve osobe, sa 30,29% fondova upravljaju tri osobe, sa 16,97% upravljaju četiri osobe i sa 12,13% upravlja više ljudi. Timovi kojima upravlja jedan menadžer klasifikuju se kao potpuno homogeni. Dakle, zaključak do kog su došli Lu et al. (2021) je da različiti timovi nadmašuju homogene timove.

Menadžeri uspešnih hedž fondova imaju izuzetno velike prihode koji su na godišnjem nivou često veći od BDP-a pojedinih zemalja. Visoke provizije privlače visoko kvalitetne investicione stručnjake. Oni su plaćeni u vidu godišnje provizije a na bazi ostvarenih rezultata, što podstiče ove kvalitetne menadžere da ostvaruju maksimalne profite. Ovi menadžeri nastoje da budu investitori u sopstvenim fondovima kojim upravljaju a u nekim fondovima oni se ugovorom obavezuju da značajan deo svog profita ulažu u fondove kojima upravljaju.

Warren Buffett (92) je američki biznismen, investitor, filantrop i glavni izvršni direktor Berkshire Hathaway. Prema poslednjim podacima Forbsa on poseduje bogatstvo vredno 118 milijardi dolara, što ga čini petom najbogatijom osobom na svetu. Dok su tokom 2022. godine najveći bogataši pretrpeli velike gubitke zbog pada akcija, jedino je Buffett uspeo ne samo da sačuva vrednost svojih akcija, već i da ih poveća. Buffett planira da 99% svog bogatstva da u dobrotvorne svrhe, jer smatra da je lako došao do bogatstva radeći posao koji voli.

Sledeći menadžer hedž fondova po bogatstvu je Jims Simons (82), bivši profesor matematike i osnivač kompanije Renaissance Technologies. Njegovo bogatstvo se procenjuje na 23,5 milijardi dolara, a njegova kompanija upravna sa 80 milijardi dolara. Iako se penzionisao i dalje je kopredsednik zajedno sa svojim sinom. Odmah iza njega, po bogatstvu, je hedž menadžer Rej Dalio (73), čije se bogatstvo procenjuje na 18,7 milijardi dolara. On je osnivač jednog od najvećih hedž fonda na svetu Bridgewater Associates (www.bankar.me)

Najposposobniji menadžeri upravljaju najvećim i najuspešnijim hedž fondovima. U tabeli 1 prikazano je petnaest hedž fondova sa najvećom aktivom.

Berkshire Hathaway Inc, (NYSE: BRK - A) je najveća investiciona kompanija na svetu, sa aktivom od 300 milijardi dolara. Ovaj fond generiše veće prihode od većine hedž fondova. Ima učešće u industriji građevinarstva, tehnologije, bankarstva i automobilske industriji. Na njenom čelu je Warren Buffett koji je jedan od osnivača hedž fondova. (www.insidermonkey.com).

Bridgewater Associatessa je osnovan 1975. sa sedištem u Vestportu u Kentakiju. Osnivač fonda je Rej Dalio i imovina fonda dostiže 126 milijardi dolara. Njihovi klijenti su institucionalni investitori, univerzitetski fondovi, dobrotvorne fondacije.

Man Group je treći po veličini fond, sa imovinom od 73,5 milijardi dolara. Osnovao ga je James Man 1783. godine sa sedištem u Londonu. U fond ulažu kako privatni tako i institucionalni investitori.

Industrija hedž fondova je najrazvijenija u Sjedinjenim Američkim Državama, Velikoj Britaniji, EU i Australiji. Oko 70% hedž fondova ima sedišta u Severnoj Americi polovinom u Njujorku, Kaliforniji i Teksasu. (www.visualcapitalist.com)

Tabela 1. Petnaest najvećih hedž fondova na svetu po veličini aktive kojom upravljaju - kraj juna 2022. godine (www.insidermonkey.com)

| | Naziv hedž fonda | Veličina aktive |
|-----|--|-------------------|
| 1. | Berkshire Hathaway Inc.(NYSE:BRK-A) | \$ 300 milijardi |
| 2. | Bridgewater Associates LP | \$ 126 milijardi |
| 3. | Man Group plc (LSE:EMG.L) | \$ 73,5 milijardi |
| 4. | Renaissance Technologies LLC | \$ 57 milijardi |
| 5. | Millennium Management LLC | \$ 55,0 milijardi |
| 6. | Citadel LLC | \$ 52,9 milijardi |
| 7. | The D.E.Shaw group | \$ 47,8 milijardi |
| 8. | Two Sigma Investments LP | \$ 40,9 milijardi |
| 9. | Davidson Kempner Capital Management LP | \$ 37,5 milijardi |
| 10. | Farallon Capital Management, L.L.C | \$ 37,4 milijardi |
| 11. | TCI Fund Management Limited | \$ 36,2 milijardi |
| 12. | Marshall Wace LLP | \$ 34,4 milijardi |
| 13. | AQR Capital Management | \$ 28,2 milijardi |
| 14. | Anchorage Capital Group, L.L.C. | \$27 milijardi |
| 15. | Baupost | \$26,3 milijardi |

U Evropi je industrija hedž fondova rasla počev od 2000. godine većom brzinom nego u Sjedinjenim Američkim Državama. Razlog se nalazi u načinu upravljanja fondovima i većoj transparentnosti njihovog poslovanja. Posebno atraktivno mesto za upravljanje fondovima je London. Velika Britanija nudi mnoge prednosti, kao što su blizina klijenata, tržišta i lokalnu ekspertizu.

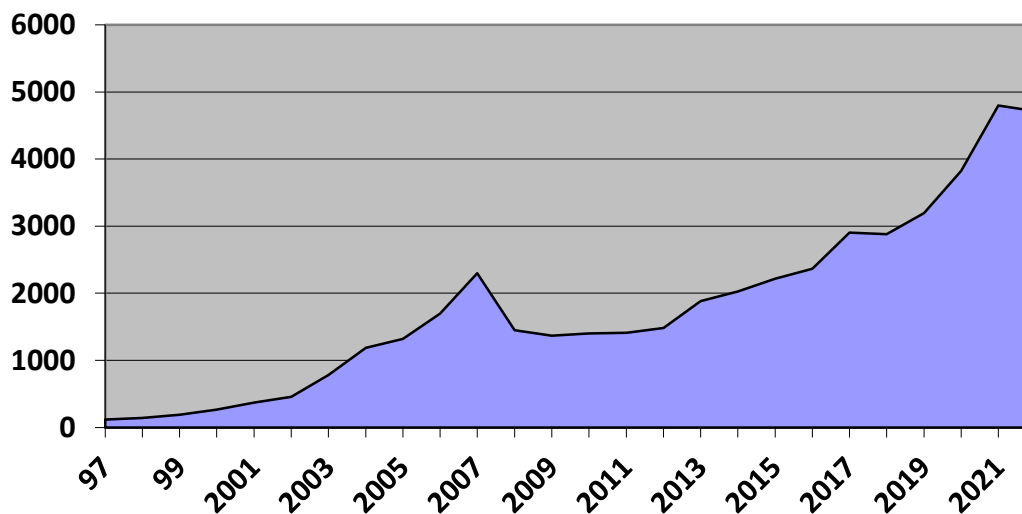
4. TENDENCIJE HEDŽ FONDOVA U SAVREMENIM ZBIVANJIMA

U našem univerzumu fondova imamo ukupno 43.083 hedž fonda, koji se sastoje od 17.368 živih fondova i 25.715 mrtvih fondova. S obzirom na zabrinutost da bi fondovi sa više klasa akcija mogli da pomute analizu, iz uzorka isključujemo duple klase akcija. Ovo ostavlja ukupno 27.751 hedž fond, od kojih su 10.228 živi fondovi i 17.523 mrtvi fondovi. Dok se 6.996 fondova pojavljuje u više baza podataka, mnogi fondovi pripadaju samo jednoj bazi podataka (Luatal, 2021).

Industrija hedž fondova doživela je procvat tokom 1990-ih i rasla je godišnje po stopi od preko 30%, sve do 2008. godine. Zbog velike krize 2008. godine njihova imovina je pala i uspela da se oporavi tek 2013. godine. Od 2013. godine ponovo raste ali nešto sporije, prosečno po stopi od 15 % godišnje.

Godina 2018. je bila prilično teška za hedž fondove. Kamate su porasle, uznemireni klijenti su povlačili sredstva, stotine fondova je ugašeno. Nakon loše godine, dolazi period njihovog pozitivnog poslovanja usled povećanja interesovanja institucionalnih investitora za industriju hedž fondova. Penzioni fondovi, osiguravajuće kuće, fondacije su postali zainteresovaniji da investiraju u hedž fondove u želji da povećaju svoje prinose.

Industrija hedž fondova se prošle godine suočila sa teškim periodom usled velikih tržišnih previranja. U prvom kvartalu 2022. godine, neto vrednost hedž fondova je iznosila 5.136,4 milijardi dolara. U drugom kvartalu 2022. godine, ona je opala na 4.872,1 milijardu dolara, da bi na kraju trećeg kvartala pala na 4.712,8 milijardu dolara. (www.barclayhedge.com)



Slika 1. Imovina hedž fondova 1997-K3 2022.god. u milijardama američkih \$ (www.statista.com>statistics)

Smatra se da je imovina hedž fondova mnogo veća, jer ni sve baze podataka ni regulaciona tela nemaju sveobuhvatan pregled ukupne imovine ove industrije. Mnogi fondovi se ne prijavljuju, jer je davanje informacija na čisto dobrovoljnoj osnovi. Ova industrija je očigledno podcenjena čak i onda kada se uključe fondovi iz svih baza podataka. Mnogi od najvećih hedž fondova se odlučuje da se ne registruje ni u jednoj bazi podataka, i upravo ovi mega fondovi predstavljaju najveću sistematsku pretnju finansijskim tržištima (Barth at al., 2021).

Tabela 2. Imovina hedž fondova 2010 - K3 2022.god (<https://www.statista.com>statistics> www.barclayhedge.com/solutions/assets-under-management/hedge-fund-assets-under-management/hedge-fund-industry)

| Godina | Imovina u milijardama američkih \$ |
|---------|------------------------------------|
| K3 2022 | 4.712,8 |
| 2021 | 4.797,6 |
| 2020 | 3.826,3 |
| 2019 | 3.194,01 |
| 2018 | 2.878,1 |
| 2017 | 2.905,67 |
| 2016 | 2.367,48 |
| 2015 | 2.219,24 |
| 2014 | 2.024,83 |
| 2013 | 1.883,75 |
| 2012 | 1.481,92 |
| 2011 | 1.408,39 |
| 2010 | 1.402,73 |

Kriza izazvana pandemijom virusa korona imala je velike posledice na poslovanje hedž fondova. Zbog najave pojave omikron soja virusa Kovid-19, tržišta akcija je zahvatio ponovni

pad vrednosti, posebno američkih akcija za 4%. Nakon vesti o novoj varijanti virusa koja ih je zatekla, došlo je do velikog pada kapitala kojima upravljaju hedž fondovi. U 2022. godini, hedž fondovi su napravili najgore rezultate od 2018. godine, i dolazi do pada njihove imovine za 4,2% (www.reuters.com).

Rastuće cene energije donele su ogromne profite naftnim kompanijama. To je bio veliki preokret obzirom da su ove kompanije beležile gubitke tokom 2020. godine, kada je pandemija uzrokovala kolaps cena nafte. Već 2021. godine cene nafte skaču, da bi u 2022. godini dostigle maksimum. Hedž fondovi su lagano prikupljali akcije naftnih i gasnih kompanija i sada ostvaruju velike dobitke sa rastom cena energenata. Veliki institucionalni investitori se oslobađaju akcija naftnih firmi, ostavljajući hedž fondovima fantastične prihode. Hedž fondovi učvršćuju svoje pozicije u naftnim i gasnim kompanijama čije akcije vrtoglavo rastu zbog rata u Ukrajini.

U isto vreme međunarodna grupa za klimatski aktivizam Divest Invest vrši pritisak na investitore da ne ulažu u 200 najboljih svetskih kompanija za naftu, gas i uglj. Međutim, menadžeri hedž fondova i dalje kupuju akcije, tvrdeći da je ulaganje u proizvodnju nafte i gasa neophodno i profitabilno. Cene nafte su dostigle najviši nivo u poslednje tri godine, a cene gasa su učetvorostručene (www.bankar.me).

Primarni uticaj na poslovanje ove industrije imala je inflacija i njeni efekti na celokupnu ekonomiju. Visoke kamatne stope i skupo finansiranje nagrizaju profne marže fondova. Među hedž fondovima bolje su se snašli veliki fondovi, i imali su manje gubitke u 2022. godini. Takođe, globalni makro fondovi su uspeli da profitiraju koristeći brojne političke i ekonomske promene.

Prinosi hedž fondova u 2022. godini, zabeležili su negativne vrednosti. Od 2000. godine najveći negativan prinos zabeležen je 2008. godine, od -9,91% a zabeležen negativan prinos u 2022. godini, od -4,68% što je sledeći po veličini negativan prinos u ovoj industriji. Negativni prinosi su u istom periodu zabeleženi još 2011. godine od -1,52%, i 2018. godine -3,27%. U januaru 2023. godine povraćaji su pozitivni, kako na globalnom nivou, tako i po pojedinim regijama (www.eurekahedge.com).

Tabela 3. Prinosi hedž fondova po regijama

(www.eurekahedge.com/Indices/IndexView/Eurekahedge/80/Eurekahedge-Asian-Hedge-Fund-Index)

| | |
|--|-------|
| Prinos globalnih hedž fondova: | |
| Prinos za januar 2023. (%) | 2,66 |
| Prinos za 2022. (%) | -4,68 |
| Prinosi hedž fondova u Severnoj Americi: | |
| Prinos za januar 2023. (%) | 3,12 |
| Prinos za 2022. (%) | -6,69 |
| Prinosi hedž fondova u Evropi: | |
| Prinos za januar 2023. (%) | 2,14 |
| Prinos za 2022. (%) | -5,95 |
| Prinosi hedž fondova u Aziji: | |
| Prinos za januar 2023. (%) | 5,21 |
| Prinos za 2022. (%) | -8,13 |

Hedž fondovi su u 2022. godini zabeležili negativne prinose i po pojedinim regionima. Posebno se ističu najbrojniji hedž fondovi Sjedinjenih Američkih Država koji beleže najveći

negativan prinos od -6,69%. Najveća inflacija u poslednjih 40 godina kao odgovor je imala povećanje kamatnih stopa federalnih rezervi što je najveći razlog za ovakav pad. U 2023. godini ovi trendovi se smiruju i hedž fondovi beleže pozitivne prinose na negativane prinose hedž fondova uticao je pad vrednosti globalnih akcija u proseku 20%, a i pad obveznica od 16,7% što predstavlja najveći pad obveznica u poslednjih nekoliko decenija. (www.ft.com).

U 2023. godini će se nastaviti gubici u poslovanju hedž fondova, radi visoke inflacije i skupog finansiranja. Otvaranje novih hedž fondova je manje nego ikad. Hedž fondovi pronalaze načine da smanje svoje troškove, te nekadašnja naknada za upravljanje ukupnim sredstvima od 2% je pala na 1,4%, a naknada od 20% za ostvarene dobitke pala je na 16,4% u proseku. Tokom 2023. godine, kako bi bili uspešni, hedž fondovi ublažavaju rizike, diverzifikuju portfolije, smanjuju troškove, koriste tehnologije i digitalizaciju (Barth et al., 2021).

Velike fluktuacije na bitkoin tržištu dovele su do propasti pojedinih kripto hedž fondova. Posle rekordnih vrednosti kripto valute krajem 2021. godine, drastično pada njihova vrednost. Kolaps berze kripto valuta jako je zatalasao industriju hedž fondova, te je jedan od najvećih kripto fondova Three Arrows Capital (3AC) otišao je u likvidaciju. Hedž fondovi koji trguju kripto valutama završili su sa padom vrednosti imovine od preko 50%. Prema podacima EurekaHedge godišnji prinos kripto hedž fondova je 2021. godine bio 142,25%, dok je 2022. godine pao na - 52,49%. Uprkos velikim gubicima, oni ne mogu da izazovu spektakularne potrese jer je njihova vrednost relativno mala (www.eurekahedge.com).

Do karaja 2021. godine radilo je nešto više od 300 kripto hedž fondova, na globalnom nivou. Njihova imovina je iznosila 4,1 milijardu dolara, što je bilo povećanje u odnosu na prethodnu godinu za 8%. Pre velikih promena na bitkoin tržištu i tradicionalni hedž fondovi su ulagali u kripto valutu. Više od trećine hedž fondova je ulagalo u digitalnu imovinu. (<https://www.pwc.com>)

Poslednje dve godine su ubrzale promene u industriji hedž fondova koje niko nije mogao da predvidi. Menadžeri hedž fondova sve više povećavaju diversifikaciju portfolija, prelaze na hibridne strategije, uvode širi spektar investicionih sredstava, što vodi ka daljem uslošnjanju investiranja. Geopolitička previranja i posledice izazvane ratom u Ukrajini značajno će i dalje uticati na njihovo funkcionisanje.

5. ZAKLJUČAK

Hedž fondovi su organizovani kao ograničena partnerstva koja imaju za cilj ostvarenje najvećeg mogućeg prinosa, preuzimajući najveći mogući rizik. Oni koriste složenije i rizičnije strategije od drugih investicionih fondova. Visoko diverzifikuju portfolije, uključuju derivate, alternativne investicije, leveridž, kratku prodaju. Menadžeri hedž fondova su motivisani da posluju uspešno jer dobijaju naknadu za svoj rad do 20% profita fonda. Privlačnost hedž fondova za investitore zavisi od uspešnosti i reputacije glavnih menadžera fondova.

Tokom dugog niza godina, hedž fondovi su uspešno poslovali. Sa povećanim interesovanjem institucionalnih investitora za ulaganje njihova imovina je rasla. Visoka diversifikacija ulaganja i visoki prinosi su ključni razlozi investiranja u hedž fondove.

Sve se više nameće potreba nadgledanja ovih finansijskih institucija uključujući posebno velike hedž fondove. Intervencije centralne banke i pojačana kontrola hedž fondova remeti njihovo poslovanje i smanjuje njihove performanse. Insistira se na većoj transparentnosti i regulisanju njihovog poslovanja, kako ne bi negativno uticali na globalnu finansijsku stabilnost.

Za poslovanje hedž fondova 2022. godina je bila najgora u poslednjoj deceniji, pored 2018. godine. Većina hedž fondova je radilo sa gubitkom, a mnogi su zatvoreni. Najveća inflacija u poslednjih 40 godina izazvala je značajno povećanje kamatnih stopa i pad cena akcija

i obveznica. Finansiranje je postalo skupo što ometa poslovanje ovih visoko leveridžovanih institucija.

Hedž fondovi se danas susreću sa komplikovanim makroekonomskim kretanjima i geopolitičkom krizom. Visoka inflacija, povećanje kamatnih stopa, pad vrednosti akcija i obveznica, slabljenje globalnih ekonomija, rat u Ukrajini, neizvesnost po pitanju mogućih pandemija, kao i kolaps kriptovaluta, doveli su hedž fondove u neizvesno poslovanje. Ipak, može se reći da je globalna industrija hedž fondova i pored loših uslova poslovanja, opstala i ima blagu tendenciju oporavka.

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ASSESSMENT OF SENSORY CHARACTERISTICS OF BREAD IN THE FUNCTION OF QUALITY CONTROL

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Abstract: The quality of food products must be satisfactory when placing the product on the market and it is evaluated in accordance with the current regulations of the Republic of Serbia, where different regulations apply to different categories of products. Before the start of production, manufacturing specifications are adopted for the products, which must be in accordance with the law regulating food safety. Sensory properties are an important indicator of product quality. When considering sensory quality, specific requirements are always set for various foods of plant and animal origin. Therefore, the same sensory properties of food are most often observed: external appearance, cut appearance, color and its sustainability, smell, taste, texture (consistency), juiciness, etc. In the work, several different types of wheat bread were tested according to a system of weighted points on an intensity scale from 1 to 5. According to the provisions of the Rulebook on methods of physical and chemical analysis for quality control of grain, milled and bakery products, pasta and quick-frozen dough, a sensory test was performed. evaluation of bread quality based on five quality properties: volume, external appearance, appearance of the middle, smell of crust and middle, and taste of crust and middle. The level of quality determined by sensory analysis is considered acceptable if the grade obtained is greater than 60% of the maximum possible quality. The results of the analysis showed that the bread quality level is in the range from 73.01 to 90.98% of the maximum possible quality, which is considered acceptable. Based on the obtained results, it was determined that all tested bread samples have good sensory quality.

Keywords: bread, sensory quality, descriptive sensory analysis

1. INTRODUCTION

In today's modern society, food consumption can be seen as a specific form of communication between humans and food. And if today consumers can easily change the choice of food and adapt it to their wishes and needs, in conditions in which they are happy to consume certain foods, essentially as a basis for their final decision on the choice, they are guided by their subjective attitude in the sense of whether they something they like or what they like to consume. Since its existence, man has needed food to sustain his life. During the consumption of food, a person experiences different feelings with his senses, such as feelings of satisfaction, indifference or dissatisfaction, forming the impression of whether the food is acceptable or not. Based on those feelings, a person forms his opinion and makes a judgment

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about the measure of the utility value of the consumed food, i.e. your own judgment about the quality of food.

Quality (Lat. *Qualitis* = feature, property, characteristics; Lat. *Qualis* = work, type, quality) represents a set of characteristics expected from products or services or represent a combination of different factors such as: design, performance, reliability, safety, efficiency, effectiveness, economy and timeliness. Accordingly, it can be said that quality can also be represented as compliance with prescribed specific standards. Quality also gives the answer to what extent and how well a product or service fulfills its purpose (QG|Quality Gurus Inc., 2023). Quality is also defined as "a set of all properties and characteristics of products, processes and services, which relate to the ability to satisfy established or indirectly expressed needs" (ISO 8402:1996(S). Edward (1968) defines quality as "compliance with standards and product specifications". Deming (1986), states that "quality is to meet the customer's requirements and satisfy them". It is noted that the meaning of quality is gradually changing to the perspective of "focusing on the customer". Manufacturers are now directed to meet the needs and expectations of customers, i.e. to seek customer satisfaction and loyalty (Gorst et al., 1998; Sirohi et al., 1998).

Concepts of quality have changed significantly nowadays. The concept of "customer enjoyment" is considered to be a key element of the concept of quality, which is expressed as "attractive quality" and "innovative quality" (Yang, 2011). Providing innovative quality products is a strategic tool for satisfying the hidden needs and curiosity of dissatisfied customers. Changes in quality concepts will lead manufacturers to reengineer their existing quality system, in order to develop innovative product and service quality attributes in order to retain and attract customers (Yang, 2017). It is a generally accepted opinion that today the quality of products and services is approached in a completely new way and it is considered that an objective and multidisciplinary approach to problems in the area of quality of food products is the basis of all current considerations and concrete activities (Radovanović & Popov-Raljić, 2000/2001).

The quality system in food production includes: control of raw materials, improvement of production processes while reducing costs, standardization of the final product (appropriate declaration), improvement of hygiene during the production process (food safety) and increase of consumer satisfaction due to a standardized and high-quality product. Food production also requires sensory analysis as a set of supplementary information on product quality. And if subjectivity is objected to the sensory methods of evaluating the quality of food products, it must be taken into account that the various attributes of the quality of food products cannot be measured by any measuring instrument, because their capabilities are mostly partial. The subjective opinion of the consumer must not be ignored and it is necessary to provide him with an adequate measure of influence on the formation of the final judgment on the quality of the examined food product.

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Each food product has a characteristic content of nutrients, but in order to define its quality, its sensory properties must also be taken into account because they have an impact on their attractiveness and utilization in the body. Regardless of their nutritional value and favorable sensory properties, food products must be healthy, i.e. they must not be contaminated by microorganisms and their toxins, parasites, chemical, toxic and radioactive substances, so that, in essence, the term quality of food products includes: chemical composition, sensory properties and the healthiness of the product, i.e. we distinguish between the concept of technological quality of food products and the concept of health suitability (<https://www.odsekvranje.akademijanis.edu.rs/files/predmeti/jelena.markovic/27.5.OTBP.pdf>, accessed March 2023).

Nowadays, bread is the most common food item in the population's diet (Udeme et al., 2014). Bread is obtained by a suitable technological process, baking dough that is prepared from flour, water, yeast and salt (Koletta et al., 2014). According to the type of flour and other raw materials used for the production of bread, a number of types of this product can be found on the market: wheat, corn, rye, mixed, buckwheat, milk bread, bread with spices, bread with prolonged freshness (Regulation on the quality of grain, mill and bakery products and pasta, 2018). In order to increase the nutritional value of bread and achieve better characteristics of the finished product, the use of some raw materials that can provide bread with the properties of functional food attracts increasing attention from producers (Marpalle et al., 2014; Filipović et al., 2016; El Salous & Pascual, 2018). Consumers choose what best suits their needs. When choosing bread, consumers generally evaluate bread based on its external appearance, which is only one of the elements for evaluating the quality of bread.

Bread used in food should meet the appropriate quality parameters. The quality assessment methodology of the basic types of wheat bread is defined by the Rulebook, but it must be emphasized that an expert quality assessment cannot be given by anyone. Because the ratings are largely subjective, that rating should be given by people with great experience, who know well the technology of bread preparation, because small differences, which affect the quality rating, are not visible to an ordinary consumer. Therefore, an objective assessment of quality can only be given by good connoisseurs of both production technology and the finished products themselves.

The sensory quality of the basic types of wheat bread is determined according to a system of weighted points, whereby an individual rating is given for each quality attribute on an intensity scale from 1 to 5. By multiplying each individual rating by the coefficient of importance (K_v), for each quality attribute, a collective quality rating is obtained products. The quality properties of bread and pastry are: volume - $K_v=4$, external appearance - $K_v=3$, appearance of the middle - $K_v=5$, smell of crust and middle - $K_v=3$, taste of crust and middle - $K_v=5$. The sum of the coefficients of importance (K_v) is 20. (Regulation on methods of physical and chemical analysis for quality control of grain, mill and bakery products, pasta and quick-frozen dough, 1988). The volume of the bread is obtained by simply multiplying the circumference of the length and width of the bread. A minimum is defined for each type of bread, and anything below that must not be placed on the market. When defining the minimum, it must be taken into account what type of flour the bread is made from and what its mass is.

The external appearance of the bread mainly depends on the technological procedure, ie the equipment on which the bread is produced, whereby the shape of the bread should be regular, with a uniform color of the crust, without damage and impurities. The degree of doneness of the crust must be uniform on all parts of the bread and the crust must be shiny. The ends of the bread must be properly rounded, without traces of sticking to other loaves. The appearance of the middle is extremely important and can indicate the quality of the bread as well as certain technological errors that may occur during bread production. The color of the

middle must be uniform, with a developed and porous structure and small cavities, without separation of the crust from the middle. The middle must be connected to the crust, without watery and bacony layers, without lumps of flour and salt, sufficiently elastic and well baked and without foreign admixtures that are not characteristic of that type of bread. The smell of the crust and the middle must be mild, pleasant, characteristic of the type of flour from which the bread is made. The presence of foreign smells, such as the smell of mold, machine oils, chemicals, etc., is not allowed and must not be noticed in the bread. The taste of the crust and middle of the bread should also be pleasant, characteristic of the type of flour from which the bread is made, without extraneous flavors. Although the description "inherent" does not explain much and sounds rather abstract, it really cannot be described more precisely.

Sensory evaluation of quality, based on the above, was carried out by students of the Gastronomy study program at the Department of Medical and Business-Technological Studies, who study the technological process of bread making in detail during their three-year studies and practically participate in it. After all, it is the consumer who gives the final evaluation by deciding to buy some bread. Although today's purchasing power largely determines the level of quality that the consumer can afford, in the case of basic foodstuffs, one must insist on the minimum prescribed by the Regulations. It is considered that the quality of bread is acceptable if it meets 60% of the maximum possible quality.

The aim of this work was to determine the quality of bread that is available to consumers on a daily basis in the territory of the town of Šabac.

2. MATERIALS AND METHODS

Sensory analysis of bread quality was performed using the method of descriptive sensory analysis and an intensity scale with five divisions where 5 corresponds to "excellent" and 1 corresponds to "not satisfactory" (Savanović & Grujić, 2008; Grujić, 2015). A total of 14 types of wheat bread, weighing 500g, which were produced from type 500 flour, were analyzed. The sensory evaluation of the bread included: volume, evaluation of the external appearance of the bread, cross-sectional appearance of the bread, smell and taste of the bread.

22 Gastronomy students participated in the examination. The bread was purchased in various bakeries that operate in the territory of the town of Sabac. The quality of the bread was evaluated 24 hours after baking, and until the moment of testing, the loaves of bread were stored in paper bags at room temperature. The bread samples were presented to the panelists in the appropriate order, which was marked by a code consisting of three-digit numbers chosen at random.

By measuring the circumference of a loaf of bread in length and width, with the help of a tailor's centimeter, the value of the volume of the bread was calculated. Also, the panelists evaluated the appearance, taste and smell of the bread and the elasticity of the middle of the bread (Kaludžerski & Filipović, 1998). Quality scores represent the average of two replicates.

3. RESULTS AND DISCUSSION

The results of testing the sensory characteristics of bread are shown in Table 1. as the values of the mean rating given by the panelists, and the corresponding coefficient of importance. Based on the results shown, it can be seen that the highest values of the coefficients of importance have the appearance of the middle and the taste of the crust and the middle as indicators of the quality of the bread. The lowest value of the coefficient of importance was assigned to the smell of the crust and the middle of the bread.

Table 1. Middle grade and coefficient of importance (Kv)

| Number of samples | External appearance | | Appearance of the middle | | The smell of the crust and the middle | | The taste of the crust and the middle | |
|-------------------|---------------------|----|--------------------------|----|---------------------------------------|----|---------------------------------------|----|
| | Middle grade | Kv | Middle grade | Kv | Middle grade | Kv | Middle grade | Kv |
| 1 | 3,67 | 4 | 3,81 | 5 | 3,86 | 3 | 3,57 | 5 |
| 2 | 4,19 | | 4,14 | | 4,33 | | 3,95 | |
| 3 | 3,86 | | 4,19 | | 3,90 | | 3,71 | |
| 4 | 4,45 | | 4,45 | | 3,82 | | 4,36 | |
| 5 | 3,95 | | 3,68 | | 3,95 | | 3,77 | |
| 6 | 4,64 | | 4,64 | | 4,18 | | 4,86 | |
| 7 | 4,06 | | 4,18 | | 3,59 | | 3,88 | |
| 8 | 4,00 | | 4,59 | | 3,06 | | 2,71 | |
| 9 | 4,12 | | 4,24 | | 4,24 | | 4,12 | |
| 10 | 4,12 | | 3,65 | | 3,82 | | 4,00 | |
| 11 | 4,06 | | 4,29 | | 4,18 | | 4,88 | |
| 12 | 4,06 | | 4,06 | | 4,12 | | 3,47 | |
| 13 | 4,29 | | 4,82 | | 4,88 | | 4,41 | |
| 14 | 4,06 | | 4,41 | | 4,24 | | 3,94 | |

The outer shape of the best quality bread is regular, with a uniform color and shine of the crust, without the presence of cracks and bubbles. Bread of the worst quality is characterized by an irregular, deformed shape, with a crust that is insufficiently baked or burnt, without a characteristic shine and with the presence of cracks (Kaluderski & Filipović, 1998). Mean scores for external appearance range from 3.67 to 4.64.

The appearance of the middle is observed on the cross section of the bread. The color of the middle of the bread should be uniform throughout the cross-section and depends on the type of flour used or other additives used in the production of bread (Jovanović et al., 2021). In addition to the color of the middle of the bread, its connection with the crust as well as stickiness, the presence of lumps of salt or flour on the cross section are also observed. The best quality are loaves of bread in which the middle is completely connected to the crust, well baked without signs of stickiness and without the presence of lumps of salt and flour. The appearance of separation of the crust from the middle of the bread, gooeyness or stickiness, with the presence of lumps of salt or flour indicates a poorer quality of the bread. The mean scores for the appearance of the middle range from 3.65 to 4.82.

The smell of the crust and the smell of the middle are evaluated individually. For the best quality bread, the smell is expressed as a very pronounced and pleasant smell, characteristic of the type of bread. Bread with the worst characteristics of the crust and the middle is characterized by an uncharacteristic smell of mold, yeast or some other foreign smell. The mean scores for both the crust and the middle range from 3.06 to 4.88.

The taste of the crust and the middle is determined by chewing, in which the taste of the crust is determined separately, then the taste of the middle, and finally the taste of the crust and the middle together. The best grades for this quality parameter are achieved with bread samples that have a very pronounced, pleasant taste, where the crust is not hard and tough, and the middle is not sticky or crumbly. Unsatisfactory grades are given to bread samples that have a sour, salty, bitter, bland or foreign taste. The mean values of the grades for this indicator of bread quality range from 2.71 to 4.88. Some authors point out that the sensory evaluation of bread varies depending on the origin of the flour used for bread production, which can be significant for changes in the organoleptic characteristics of a loaf of bread.

The results of the assessment of the sensory quality of bread are shown in Table 2. The corrected assessment for the corresponding quality indicator was obtained as a product of the mean assessment given by the panelists and the corresponding coefficient of importance (Kv).

Based on the presented results, it can be seen that all bread samples have the appropriate quality, which is in the range from good (grade 3) to excellent (grade 5). Sensory analysis showed that 14.28% of the bread samples analysed were characterized by the best quality.

Table 2. Results of grading of sensory bread quality

| Number of samples | Adjusted grade for volume | Corrected grade for external appearance | Corrected grade for appearance of the middle | Corrected grade for the smell of the crust and the middle | Corrected grade for the taste of the crust and the middle | % max. possible quality | Numerical grade on a scale of 1-5 |
|-------------------|---------------------------|---|--|---|---|-------------------------|-----------------------------------|
| 1 | 16 | 11,01 | 19,05 | 11,58 | 17,85 | 75,49 | 3 |
| 2 | 20 | 12,57 | 20,70 | 12,99 | 19,75 | 86,01 | 4 |
| 3 | 20 | 11,58 | 20,95 | 11,70 | 18,55 | 82,78 | 4 |
| 4 | 20 | 13,35 | 22,25 | 11,46 | 21,80 | 88,86 | 4 |
| 5 | 20 | 11,85 | 18,40 | 11,85 | 18,85 | 82,10 | 4 |
| 6 | 16 | 13,92 | 23,20 | 12,54 | 24,30 | 90,86 | 5 |
| 7 | 20 | 12,18 | 20,90 | 10,77 | 19,40 | 75,05 | 3 |
| 8 | 20 | 12,00 | 22,95 | 9,18 | 13,55 | 84,73 | 4 |
| 9 | 20 | 12,36 | 21,20 | 12,72 | 20,60 | 90,98 | 5 |
| 10 | 20 | 12,36 | 18,25 | 11,46 | 20,00 | 73,01 | 3 |
| 11 | 20 | 12,18 | 21,45 | 12,54 | 24,40 | 85,57 | 4 |
| 12 | 16 | 12,18 | 20,30 | 12,36 | 17,35 | 78,19 | 3 |
| 13 | 20 | 12,87 | 24,10 | 14,64 | 22,05 | 82,51 | 4 |
| 14 | 20 | 12,18 | 22,05 | 12,72 | 19,70 | 86,65 | 4 |

*% of maximum possible quality is 100, ΣQ -% of maximum possible quality (100)

** K_v – coefficient of importance, $\Sigma K_v=20$

28.57% of the analyzed samples had good quality bread, while 57.14% of the analyzed samples had very good quality. Bread samples with unsatisfactory quality were not recorded in the total mass of analyzed samples.

When analyzing the appearance of the middle, a score was also given for the elasticity of the middle. The results of this test are shown in the Table 3.

Table 3. The elasticity of the middle of the bread

| Number of samples | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|--------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Elasticity of the middle | 3,86 | 4,05 | 4,05 | 4,41 | 4,00 | 5,00 | 2,24 | 4,12 | 5,00 | 2,18 | 3,88 | 3,00 | 2,18 | 3,47 |

Bread elasticity is defined as excellent, very good, good, satisfactory or not satisfactory. Based on the results shown in Table 3, it can be seen that 14.28% of the bread samples had excellent middle elasticity, while 21.43% of the samples had satisfactory middle elasticity. Differences in the elasticity of the middle can be attributed to the higher fat content used in the technological process of bread production (Jovanović et al., 2021).

4. CONCLUSION

Based on the results of the analysis, the wheat bread samples were categorized and compared according to the established quality and established standards, as well as the level of quality. Grade 5 (excellent) was given by 14.28% of tested wheat bread samples, grade 4 (very

good) by 57.14% of tested wheat bread samples, and grade 3 (good) by 28.57% of tested wheat bread samples.

The determined quality level ranges from 73.01% to 90.98% of the maximum possible quality, which is considered acceptable (the description of the quality level rating is from 3 (good) to 5 (excellent)). Based on the obtained results, it was determined that the examined samples of wheat bread meet the sensory quality prescribed by the standards.

The overall average score for the sensory quality parameter of the tested bread samples is as follows: the external appearance is 4.11, the appearance of the middle is 4.23, the smell of the crust and the middle is 4.01, and the taste of the crust and the middle is 3.97. The appearance of the crust and middle was rated the best, and the lowest score was given to the taste of the crust and middle. Based on this, manufacturers can be recommended to work on improving the sensory property of the taste of the crust and the environment, given that the coefficient of importance of this property, $K_v=5$.

The results indicate that the citizens of Sabac consume bread of very good quality (average score 4.57-very good). Based on the results, bread producers have space for quality improvement. Future research could be focused on periodic quality control of bread.

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RIZICI INVESTICIONIH PROJEKATA PREDUZEĆA USLOVLJENI PROCESOM (DE)GLOBALIZACIJE

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Apstrakt: U radu se se čini pokušaj prihvatljive eksplikacije magistralnih promena u okruženju današnjih preduzeća (političkih, tehnoloških, ekonomskih, finansijskih, društvenih i ekoloških) na ispoljavanje rizika investicionih projekata, sa akcentom na njihove pojavne oblike u vremenu (de)globalizacije. Ovo iz osnovnog razloga što je očigledno da model globalizacije koji je bio osnovni obrazac rasta i razvoja preduzeća u daleko najvećem broju zemalja u periodu koji obuhvata poslednjih dvadesetak godina prethodnog i prvu deceniju ovog veka, u mnogim svojim izražajnim oblicima počeo da se krni nakon ekonomske krize iz 2008. godine. Tendencija slabljenja globalizacije kao svetskog procesa je nastavila da se ispoljava kao posledica krize uzrokovane virusom Kovid 19, dok joj je posebno snažan udarac zadao aktuelni rat u Ukrajini koji je započeo februara meseca 2022. i koji još uvek traje. Prekompozicija svetskog političkog i ekonomskog poretka praćena je uspostavljanjem brojnih trgovinskih ograničenja, prekidom trgovinskih lanaca snabdevanja, obustavljanjem kooperantskih odnosa, što je u potpunoj suprotnosti sa dominantnim obeležjima poslovanja preduzeća u godinama uspona globalizacije. Ova događanja, pored ostalog, su neminovno u funkciji ispoljavanja kvalitetno novih rizika koje preduzeću kao ekonomskom entitetu i njegovim investicionim projektima donosi suštinska promena okruženja u odnosu na višedecenijski raniji period. Staviše, funkcionisanje svetske privrede u današnjim uslovima karakterišu sve veće razlike i nove geopolitičke podele a sve manje slaganja i zajedničke vrednosti okruženja u okviru koga funkcionišu savremena preduzeća.

Ključne reči: investicioni projekat, rizik, okruženje preduzeća, globalizacija, deglobalizacija

1. UVOD

Pod projektom treba razumeti poduhvat koji je sastavljen od većeg broja aktivnosti, kao i resursa neophodnih za njegovu realizaciju. Svi projekti nose obeležje privremenosti budući da uvek postoji početak i kraj njihove realizacije.

Nezaobilazni prateći elementi realizacije projekata su rizik i neizvesnost. Rizik predstavlja manju ili veću neizvesnost u vezi sa očekivanim ishodom neke poslovne aktivnosti, odnosno realizacije investicionog projekta. Ukratko, rizik investicionog projekta je povezan je sa nepredviđenim događajima koji mogu uzrokovati neželjene posledice.

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Današnja preduzeća svoje investicione projekte realizuju u ambijentu koga u materijalnom smislu determiniše apsolutna dominacija digitalnih tehnologija. Mogućnosti, a takođe i rizici koje omeđuju izazovi i dometi digitalnih tehnologija s kojima se susreću u svom poslovanju današnja preduzeća se eksponencijalno povećavaju. Ono što je karakteristično za takozvani sajber (*cyber*) rizik je činjenica da on nikada nije delo isključivo tima koji se bavi informaciono komunikacionim tehnologijama, premda je nesporno njegova uloga pri tome nesporna. Stoga funkcija upravljanja rizicima preduzeća koje svoje poslovanje realizuje u digitalnom okruženju podrazumeva njihovo suštinsko razumevanje, kao i poznavanje praktičnih alata i tehnika dostupnih za rešavanje problema koji rizici sobom nose¹.

U finansijskom i projektnom menadžmentu često se pravi pravi razlika između rizika u užem i u širem smislu. U užem smislu, rizik označava opasnost od gubitka, odnosno od štete. U širem smislu, kategorija rizika se odnosi na mogućnost drugačijeg ishoda od očekivanog (kako lošijeg tako i boljeg). "Razumevanje problematike investicionih odluka u uslovima rizika zahteva poznavanje elemenata rizika projekta. Tri ključna elementa rizika projekta su: (a) rizični događaj, (b) verovatnoća rizika i (c) veličina uloga (Petrović & Denčić Mihjlov, 2007, 101).

Ocena rizika investicionih projekata preduzeća pretpostavlja raspolaganje informacijama o novčanim prilivima i odlivima u ekonomskom veku projekta, čija je profitabilnost funkcija velikog broja subjektivnih, tehnoloških i organizacionih faktora. Uslovi projekta determinišu najvažnije parametre investicionog odlučivanja preko kapaciteta i obima proizvodnje, životnog veka proizvoda i upotrebno perioda osnovnih sredstava. Takođe, faktori poput tražnje za proizvodima iz proizvodnog asortimana preduzeća, proizvodni troškovi, cene, prognozirana produktivnost i sl. imaju uticaja na parametre isplativosti projekata čija se realizacija predviđa konkretnim investicionim poduhvatom (rok povraćanja sredstava, neto sadašnja vrednost, interna stopa prinosa).

Imajući u vidu predhodno prezentovane konstatacije, cilj rada je elementarna eksplikacija suštine rizika individualnih investicionih projekata koje pokreću promene u okruženju a sa kojim se svakodnevno suočavaju preduzeća. U tom kontekstu, treba napomenuti da su promene okruženja koje se upravo dešavaju tako duboke i snažne da jednostavno one pogađaju sve ekonomske subjekte, gotovo bez izuzetaka.

2. FUNKCIONISANJE SAVREMENIH PREDUZEĆA U AMBIJENTU GLOBALIZACIJE VERSUS DEGLOBALIZACIJE

Rizici se u literaturi klasifikuju na različite načine. Različiti su kriterijumi njihovih podela, počevši od osobina rizika, načina na koji se oni ispoljavaju, mesta za koje su rizici vezani, vreme tokom koga se rizici ispoljavanja, itd. Ipak, postoje određene razlike u prirodi ispoljavanja rizika koje su posebno važne prilikom analize investicionih projekata preduzeća. Tu se pre svega imaju u vidu podele rizika na finansijske i nefinansijske, na statičke i dinamičke, na čiste i špekulativne rizike. Zavisno od veličine, preduzeće može da upravlja, ili da se prilagođava nastalim promenama.

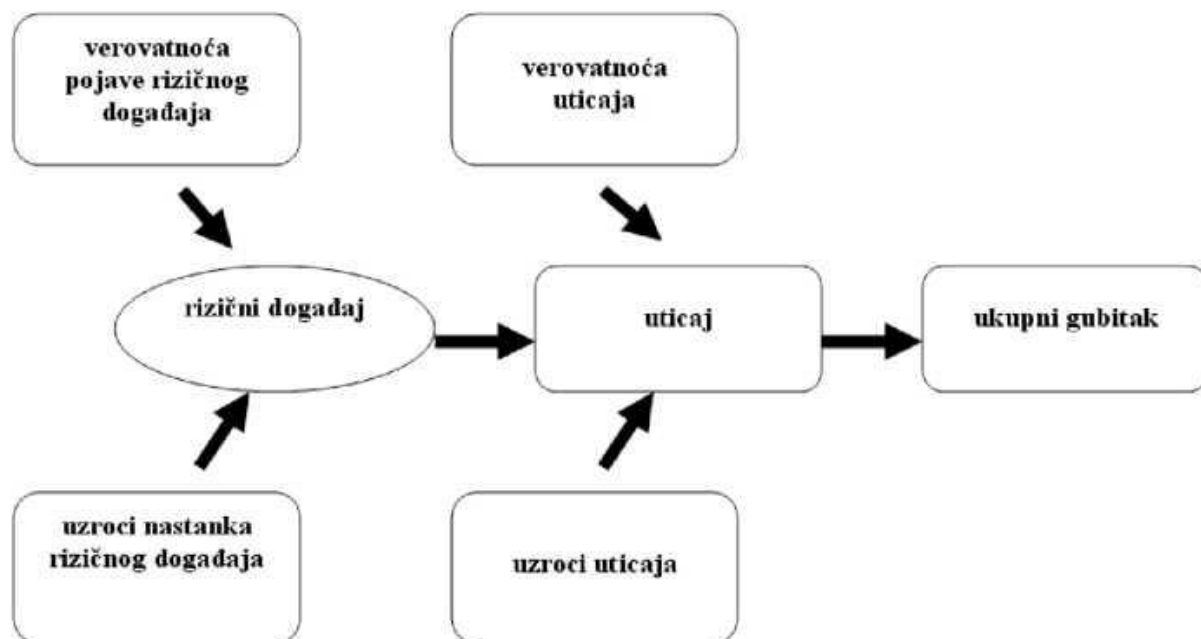
Analiza rizika kao bitnog faktora neizvesnosti ima za cilj sagledavanje događaja koji u budućnosti mogu delovati na ponašanje investicionog projekata. Odbojnost prema riziku nalaže individualnim investitorima da procene mogući prinos, a takođe da sagledaju i nivo rizika koji svaki investicioni poduhvat bez izuzetaka nosi sa sobom. Nesporno je međutim, da investitori po definiciji moraju da prihvate rizik, budući da ne postoji način njihovog

¹ Sajber rizici obuhvataju rizike povezane s online aktivnostima, internet trgovinom, digitalnim sistemima i IT mrežama, kao i rizike povezane sa skupljanjem i čuvanjem ličnih podataka.

predviđanja u budućnosti. Rizici su posebno izraženi u savremenim uslovima poslovanja koje odlikuje stalno rastuća nesigurnost, dobrim delom i usled sve prisutnijih promena okruženja u okviru kojih funkcionišu preduzeća.

Promene koje transformišu poslovanje savremenih preduzeća su najrazličitijeg karaktera, a nesporno je da su one izazvane ne samo velikim brojem internih uzročnika već su uzrokovane sve komplikovanijim međunarodnim političkim i ekonomskim odnosima, ekstremno dinamičnim tehnološkim promenama, složenim društvenim gibanjima na globalnom planu, a takođe i rastućim i sve raznovrsnijim ekološkim izazovima. Analogno događajućim promenama, do ispoljavanja dolaze sve brojniji i sve raznovrsniji rizici individualnih projekata preduzeća. “Upravljanje rizikom je proces merenja ili procenjivanja rizika i razvijanje strategija za upravljanje. Strategije uključuju prenos rizika drugoj strani, izbegavanje rizika ili smanjivanje negativnog uticaja rizika i prihvatanje nekih ili svih posledica rizika. Tradicionalno upravljanje rizikom fokusira se na rizik koji proizlazi iz fizičkih ili legalnih slučajeva (npr. prirodne katastrofe, požari, nesreće, smrt, sudske tužbe itd.)” (Pokrajac, 2016, str. 443).

Standardni model rizika kao česta metodologija modeliranja rizika investicionih projekata preduzeća je dat na slici 1. Kao što je moguće primetiti model obuhvata poimanje rizika i ilustruje uzročno-posledične relacije, što je krucijalna premise efikasog menadžmenta rizicima (Smith & Merritt, 2002).



Slika 1. Metodologija modeliranja rizika investicionih projekata preduzeća (Pokrajac, 2016)

Funkcionisanje savremenog sveta u političkom, ekonomskom, kulturnom a u naznakama i u religijskom smislu je u mnogim svojim dimenzijama u potpunoj suprotnosti sa tokovima koji su karakterisali proces globalizacije u periodu uspona globalizacije shvaćene u smislu procesa „uspostavljanja povezanosti sveta, snagom tržišta, a ne snagom država, u kome narodi nisu odvojeni jedni od drugih protekcionističkim barijerama i granicama.“ (Marković, 2004, 3). U najširem kontekstu, „ekonomske dimenzije globalizacije iskazuju se kroz procese intenziviranja slobodnih trgovinskih tokova i uspostavljanja liberalnog kretanja kapitala, ljudi i informacija“ (Pelević, 2004).

U periodu rastuće globalizacije stvorene su mogućnosti zajedničke proizvodnje korišćenjem resursa iz čitavog sveta (Santos, 2017). “Konkurencija na globalnom tržištu sve se više zaoštrava i traži od kompanija dodatno prilagođavanje novim okolnostima i digitalnu transformaciju poslovanja. Upravljanje rizicima globalnog poslovnog okruženja, posebno u delu direktnih stranih investicija postaje imperativ kompanijama koje deluju na globalnom tržištu” (Merkaš, 2018, str. 96).

Proces liberalizacije poslovanja i snažan razvoj novih tehnologija smanjili su u značajnom stepenu prepreke koje su stajale na putu međunarodnih tokova dobara i faktora proizvodnje. Rastuća specijalizacija proizvodnje za rezultat je imala nagli rast međunarodnih ekonomskih transakcija. Akcenat u globalnom poslovanju bio je na kreiranju globalne konkurentske prepoznatljivosti uz razumljiva lokalna prilagođavanja. Kvalitet isporučenih roba i usluga je postao postao je svojevrsni izazov menadžerski izazov.

Sve značajniji oblik poslovanja preduzeća u uslovima globalizacije su postojale poslovne alijanse, koje su omogućavale poslovnim partnerima dolaženje do sinergetskih efekata zahvaljujući dolaženju do asimetričnih kompetentnosti. Strategijske poslovne alijanse su savezi dva ili više preduzeća iz različitih zemalja. Formiraju se u cilju podele troškova i posebno rizika istraživačko-razvojnih poduhvata. Imaju značajnu ulogu u osposobljavanju preduzeća za efikasno uključivanje u globalne tokove proizvodnje, transfera kapitala i prenosa tehnologije. Važan način pokretanja bila su sredstva fondova rizičnog kapitala, odnosno sredstva rizičnih fondova kao posebnih izvora finansiranja rizičnih aktivnosti preduzeća u zamenu za svojinske udele preduzeća. Pritom se mnogim rizicima može upravljati tako da se poboljša rast ili da konkurentna prednost kompaniji. Poseban je izazov bio aktivno upravljati rizicima. Rizici će biti predvidljiviji kada se putem kooperativnog odnosa pristupa novim kupcima, ekonomiji obima, a takođe i zajedničkim resursima (Merkaš, 2018, str. 97).

Mnogi analitičari tokom prethodnih godina govore o deglobalizaciji svetske privrede. Apstrahujući analizu opravdanosti ovakve kvalifikacije nastalih promena na svetskom nivou, moguće je zaključiti da su rizici procesa deglobalizacije i kriznih poremećaja uslovljenih otpočinjanjem ratnog skukoba na ukrajinskom tlu februara meseca 2022. godine dobili gotovo kataklizmičnu dimenziju.

Već desetak godina postoje naznake da je globalizacija kao svetski proces u opadanju. U osnovi takve konstatacije nalazi se podatak da je udeo međunarodne trgovine u globalnom bruto domaćem proizvodu imao svoj maksimum 2008. godine, pre početka svetske ekonomske krize. Odnos izvoza prema BDP-u širom sveta znatno se povećao devedesetih i dvehiljaditih. Ali od vremena izbijanja globalne finansijske krize 2008. godine taj odnos neupitno iskazuje opadajući trend.

Korona pandemija i rat u Ukrajini doveli su do gotovo tektonskih promena međunarodnih ekonomskih odnosa sa složenim i teško predvidivim posledicama po funkcionisanje svih privrednih sektora gotovo bez izuzetaka. Promene koje se događaju u okruženju su pokrenute brojnim političkim, ekonomskim, društvenim, finansijskim, ekološkim događajima. One nesumnjivo postaju izvor sve većih rizika investicionih projekata preduzeća. Vođeni tom tezom, u sledećoj sekciji rada data je kratka eksplikacija rizika investicionih projekata savremenih preduzeća kroz prizmu izazova i dometa procesa globalizacije, odnosno deglobalizacije.

3. RIZICI INVESTICIONIH PROJEKATA IZAZVANI PROCESOM POLITIČKE SUPROSTAVLJENOSTI ZEMALJA

Nesporno je da aktuelna politička suprostavljenost zemalja bloka oko SAD i njenih saveznika, s jedne, i zemalja BRIKS-a, s druge strane, neminovno utiče na ekonomsku polarizaciju u svetu koja dovodi do preispitivanja mnogih trendova u ekonomiji i društvu oblikovanih na principima neoliberalne doktrine u vremenu globalizacije. Obris te polarizacije se danas vide u nastojanju pojedinih zemalja da maksimalno umanje zavisnost od država koje ne čine grupaciju politički suprostavljenih privreda, kao i nosećih transnacionalnih korporacija i finansijskih institucija u svetu.

Što više budu trajale političke i ratne tenzije u Ukrajini i u svetu u celini, to će devastacija balansiranog poretka ponude i tražnje biti izraženija, sa nesagledivim posledicama po nacionalne ekonomije, kao i po svetsku privredu u celini. Očigledno da model međupovezane svetske privrede polako nestaje, što generiše mnoge rizike koji nisu bili tako česta pojava u prethodnom period. Rizici ove vrste su postali sve vidljiviji tokom krize izazvene kovid virusom, a najdirektnije su ili produkt pada privredne aktivnosti i porasta transportnih troškova. Početak energetske krize i rast cena goriva dao je značajan doprinos inflatornoj spirali. Nastojanje nacionalnih banaka da politikom niskih kamata podstaknu privredne aktivnosti delovala je u pravcu ubrzanja inflacije.

Nesporno da je rizici investicionih projekata izazvani procesom sve izraženijih političkih suprostavljenosti zemalja u svetskim relacijama dolaze svakim danom do izražaja. Prekidaju se lanci snabdevanja, troškovi rastu, pojavljuju se nestašice mnogih proizvoda, što skupa vodi recesiji.

Lanac snabdevanja je integrisani sistem koji započinje od nabavke sirovina ili poluproizvoda, nastavlja se kroz proizvodnju, pakovanje, skladištenje i distribuciju i završava se isporukom finalnih proizvoda za krajnje kupce (Toygar & Yildirim, 2023). Veze ovog lancia nisu ograničene samo na proizvođače i dobavljače. Postoje mnoge različite strane u lancu snabdevanja, kao što su provajderi usluga logistike, maloprodaja, osiguravajuća društava, carinski posrednici i kupci (Chopra & Meindl, 2013; Toygar & Yildirim, 2023). Drugim rečima, lanac snabdevanja je proces koji se koristi u dostavljanju proizvoda od mesta proizvodnje do potrošača, odnosno od dobijanja sirovina za produkciju proizvoda do njegove isporuke kupcima (Ray, 2009). Upravljanje lancem snabdevanja je suština savremenog poslovanja.

Rizici izraženi procesom sve izraženijih političkih suprostavljenosti zemalja u svetskim relacijama koji vode deglobalizaciji istovremeno su razotkrili mnoge slabosti modela u kojem proizvođač u nekoj od evropskih zemalja čeka na deo iz Kine da bi kompletirao vlastiti finalni proizvod koji nudi na tržištu. Dugo, važeća logika da se industrijska preduzeća razvijaju na lokacijama na kojima je jeftina proizvodnja, a da se ekonomski učesnici specijalizuju za određene poslovne i razmenske operacije kako bi bile na dobitku očigldno nije više sigurna opcija rasta i razvoja preduzeća.

Pandemija je donela brojne probleme u funkcionisanju preduzeća usled smanjenja opšte privredne aktivnosti, otežanog kretanja ljudi i roba, rasta cena transporta, goriva, gasa i hrane. Kraća i duža epidemiološka zatvaranja pojedinih oblasti i čitavih zemalja značila su i diskontinuitet poslovnih aktivnosti, pa samim tim i destrukciju u lancima snabdevanja različitih privrednih grana. U tako izmenjenoj pririodi okruženja, globalno integrisana privreda, naročito u domenu složenih visoko sofisticiranih proizvoda, ispoljila je visok stepen rizičnosti. Vlasnici sofisticiranih tehnoloških brendova, sazdanih od komponenti proizvedenih na udaljenim svetskim destinacijama suočili su se sa problemom nemogućnosti finalizacije svojih proizvoda. Nekada prevaziđena logika lokalnih integrisanih lanaca snabdevanja u

uslovima distanciranja i proizvodnog i transportnog diskontinuiteta postala je svojevrsna konkurentna prednost politički i ekonomski sve udaljenijih privreda.

Velike pandemije poslovično su praćene ekonomskim krizama. Sankcije nametnute Ruskoj federaciji od strane Zapada svojevrsna su ilustracija moguće destrukcije i različitih rizičnih situacija u kojima posluju preduzeća u pojedinim delovima sveta. Već danas je očigledno da evropska ekonomija, koja je u energetsom i sirovinskom smislu bila značajno vezana za rusku privredu, doživljava svojevrsne bumerang efekt u smislu smanjene ekonomske aktivnosti i narušene stabilnosti. Neminovni višeslojni negativni inflatorni i drugi efekti nametnutih sankcija Ruskoj federaciji po evropske i svetske lance snabdevanja trenutno se teško mogu sagledati. Ilustracije radi, teško da je neko mogao i da pretpostavi da je moguće u zapadnim prodavnicama doći do nestašice toalet-papira? Ili da će paket koji je putovao par dana doći za par nedelja, a moguće i kasnije? Zato nije čudo, što proizvođači iz mnogih zemalja razmišljaju o skraćivanju lanaca snabdevanja. Sigurna isporuka, korak ka samodovoljnosti, umesto efikasnosti i niske cene koje je mora se priznati omogućila globalizacija.

Globalno integrisana privreda, naročito na planu složenih visoko sofisticiranih proizvoda, ispoljila je do sada neviđen stepen ranjivosti. Složeni globalni lanci snabdevanja, sa mnogobrojnim karikama širom sveta, pokazali su se kao ranjivo poslovno rešenje. Vlasnici sofisticiranih tehnoloških brendova, sazdanih od komponenti proizvedenih na udaljenim svetskim destinacijama suočili su se sa problemom nemogućnosti finalizacije sada znatno skuplje proizvodnje. Nekada prevaziđena logika lokalnih integrisanih lanaca snabdevanja u uslovima distanciranja i proizvodnog i transportnog diskontinuiteta postala je svojevrsna konkurentna prednost sve udaljenijih ekonomija.

4. ZAKLJUČAK

U projektnom menadžmentu pod rizikom se podrazumeva mogućnost nastanka štete kao posledice određenog ponašanja, događaja ili nepovoljnog uticaja koji mogu ali ne moraju nastupiti tokom realizacije projekta. On je opasnost da navedeni događaji, loši postupci i/ili neiskorišćene šanse mogu negativno uticati na realizaciju projekta.

Upravljanje rizikom individualnih investicionih projekata preduzeća omogućuje donošenje racionalnih mera kontrole zaštite pa čak i izbegavanja. Identifikacija opasnosti (iznalaženje svih uzroka nastajanja štete) je po mnogima najznačajniji korak koji prethodi svim drugim koracima (analiza opasnosti, određivanje rizika i sl.) u menadžmentu rizikom projekta. Realizacija svakog pojedinačnog projekta po prirodi je rizična i neizvesna. Profitabilnost projekta zavisi od niza rizičnih i neizvesnih faktora (tražnje, prodajne cena, troškova itd). U praksi projektnog menadžmenta teško je proceniti novčane tokove pa se mora meriti verovatnoća i pouzdanost pojedinih elemenata novčanih tokova. Razvijene su mnoge analitičke metode za identifikaciju rizika.

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BENEFITS AND OPPORTUNITIES OF ENERGY MANAGEMENT WITH AN ACCENT ON SUSTAINABILITY IMPROVEMENT

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Abstract: Energy is a key factor in modern economic development. With the help of energy, economic activities, economic growth, but also the provision of a large number of services for the improvement of social and ecological living conditions are ensured. However, only energy that is safe, produced in an environmentally friendly way and used efficiently is key to sustainable development. Energy management is the use of management tools and procedures aimed at the most efficient use of energy in the country, region, local area, company or local facility. It is a process of managing the energy parameters of the previously mentioned entities that develops over time. If the management of energy flows defined in this way is organized, structured, systematic and permanent, then there is an established system of energy management in the organization. The energy management system is a set of measures that guarantee the efficient use of available energy resources in the company. The measures refer to energy saving, rational use of energy, as well as the replacement of certain types of energy sources with sustainable ones, that is, those that can be used more efficiently. An established system of energy management means a departure from random or externally controlled management of energy flows and the development of strategic and targeted activities related to the improvement of energy efficiency. An energy management system enables organizations to expand their responsibility towards the environment, reduce energy costs and CO2 emissions.

Keywords: energy management, energy management system, advantages of energy management, possibilities of energy management

1. INTRODUCTION

The growth of interest in management science, especially the development of management practice in various segments of production and consumption for complex issues related to energy, was certainly influenced by the circumstances of continuous growth in energy consumption and depletion of energy resources. Also, to a significant extent, the growing interest of theorists and managers in various aspects of the use and management of energy production and consumption was influenced by increasingly pronounced problems associated with environmental damage (Latas, 2021; Kostić et al., 2022). It can be stated that the interest of energy managers will grow in the coming period as a result of fundamental

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changes in international political and economic circumstances and the creation of a new world reality. Namely, it is obvious that the war in Ukraine from its beginning in February 2022 to the present day has led to more than disturbed world relations, one of the manifestations of which is the energy crisis, which is specially manifested on the European continent.

But long before 2022 it became evident that every country must take into account the supply and demand of energy in conditions of growing consumption, on the one hand, and reduced supplies of non-renewable energy sources, on the other hand (Kander & Stern, 2014). Not to mention the current issue of energy security after the terrorist attack on the Nord Stream pipeline on September 2022. The mentioned circumstances additionally made the energy transition necessary on a global scale and emphasized the actuality of energy management as a process of managing the energy parameters of countries, regions, local communities, companies and specific economic subjects. Under the content of the category of energy management, we mean the use of increasingly soft management tools and techniques with the aim of more efficient production and especially the use of energy, i.e. the process of managing the energy parameters of individual entities starting from the lowest levels (individuals and companies) to the level of states and large regional economic integrations (such as the European Union). It can be concluded that the main goal of energy management is the production and especially the use of energy with the lowest possible costs (Doty et al., 2018).

The aim of the paper is to analyze the possibilities and advantages of energy management. The structure of the work was adapted to its realization. After the introduction, a brief explanation of the conceptual content of energy management was first presented. Then the benefits and opportunities of energy management were explained. The work ends with concluding remarks and a list of used sources.

2. ENERGY MANAGEMENT

Management is a very complex concept, in the definition of which there are problems of both semantic and content nature. From the semantic aspect, the problem first arises in the word management overlaps with other words such as supervision, leadership, organization, administration, control and direction. In professional literature, the terms management, organization and administration are often identified. Also, the term management is used both as a noun and as a verb, and can have different meanings. The speed of introducing the management in almost every aspect, such as social life and not only business, led to the enormous popularity of the managerial approach (Pokrajac, 2016).

Energy management represents strategic management approach and the use of advanced technologies that significantly influence the improvement of energy use in the organization. From the aspect of the organization, energy management can be equated with the management process from the moment of determining the energy status of the organization, through the procurement of energy resources to their final use. Often, energy efficiency or savings are recognized as the core aspects of energy management in an organization. Therefore, the process of energy management does not only include the choice of energy sources, but also the optimization of energy productivity and the minimization of energy consumption. This practice involves monitoring the energy flow parameters within the organization, from the procurement and production of energy resources to the process of energy transformation and use. Therefore, energy management is a comprehensive term for managing all phases of energy use in an organization.

Accordingly, energy flow parameters include more quantitative and qualitative indicators that reflect the technical, economic, social and environmental aspects of certain

processes. With this defined, well-organized, systematic and permanent control of energy flows, an organized energy management system is established in the organization. By undertaking a series of activities and measures, energy management enables sustainable consumption of available energy resources in the organization in order to increase energy efficiency. At the same time, the energy management implies the existence of special competences, knowledge and skills, i.e. human capital. Studies show that along with an increase in the level of human capital, which includes specific knowledge in the field of energy management, there can be a parallel increase in energy efficiency and economic development (Edziah et al., 2021; Gao et al., 2022). Energy efficiency can be improved in a variety of ways, including more rational use of energy, energy conservation and replacement of waste energy sources with cleaner energy sources. In order to achieve these goals, it is necessary to have a well-developed energy management system that prioritizes the organization's targeted and strategic activities instead of leaving energy flows to chance or external management.

2.1 Benefits of energy management

Benefits of Energy Management are multiple. They are reflected in the growth of profitability at different levels of organization of the energy system, improvement of sustainability and competitiveness growth. Also, effective energy management contributes to the reduction of costs, risks and carbon dioxide emissions (Figure 1).

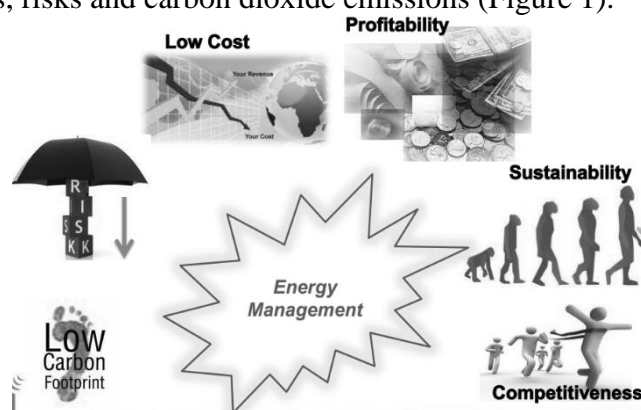


Figure 1. Benefits of energy management (Bharti Infratel Ltd., 2012)

Good energy management, i.e. an increase in energy performance for the same amount of energy results in a direct increase in profit. If the cost of energy is 20% of all costs, and the profit is 15%, if we increase the energy output by 10%, the profit will increase by 13.33% (Doty et al., 2018).

The significant advantages of the energy manager are reflected in the improvement of the environmental condition, the rationalization of maintenance costs, the reduction of waste, and the creation of better and healthier working conditions, which is also important for human capital development. Green credentials enable companies to better position themselves on the market, and thus the acceptance of recognizable environmental standards. In addition, the reduction of emissions of harmful gases, greenhouse effects, as well as the rationalization of consumption represent positive results of organizations, which can be used in the promotional and marketing activities of the organization itself on the market. Major environmental problems are caused by inadequate and unsustainable methods of production and use of energy. The problems facing the planet today indicate that energy is the basis of sustainable and social development, as well as a crucial factor in solving many environmental problems. The significant role of clean energy is reflected in the minimization of the emission of harmful

gases, the creation of opportunities for opening new businesses, local and regional development, which forms the backbone of sustainable development. The special importance of using renewable energy sources is also present in the construction and improvement of the social and ecological determinants of sustainable development.

Modern conditions of development and sustainability pay great attention to energy sources, because vital economic activities, and therefore people's livelihoods, depend on energy consumption. The consumption of energy from non-renewable sources in a high percentage of more than 80% indicates a high dependence, and therefore a major global problem, because it is estimated that energy supplies will be exhausted in the next fifty years. Consequently, the supply of energy from non-renewable energy sources is limited. Also, the large problem of burning these energy sources from non-renewable sources contributes to the creation of the greenhouse effect and a high percentage of environmental pollution. Therefore, the burning of fossil fuels from renewable sources creates a lot of pollution, which is contrary to the basic goals of sustainable development. Solving this problem is of primary importance and attracts a lot of attention in the search for new sources of energy from renewable sources, in order to reduce the consumption of fossil fuels.

Achieving the goals of sustainable development is a challenge that entails economic growth while reducing pollution, increasing the quality of life, preserving natural resources, and increasing the production of energy from renewable sources that does not threaten the balance of natural resources, while reducing environmental problems and affecting the quality of life of people. Such growth also ensures the improvement of the overall human capital (Edziah et al., 2021). Therefore, the achievement of economic and social goals of development, primarily creates a certain pressure on the exploitation of natural resources in order to increase energy production. The percentage of utilization of natural resources should be in accordance with the percentage of their regeneration, in order to be in line with the concept of sustainable development. Therefore, the energy efficiency policy is focused on the use of energy from renewable sources. Rationalization and efficiency in the use of energy, as well as increasing the rate of use of energy from renewable sources is one of the ways to ensure the economic, ecological, social and energy transition towards sustainable development. The problems of providing the necessary amounts of energy and sustainable development are crucial in modern conditions of development. Meeting the growing needs for energy in modern conditions of development from renewable sources is a strategic goal in realizing the concept of sustainability.

The challenges of providing energy for sustainable development are numerous. Improving the economic, social and environmental conditions of people's lives, both today and in the future, will require a much higher level of services provided by energy. The conformity of the key dimensions of sustainable development (ecological, economic and social) and energy policy is also reflected in the fact that the increase in energy production and greater availability of energy should accompany the improvement of the living standard of the population, but with the reduction of costs and pollution at the same time. The social aspect of the energy policy is reflected in the possibility of access to energy for as many people as possible at acceptable prices. In this way, the policy of developing the energy system is becoming more and more complex, not only from an economic, but also a social and ecological aspect.

The energy sector can achieve the goals of sustainable development only through the production and delivery of energy in a safe and environmentally friendly way and through increasing the efficiency in the use of energy. Increasing energy efficiency and reducing consumption can partially redirect the focus from the traditional emphasis on increasing energy supply, primarily through the construction of new power plants. Starting from the fact that 75% of total energy consumption falls on highly industrially developed countries, where no more

than 25% of the world's population lives, then the increase in energy consumption in developing and underdeveloped countries can be neutralized by reducing consumption in industrially developed countries. This attitude towards intragenerational equality, as one of the principles of sustainable development, can contribute to the preservation of the base of non-renewable resources, but also to the impact on climate change, globally.

Energy management can play a major role in establishing a company's competitive advantage. Responsible use of the valuable energy resources of coal, oil and gas is also critical in our commitment to the environment. The greenhouse effect is now considered a key environmental issue nationally and internationally.

Energy costs are often treated as fixed. But, with the right approach to energy management, it is possible to achieve significant savings. However, energy management is often overlooked, even though there is significant potential for energy savings and cost reduction. At the same time, there is increasing financial pressure caused by rising energy prices, as well as the need to present the organization to the public and customers as environmentally responsible. Reducing costs and rationalizing energy consumption are exemplary reasons for saving energy. Most organizations can save up to 20% on their energy bills simply by better energy management and investing in cost-effective energy efficiency measures. Worldwide experience shows that savings can range from 10%-30%, with typical payback periods of two years or less. It is not unusual to save 10%-15% just by better organization of production, with minimal capital expenditures (Doty et al., 2018).

One of the most significant challenges at the global level is the security of energy supply in the conditions of decreasing supplies of non-renewable energy sources, pronounced political instability of energy-producing countries and uncertain natural disasters. The necessity of an energy transition is emerging, which is possible only in the long term. Orientation towards renewable energy sources, reducing dependence on only one energy source, increasing the number of suppliers, is a way to meet these challenges and ensure a higher degree of not only energy, but also economic, ecological, technological and political security.

It is necessary to distinguish between energy security and energy dependence, because the problem of energy security is not only related to import dependence on energy sources. Thus, energy security is an integral concept that combines various aspects in order to ensure the long-term sustainability of energy supply. Any form of jeopardizing the balance of the energy system can lead to jeopardizing GDP, political stability, and the well-being of citizens.

In order to monitor progress towards a sustainable way of using energy sources and achieving it, it is necessary to distinguish between energy security and energy dependence, because the problem of energy security is not only related to import dependence on energy sources. Thus, energy security is an integral concept that combines various aspects in order to ensure the long-term sustainability of energy supply. Any form of jeopardizing the balance of the energy system can lead to jeopardizing GDP, political stability, and the well-being of citizens.

2.2 Opportunities of energy management

With energy management, in addition to acting on the growth of energy efficiency, it is possible to act on the growing production of energy from renewable energy sources, and also on the reduction of the energy load (Figure 2).

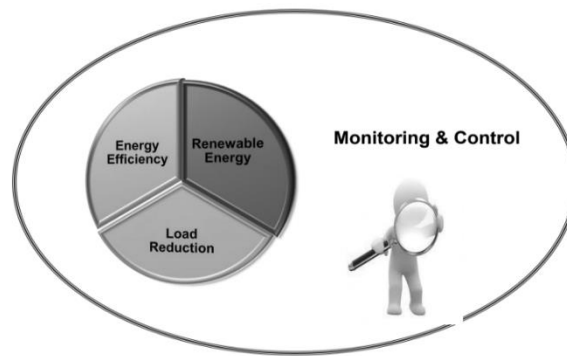


Figure 2. Opportunities of energy management (Bharti Infratel Ltd., 2012)

The contribution of energy management to the growth of energy efficiency is significant. Improving energy efficiency leads to a reduction in energy consumption, slows climate change, and provides time for the development of alternative energy sources. Thus, a higher level of energy efficiency creates the possibility for the gradual expansion of the application of renewable energy sources. Renewable energy sources are becoming more affordable for an increasing number of people around the world. Nowadays, renewable energy is considered crucial to meet the needs of current and future generations. As markets become global, the renewable energy industry is responding by increasing its flexibility, product diversification and developing global supply chains. The increase in the production of solar and hydropower is particularly significant, accounting for one third of the total new capacities. According to the available data, the growth of total primary energy consumption at the global level in the period 1965-2020. it was 3.6% per year.

Table 1. Global energy consumption by source (British Petroleum, 2021; Latas, 2021)

| Type of energy | In 1965 | In 2020 | 2020/1965 (%) | In 2020 (%) | 2009-2019 (%) |
|--------------------------|---------------|---------------|---------------|-------------|---------------|
| Renewable sources | 0.21 | 31.71 | 15100 | 9.7 | 13.4 |
| Oil | 64.72 | 173.73 | 268 | -9.7 | 1.4 |
| Natural gas | 22.69 | 137.62 | 607 | -2.3 | 2.9 |
| Coal | 58.1 | 151.42 | 261 | -4.2 | 0.9 |
| Nuclear energy | 0.26 | 23.98 | 9223 | -4.1 | -0.2 |
| Hydro energy | 9.23 | 38,16 | 413 | 1.0 | 2.1 |
| IN TOTAL | 155.22 | 556.63 | 359 | 4.5 | 1.9 |

From the data presented in Table 1, it can be seen that the share of energy from renewable sources in the total consumption was at the level of 5.7%. However, the growth trend of this share was extremely pronounced during the previous years. For example, the primary consumption of energy from renewable sources in the period 1965-2019. grew at an average rate of 13.4%, while the average energy obtained from natural gas grew at a rate of 2.9% and from oil at 1.4%.

In the European Union in 2021, it was 37.5% in the structure of produced electricity. Wind energy and hydropower accounted for more than two-thirds of the total electricity produced from renewable sources, 37% and 32%, respectively. The remaining one-third of electricity came from solar energy (15%), solid biofuels (7%) and other renewable sources (8%). Solar energy is the fastest growing source, since in 2008 it was only one percent of electricity consumed in the EU. In 2021, more than three quarters of gross electricity consumption in Austria, 76.2%, was from renewable sources, primarily hydro, while in Sweden it was 75.7%. In Denmark, where 62.6% of energy is from renewable sources, mainly wind, in Portugal 58.4% of energy consumed is from renewable sources, mostly wind

and hydropower, and in Croatia 53.5%. The lowest share of electricity from renewable sources was recorded in Malta (9.7%), Hungary (13.7%), Luxembourg (14.2%), the Czech Republic (14.5%) and Cyprus (14.8%) (Eurostat, 2023).

The use of renewable energy sources is mainly related to the local specificities of the area and climatic conditions. In recent years, the extremely strong development of the technology market for the use of renewable energy sources has enabled the competitiveness of renewable energy sources. The European Commission has adopted a series of measures aimed at reducing gas emissions through the use of renewable energy sources.

Renewable sources provide clean energy using unlimited resources, help mitigate climate change, increase energy independence and energy security of countries (Bharti Infratel Ltd., 2012). However, many renewable energy technologies are relatively new and not yet as established as "conventional" energy generation technologies that burn fossil fuels (Doty et al., 2018). With a better energy management system, it is possible to improve the resilience and flexibility of the energy system for uncertain and unforeseen situations. With the help of strategic reserves, stocks of energy storage and production equipment, well-designed plans for action in crisis situations, it is possible to overcome energy crises and shocks.

3. CONCLUSION

The benefits of energy management are manifold. They are reflected in the growth of efficiency at different levels of organization of the energy system, improvement of sustainability and competitiveness. The possibilities of energy management are reflected in the contribution to cost reduction, risk reduction and reduction of CO₂ emissions. With energy management, it is possible to influence the growth of energy efficiency, the production of energy from renewable sources, as well as the reduction of the energy load. All this is in direct function of environmental protection, reduced pollution and climate change management.

The absence of energy management at the level of local communities, cities, and companies is one of the important reasons why insufficient attention is still being paid to the imperative of energy transition, within which a significant place belongs to the growing share of energy from renewable sources.

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THE IMPORTANCE OF BOTANICAL GARDENS

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Abstract: The botanical garden in today's world occupies an important place when it comes to the social aspect. It represents a place of education and psychological well-being when the human population is faced with great psychological pressures. As a scientific and research institution, it provides knowledge in several areas and the possibility to preserve biodiversity as effectively as possible. This study aimed to investigate roles that botanical gardens have in today's world and in what ways they fulfill them. The results obtained revealed that their roles not only in research and education, but also sustainable development, the social aspect that includes various programs and actions, participation in the food production process and the assessment of the conservation of plant species and the creation of collections. Due to the increasingly current global problem of preserving ecosystems as well as great poverty and hunger, it is undeniable that botanical gardens will gain even greater importance in the future. Programs implemented within the local community can be directed towards the creation of mini botanical gardens. In this way, in addition to fulfilling the already mentioned roles, they can also participate in nutrition, creating new opportunities for food production for the human growing population.

Keywords: Botanical Garden, conservation, education, research

ZNAČAJ BOTANIČKIH BAŠTA

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Apstrakt: Botaničke bašte u današnjem svetu zauzimaju važno mesto kada je u pitanju društveni aspekt. One su prostor na kome se odvijaju obrazovni programi, ali one predstavljaju i oazu za relaksaciju i odmor što je izuzetno važno danas kada je ljudska populacija suočena sa velikim psihološkim pritiscima. Kao naučno-istraživačka institucija pruža znanje iz brojnih naučnih oblasti, kao i mogućnost stručnog i efikasnog očuvanja biodiverziteta. Ova studija je imala za cilj da istraži uloge i značaj koje imaju botaničke bašte u današnjem svetu. Na osnovu dobijenih rezultata je utvrđeno da je uloga Botaničkih bašti danas ne samo u istraživanju i obrazovanju, već i u održivom razvoju, društvenom aspektu koji obuhvata različite programe i akcije, imaju učešće u procesu proizvodnje hrane i proceni očuvanosti biljnih vrsta i stvaranje zbirki. Zbog sve aktuelnijeg globalnog problema očuvanja ekosistema, kao i velikog siromaštva

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i gladi, neosporno je da će botaničke bašte u budućnosti dobiti još veći značaj u ovom aspektu. Programi koji se realizuju u okviru lokalne zajednice mogu biti usmereni ka stvaranju mini botaničkih bašti. Na ovaj način, pored brojnih i važnih uloga koje bašte imaju one mogu biti uključene u rešavanje problema ishrane i proizvodnje hrane za ljudsku populaciju koja je u porastu.

Ključne reči: Botanička bašta, očuvanje, obrazovanje, istraživanje

1. UVOD

Tokom poslednjih decenija došlo je do promena u ulogama i značaju botaničkih bašti u društvu. Prvobitno osnovana kao centar za proučavanje i gajenje lekovitih biljaka, botanička bašta je vremenom postala prostor za kultivaciju i širenje različitih vrsta, odnosno dobila je važnu ulogu očuvanja i u održivom korišćenju biodiverziteta. Opšte je prihvaćeno da će biodiverzitet biti dugoročno očuvan ako se ekosistemi koriste na održiv način. Ovo povlači i očuvanje ekosistema biljnih vrsta koje su od velikog značaja za čoveka.

Veliki izazov sa kojim se suočava ljudska populacija jeste očuvanje ekoloških resursa, što je direktno povezano sa pitanjem siromaštva i nedovoljne količine hrane za rastuću svetsku populaciju, zato je potrebna velika posvećenost njegovom rešavanju (Krishnan & Novy, 2016).

Botanička bašta se može posmatrati kao mesto za rekreaciju, ali i kao ustanova uključena u aktivnosti koje su fokusirane na oblasti nauke, obrazovanja, konzervacije i hortikulture, kao i mesto različitih resursa i znanja koji su potrebni za očuvanje biljnih vrsta.

Korišćenje biodiverziteta za poboljšanje kvaliteta ljudskog života može se ostvariti na mnogo načina što uključuje i problem ishrane čovečanstva i poboljšanje finansijskog položaja ljudi. Današnji trenutak je vreme kada se sve više treba baviti poboljšanjem zdravstvenog sistema i zaštite, a jedan aspekt je i osnaživanje zajednica da učestvuju u gajenju biljaka za ishranu i lečenje, a kroz zdravstvene i društvene programe mogu se postići zavidni rezultati (Waylen, 2006).

Savremeni važan zadatak botaničkih bašta je da uspostave i održavaju odnos između ljudi i biljaka, odnosno živog sveta. Najstarije postojeće botaničke bašte datiraju iz ranog modernog doba, kada su se koristile u obrazovne svrhe i gajenje biljaka koje su se koristile u medicinske svrhe. Današnja botanička bašta ima brojne i šire uloge i nema mnogo sličnosti sa ranijim verzijama botaničkih vrtova (Roger & Cross, 2017).

Biodiverzitet se odlikuje ekonomskim, društvenim, kulturnim, naučnim, obrazovnim i estetskim odlikama. Ekosistem pruža više vrednosti i dobara kao što su: genetski resursi, plodnost tla, hranljive materije, ublažavanje suša i poplava, regulacija klime, sprečavanje formiranja mulja, oprašivanje i širenje semena, kontrola štetočina i bolesti, kontrola zagađenja, proizvodi (lekovi, hrana, drvo) i rekreacija (Zegeye, 2017).

U prethodnim decenijama koje su dovele do povećanja svesti o značaju biodiverziteta i funkcijama ekosistema, u većem fokusu danas su očuvanje i održivo korišćenje biodiverziteta.

Različite, i po biljni svet destruktivne aktivnosti, kao što su prekomerna žetva i eksploatacija zemljišta, destruktivna poljoprivreda, urbanizacija, zagađenje životne sredine i promene u upotrebi zemljišta, dovele su do smanjenja i gubitka biljne raznovrsnosti. Takav gubitak dalje vodi ka smanjenom razvoju i korišćenju ekosistema. Stoga je potrebno razviti različite strategije za što bolje očuvanje biljnih vrsta. Resursi za očuvanje i proučavanje biljaka, upoznavanje svetske raznovrsnosti biljnih vrsta i predstavljanje javnosti nalaze se i u botaničkim baštama. Ali je i njihova važna uloga zadovoljenje i drugih raznolikih ljudskih potreba (Gao & Weibang, 2018).

Stoga je cilj ovog rada da prikaže koje sve uloge imaju botaničke bašte u današnjem svetu, na koje načine ih ispunjavaju i kakav je njihov uticaj na različite aspekte ljudskog života, počevši od obrazovanja i naučnih istraživanja, pa do zadovoljenja estetskih potreba i rekreacije.

2. NAUČNA ISTRAŽIVANJA

Istraživanja koja se vrše u botaničkim baštama predstavljaju važan element za dalji razvoj, prikupljanje podataka, a bašte su i mesto promocije naučnih istraživanja. Istraživanje u botaničkim baštama uključuje laboratorije, objekte za istraživanje, herbarijume, različite eksperimentalne stanice i sisteme za upravljanje podacima, kao i opremu za molekularne i genetičke studije. Istraživanja se vrše sa ciljem što boljeg razumevanja biodiverziteta i njegovog očuvanja (Krishnan & Novy, 2016).

Nemaju sve botaničke bašte odgovarajuće resurse, kao što su stručno osoblje, objekte ili opremu. Postoji veliki broj botaničkih bašta koje su pod pokroviteljstvom univerziteta i u skladu sa tim se bave odgovarajućim istraživanjima, a svoje podatke i prikupljen materijal čine dostupnim u svrhu edukacije. Prezentovanje raznovrsnih radova koji se bave taksonomijom biljaka predstavlja direktno učešće u očuvanju njihove raznovrsnosti. Ovakva istraživanja uključuju konzervacionu biologiju, ekologiju, sisteme za upravljanje podacima, hortikulturu, molekularnu genetiku, sistematiku i taksonomiju i slične oblasti istraživanja (Wyse-Jackson, 2000).

Niz aktivnosti koje se sprovode u okviru botaničkih bašta imaju za cilj da doprinesu botaničkom istraživanju, a to je pre svega određivanje prioriteta u istraživanju, gde se naročito ističu aktivnosti koje mogu pomoći u očuvanju biološke raznolikosti. Podaci koji se dobiju iz ovakvih istraživanja mogu delom biti objavljeni u javnosti radi što boljeg razumevanja ove problematike. Veoma je važno ostvariti saradnju sa drugim institucijama kroz istraživačke programe na nacionalnom i međunarodnom planu. Takođe, zapažanja i rezultati naučnih studija koja su dobijena o biljkama, njihovom staništu, vegetaciji, kao i o njihovim ekonomskim i kulturnim aspektima i upotrebi su od ogromnog značaja.

Sakupljanje i čuvanje biljaka treba odraditi sa posebnom pažnjom. Ovaj proces stvaranja kolekcija živih biljaka i stvaranje banki semena omogućava očuvanje vrsta. Jedino tako se može postići maksimalna genetska raznolikost, uz sprovođenje velikog broja istraživanja, čime se vrši očuvanje biljnog diverziteta *in situ*. Botaničke bašte imaju glavnu ulogu za uspeh ove strategije.

3. ODRŽIVI RAZVOJ

Koncept održivog razvoja je predstavljen kroz mnogobrojne pretpostavke i traži adekvatna rešenja. Upotreba divljih, nekultivisanih vrsta, osim zaštite određenih vrsta, pogoduje i zaštiti ekosistema. Ovaj koncept pruža ljudima dobit u smislu korišćenja vrednih resursa i oporavak i održavanje vrsta i populacija koje su vremenom postale ranjive usled prekomerne upotrebe. Botaničke bašte imaju ulogu u rešavanju ove problematike i aktivne su u održivom korišćenju biodiverziteta.

U modernom svetu se održivost smatra vodećim principom sa svrhom razvoja. Botaničke bašte se najčešće oslanjaju na posetioce i turizam kada je u pitanju njihov finansijski održivi razvoj. U većim institucijama postoji razvijen marketing i stručno osoblje, dok je u manjim baštama situacija drugačija. U takvim baštama osoblje koje radi suočava se sa izazovom promocije i stvaranjem inovativnih programa, koji treba da zainteresuju javnost za održavanje biološke raznovrsnosti (Wyse-Jackson, 2000).

U botaničkim baštama mogu se čuvati kolekcije biljaka koje su od velikog značaja za ekonomsku upotrebu, kao što su biljke koje se koriste u prehrambenoj industriji (povrće, usevi, voće, žitarice i seme), stočna hrana, aromatične biljke, lekovita ulja, hrana za pčele, piće.

Trenutak današnje civilizacije iziskuje podsticanje održivog korišćenja biodiverziteta kroz očuvanje i korišćenje resursa. Neophodno je primeniti stručnost u oblastima kao što su botanika, arborikultura i u drugim poljima, što će doprineti njegovom razvoju. Neophodno je i svrsishodno formiranje i održavanje zbirke biljnih resursa, posebno biljaka koje su od ekonomskog značaja, kultivisanih biljaka, kao i divljih biljaka. Naročito treba posvetiti posebnu pažnju očuvanju biljnih grupa koje nisu pravilno zaštićene od strane drugih institucija i organizacija, bilo na nacionalnom ili regionalnom nivou (Wyse-Jackson, 2000).

4. OBRAZOVANJE

Kroz niz programa koji se realizuju u različitim oblicima, obrazovanje u botaničkoj bašti može imati višestruki značaj. Primeri programa koji se primenjuju u ovu svrhu su dečiji letnji kampovi, studentski kampovi, školski programi u vidu izleta, kao i programi za odrasle. Programi koji nude obrazovanje odraslih u botaničkoj bašti mogu biti raznog karaktera. Sveobuhvatno angažovanje, planiranje i kvalitetna uputstva dovode do uspeha ovakvih načina obrazovanja i edukacije različitih ciljnih grupa (Krishnan & Novy, 2016).

5. PROIZVODNJA HRANE

Sa očekivanjem povećanja svetske populacije na globalnom nivou raste i zabrinutost u vezi budućih povećanih potreba za hranom. Problem hrane, zajedno sa klimatskim promenama i gubitkom biodiverziteta, predstavljaju goruće teme današnjice. Jedan od programa istraživanja i edukacije u botaničkim baštama mogao bi da pruži znanja o poljoprivrednim sistemima i gajenju prehrambenih biljaka. U ovom smislu, botaničke bašte mogu igrati ključnu ulogu u rešavanju pitanja bezbednosti i obezbeđivanja hrane u budućnosti.

Danas se u botaničkim baštama prezentuje i populariše upotreba posebnih prehrambenih biljaka. Bašte predstavljaju prostor za edukaciju javnosti i prikazivanje poljoprivredne tehnologije kroz prikaz ratarskih biljaka, sistem gajenja i mehanizacije. U tom smislu, botaničke bašte mogu da učestvuju u formiranju veza sa programima u poljoprivredi, organizacijama poljoprivrednika i slično.

Sa dovoljno velikim prostorom, bašta može da podrži aktivnosti u poljoprivredi i razvoj bankarstva semena. Najveći uticaj može da se ostvari kroz obrazovanje i uključivanje zajednice u poljoprivredna pitanja. Kao primer toga, postoje projekti koji na lokalnom nivou uključuju stanovništvo i lokalne zajednice u program edukacije o hrani, korisnim biljkama, tehnikama njihovog gajenja i upotrebi, koji se realizuju na prostoru botaničkih bašta (Waylen, 2006). Oni imaju za cilj da unaprede kulturu ishrane lokalnih zajednica. I upravo je ovo jedan od načina kako botaničke bašte mogu poboljšati ishranu ljudi, kroz ovako osmišljene programe u kojima će se uključivati građani i gde će se kroz promociju kultivacije biljaka ukazati na korist koju ovaj vid proizvodnje hrane i ishrane pruža. Ovakvi projekti se takođe moraju uključiti u rešavanje problema nezdrave ishrane. Raznovrsne tehnike koje se mogu koristiti u ovakvim projektima mogu da promovišu zdraviji način života (Waylen, 2006).

Snadbevanje hranom oslanja se prvenstveno na biljne proizvode, što je od izuzetnog značaja za opstanak čoveka. Samo adekvatno funkcionisanje ekosistema i racionalno korišćenje resursa mogu dovesti do poboljšanja kvaliteta useva (Waylen, 2006).

6. DRUŠTVENI ASPEKTI

Dosadašnja istraživanja vršena u botaničkim baštama širom sveta ukazuju na velike terapijske prednosti prirodnog okruženja i boravka u botaničkim vrtovima. Ispitanici su se tokom tih studija izjasnili kako se tokom boravka u bašti, u prisustvu biljaka i drveća osećaju znatno bolje i prijatnije. Kontakt sa prirodom pruža lično zadovoljstvo i osećaj kvalitetno provedenog vremena. Vreme provedeno u bašti i prirodnom okruženju smanjuje anksioznost, poboljšava raspoloženje i pruža osećaj slobode (Blaszak et al., 2019).

Botaničke bašte predstavljaju prirodnu sredinu i kao takve su sastavni deo društva stotinama godina. Terapijske prednosti koje ona pruža su prihvaćene od davnina. Interakcija sa prirodom je od velikog značaja za kvalitet ljudskog života.

Važno je naglasiti i uticaj savremene medicine koja napreduje u borbi protiv bolesti i lošeg mentalnog zdravlja. Istraživanja pokazuju da je jedan od alternativnih načina lečenja i prirodna atmosfera kao što je bašta, koja ima višestruku korist za zdravlje. Hortikulturalna terapija je socijalna i terapijska tehnika koja koristi hortikulturu kao vid poboljšanja ljudskog zdravlja (Blaszak et al., 2019).

Promovisanje kulturnih vrednosti i tradicija mogu biti jedan od važnih ciljeva botaničke bašte. Botaničke bašte mogu biti važan činilac u pronalaženju načina poboljšanja odnosa i poboljšanja kvaliteta socijalnog života u mestima gde je kvalitet životne sredine loš ili gde postoji problem nejednakosti i diskriminacije (Waylen, 2006).

Zaštita biodiverziteta, ekosistema i ljudskog zdravlja, kao i poboljšanje i razvijanje ciljeva koji vode ka zdravijem načinu života ciljevi su i međunarodne politike, različitih konvencija i strategija koji su značajni i za očuvanje botaničke bašte (Waylen, 2006).

Neke od konvencija i strategija koje se decenijama unazad bave uticajem botaničkih bašti su:

- *Međunarodna agenda za botaničke bašte u očuvanju* (1999). Ova agenda je pripremljena od strane BGCI (*Botanic Gardens Conservation International*). U saradnji sa preko 300 institucija i pojedinaca napravljen je okvir za politiku botaničke bašte, kao i zadatke i ciljeve u očuvanju biodiverziteta. Jedan deo ove agende podrazumeva i promoviše očuvanje biljaka i njihovo održivo korišćenje (Waylen, 2006).

- *Milenijumski ciljevi razvoja* (MDGs, 2000) predstavljaju niz ambicioznih programa stvorenih za smanjenje siromaštva i poboljšanje života kroz ekološku održivost. Poslednja godina realizacije za svaki od više postavljenih ciljeva bila je 2015. godina. Neki od tih ciljeva su bili: iskoreniti ekstremno siromaštvo i glad, ostvariti univerzalno osnovno obrazovanje, osigurati održivost životne sredine.

- *Globalna strategija za konzervaciju biljaka* (GSPC, 2002) ima 16 globalnih ciljeva koje je trebalo postići do 2010. godine. Naglašava važnost biljaka i ekosistema i ima za cilj da obezbedi njihovo očuvanje (Waylen, 2006).

7. GLAVNI CILJEVI BOTANIČKIH BAŠTA

Kao institucije, botaničke bašte na nacionalnom nivou su uključene u istraživanje i sakupljanje biljnih vrsta. Očuvanje biljaka je od značaja za očuvanje biodiverziteta na Zemlji, poljoprivredu i ishranu. U vezi sa tim, neki od glavnih ciljeva botaničkih bašti su: smanjiti ili sprečiti u potpunosti gubitak biljnih vrsta, sprovesti akcije za poboljšanje prirodne sredine i prezentovati javnosti postavljene ciljeve. Jedan od ciljeva je promovisati i omogućiti održivo korišćenje svih prirodnih resursa (Wyse-Jackson, 2000).

Botaničke bašte pružaju informacije o životnoj sredini i ekosistemima, a kao važan njihov zadatak navodi se i uspostavljanje i razvijanje odnosa između društva i prirode.

Ciljevi botaničkih bašta mogu biti očuvanje i održavanje različitih sorti, planiranje i kreiranje programa obrazovanja o životnoj sredini, dendrologija, procena uticaja na životnu sredinu, etnobiološka istraživanja, hortikultura i laboratorijska istraživanja, ukrasna hortikultura, sistematika, programi za smanjenje zagađenja i monitoring, očuvanje i upravljanje *ex situ* i *in situ* zaštitom i dr. (Wyse-Jackson, 2000).

8. IN SITU ZAŠTITA

In situ zaštita podrazumeva očuvanje biodiverziteta unutar ekosistema i prirodnih staništa. Odnosi se na čuvanje biljaka u okolini gde su se prirodno razvile. Cilj *in situ* zaštite je da se očuva raznolikost ekosistema, a u slučaju biljne populacije to se odnosi na sposobnost održavanja biljnih vrsta i njihovog daljeg razvoja.

In situ zaštita uključuje i održavanje, očuvanje i upravljanje resursima prirode, oblastima vegetacije i zaštitu nacionalnih parkova i drugih zaštićenih područja.

Neki od ciljeva *in situ* zaštite su (Wyse-Jackson, 2000):

- saradnja sa lokalnim zajednicama, javnim i privatnim institucijama i organizacijama koje su zainteresovane da se uključe u očuvanje zaštićenog i prirodnog ekosistema
- organizovanje aktivnosti sa ciljem da se održi populacija vrsta u prirodnim naseljima
- uključivanje stručnog osoblja u ekologiju i genetiku očuvanja
- učestvovanje u programima koji imaju za cilj očuvanje raznolikosti
- razvijanje programa koji pružaju *in situ* zaštitu, pri čemu se uključuju i oblasti kao što su: ekologija, hortikultura, kontrola flore i srodne oblasti
- podržavanje programa za očuvanje biodiverziteta, u kojima se nalaze botaničke bašte
- na adekvatan način obaveštavanje javnosti o važnosti *in situ* zaštite.

In situ zaštita je metod konzervacije koji odražava odnos sa staništem. Ekosistemi su promenljivi i dinamični, a *in situ* zaštita omogućava genetsku varijabilnost i adaptaciju vrsta na promenljive uslove životne sredine. Konzervaciju *in situ* je najbolje ostvariti u prirodnim ekosistemima. Troškovi i rizici *in situ* konzervacije nisu veliki, ali nju nije moguće izvesti u oblastima sa velikim ekološkim i ljudskim pritiscima. Metode očuvanja *in situ* se odnose na različita zaštićena područja i sisteme (Zegeye, 2017).

Dobar primer *in situ* zaštite je i klimatogena zajednica hrasta sladuna i cera koja je sastavni deo Botaničke bašte u Kragujevcu.

9. EX SITU ZAŠTITA

Brojni su primeri kada *in situ* konzervacija nije primenljiva i izvodljiva. U tom slučaju, ugrožene vrste se mogu očuvati *ex situ*. *Ex situ* metod se može koristiti kao izvor materijala za istraživanje i obnovu ekosistema. Ovaj tip konzervacije može prekinuti evolucione i ekološke procese, ograničiti genetsku varijabilnost i adaptaciju vrsta na promenljive ekološke uslove. Troškovi pri istraživanjima *ex situ* su znatno veći od onih kod *in situ* konzervacije. *Ex situ* metode uključuju i botaničke bašte, zoološke vrtove i banke gena (Zegeye, 2017).

Ex situ zaštita je od izuzetnog značaja za očuvanje biodiverziteta koji su zastupljeni u botaničkim baštama. Kao glavni cilj *ex situ* zaštite može se navesti obezbeđivanje očuvanja ekosistema. Treba napomenuti da *ex situ* zaštita nije potpuni sistem zbog nemogućnosti održanja više od ograničenog uzorka genetske raznovrsnosti. *In situ* i *ex situ* zaštita se međusobno dopunjuju (Wyse-Jackson, 2000).

Prednosti *ex situ* zaštite i očuvanja je u tome što postaje jedina dostupna metoda kada je prirodno stanište uništeno. Sa ekonomske strane, može biti isplativo, jer se semena pojedinih vrsta (koja su pogodna za skladištenje) mogu podvrći dugotrajnom skladištenju. U vezi sa tim

je i uloga botaničke bašte koja može da obezbedi prostor i objekte za razmnožavanje i istraživanja. Osim toga, *ex situ* zaštita podrazumeva i očuvanje populacija ugroženih biljaka u divljini, stvarajući na taj način materijal za reintrodukciju. Na ovaj način se takođe prikupljaju podaci za upravljanje terenima na kojima se nalaze populacije ugroženih biljaka na njihovom prirodnom staništu (Wyse-Jackson, 2000).

Prioritet u *ex situ* zaštiti imaju određene kategorije biljaka koje treba uključiti u programe *ex situ* očuvanja, a tu spadaju vrste ili taksoni koji su u opasnosti ili im pretilo izumiranje, lokalno ili nacionalno, čak i globalno. Vrste ili taksoni koje su takođe prioritet ovakvog tipa zaštite jesu one koje su ekonomski značajne, a to su usevi za ishranu i lekovito bilje (samoniklo ili kultivisano). U grupu vrsta koje imaju prednost kod ove vrste zaštite spadaju još i vrste ili taksoni koji su bitni za proučavanje i istraživanje, a to su endemi ili relikti (Wyse-Jackson, 2000).

Primer *ex situ* zaštite biljaka je i Pančičeva omorika (*Picea omorika* (Pančić) Purk.) koja se nalazi u botaničkoj bašti u Kragujevcu što je predstavljeno na Slici 1.

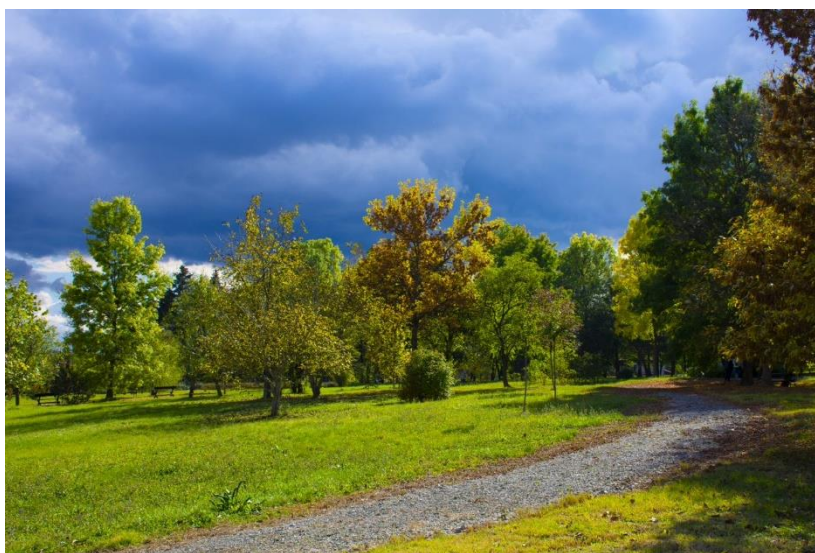


Slika 1. Primer *ex situ* zaštite Pančičeva omorika (*Picea omorika* (Pančić) Purk.) u Botaničkoj bašti u Kragujevcu (foto. A. Ninković)

U odnosu na sve pristupe koje botaničke bašte koriste, generalno postoji potreba za razmatranjem uloge *ex situ* zaštite, a to su: procena trenutne vrednosti očuvanja svojih kolekcija, identifikacija vrsta koje zahtevaju očuvanje, poboljšanje sistema dokumentacije i upravljanje zbirkama u skladu sa naučnim i hortikulturnim standardima i sprovođenje planiranih programa kako bi se postigli ciljevi očuvanja (Wyse-Jackson, 2000).

Metodama *ex situ* zaštiti se veliki broj biljnih vrsta iz različitih staništa čuva u strogo kontrolisanim uslovima. Potreba za očuvanjem biljnih vrsta potiče iz globalnog suočavanja sa problemom zaštite životne sredine i biodiverziteta. Očuvanje biljnih vrsta u botaničkim baštama je odličan primer za *ex situ* zaštitu, a jedan od prostora na kome se ova zaštita primenjuje je Botanička bašta u Kragujevcu (Topuzović, 2007). Botanička bašta u Kragujevcu (Slika 2.) u sklopu Memorijalnog parka „Kragujevački oktobar“ i kao posebna organizaciona jedinica Prirodno-matematičkog fakulteta u Kragujevcu, postoji od 1997 godine. Područje bašte pripada

klimatogenoj zajednici hrasta sladuna i cera, *Quercetum confertae-cerris* Rudski. Unutar bašte su organizovane različite celine kao što su: izložbena celina sa alpinetumom i dendrarijumom, ekonomsko-proizvodna celina i administrativno-naučni deo. Osim praktične nastave koja se odvija u bašti, tokom letnjih meseci se organizuju i dečiji kampovi i različite edukativne radionice. Najvažnija uloga ove bašte pored edukativne je i očuvanje biljne raznovrsnosti. Realizacijom edukativnih projekata podiže se ekološka svest šire društvene zajednice, a posebna pažnja se posvećuje edukaciji predškolske i školske populacije.



Slika 2. Botanička bašta u Kragujevcu (foto. Z. Đorđević)

10. BUDUĆA MISIJA BOTANIČKIH BAŠTA

Pozitivan doprinos rada botaničkih bašti se ogleda u očuvanju biljaka, proučavanju i saradnji sa istraživačima u oblasti taksonomije i sistematike biljaka, genetike i predstavljanju dostignuća lokalnim zajednicama. Hortikulturene aktivnosti su važan aspekt u botaničkim baštama. Procena efekta očuvanja i srodne studije mogu da dovedu do uspeha u radu botaničkih bašta, stoga osoblje treba na najbolji način da iskoristi svoje znanje i iskustvo.

Podaci i rezultati proučavanja proistekla iz istraživanja u botaničkim baštama treba da budu dostupni zainteresovanom delu javnosti. Obuka, sakupljanje i identifikacija biljaka, evidentiranje i procena vrsta, tehnike konzervacije i javno obrazovanje treba da se sprovedu tako da budu dostupni potencijalnim botaničarima i hortikulturistima.

Sakupljanje živih kolekcija je od izuzetnog značaja. Sa razvojem novih tehnologija treba misliti na koncept očuvanja biodiverziteta i predstaviti nove mogućnosti za istraživače u botaničkim baštama, što one kao naučne baze, imaju fokus pre svega na nauku i očuvanje biodiverziteta (Krishnan & Novy, 2016).

Prekome sakupljanje divljih biljaka za hortikulturu, lekove i hranu uzrokuje gubitak diverziteta. Gajenje biljaka može smanjiti pritisak na divlje populacije i sprečiti -iskorišćavanje biljaka radi ostvarivanja profita. Botaničke bašte imaju nadležnost da upravljaju zaštićenim područjima unutar i van svoje lokacije kako bi promovisale biodiverzitet (UKEssays, 2018).

Jedan od uzroka smanjenja lokalnog biodiverziteta su invazivne vrste koje ugrožavaju biljne zajednice i ekosisteme. U botaničkoj bašti se pomoću veština i znanja u identifikaciji i hortikulturi mogu pratiti ovakve vrste i raditi na obnavljanju staništa koja su bitna za očuvanje raznovrsnosti (UKEssays, 2018).

Postoji nekoliko glavnih prioriteta koji bi trebalo da budu globalna misija botaničkih bašta širom sveta, a to su: sprečavanje gubitka biljnih vrsta i njihove genetske raznolikosti, povećanje fokusa na sprečavanje dalje degradacije svetske prirodne sredine, rad na obrazovanju javnosti o potencijalu i značaju biljnog diverziteta i pretnjama koje ga ugrožavaju, sprovođenje akcija i promovisanje održivog korišćenja svetskih prirodnih botaničkih resursa (Wyse-Jackson, 2000).

Nesumnjivo je da će u budućnosti botanički vrtovi i botaničke bašte imati još veći značaj, posebno pošto postoji težnja ka što boljem očuvanju biljnih vrsta i biodiverziteta uopšte. Osim toga, posmatrano sa društvenog aspekta, botaničke bašte su od višestrukog značaja. Za široku populaciju, botaničke bašte su mesta koja ljudima pruža prirodan, psihofizički ugodan osećaj, gde se oni vraćaju prirodnoj i psihički prihvatljivoj sredini. Promovisanje zdrave ishrane, biljaka koje mogu da se koriste u ishrani, proizvoda koji se dobijaju njihovom daljom preradom, samo su neki su od načina koji mogu da pruže prednost u razvoju ovakvih institucija koje žele da povećaju broj posetilaca i ostvare napredak.

Nekontrolisana eksploatacija biljnog sveta dovodi do uništavanja staništa ljudskom aktivnošću. Posledica izumiranja velikog broja biljnih i životinjskih vrsta ozbiljno dovodi do narušavanja ekosistema i biološke raznovrsnosti. Različite agende su tokom decenija promovisale rekultivaciju i vraćanje u prvobitno stanje kopnenih i vodenih ekosistema (šume, močvare, planine). Vremenom su uključivani različiti sektori i primenjivanjem konkretnih mera očuvanja prirodnog staništa i održivog korišćenja biljaka jedino su postizani dobri rezultati (Waylen, 2006).

Istraživanja koja se vrše u botaničkim baštama, koje predstavljaju naučne institucije i naučne baze, od neprocenjive su vrednosti, kako za studente biologije i ekologije i srodnih nauka i oblasti, tako i za zainteresovane lokalne zajednice i građane koji na taj način mogu da se edukuju. Neophodna je primena dostupnih znanja iz oblasti kao što su botanika, sistematika, hortikultura, genetika i srodnih oblasti kako bi se razvijale kolekcije biljaka koje se najbolje i adekvatno čuvaju na prostoru botaničkih bašti. Kroz ciljane i dobro osmišljene programe u botaničkim baštama vrši se edukacija dece, omladine i šire populacije, što predstavlja dobru bazu u razvoju svesti očuvanja zaštite biljaka, celokupnog biodiverziteta i prirode uopšte.

11. ZAKLJUČAK

Botaničke bašte razvijale su se decenijama i stolećima, i to prvobitno kao medicinske bašte, a kasnije sve više poprimaju ulogu u naučne svrhe, edukaciji i popularizaciji nauke. Poslednjih decenija se po određenim principima razvijaju kao naučno-istraživačke ustanove i nastavno-naučne baze, prostori očuvanja biodiverziteta, a značajna je njihova uloga i u turizmu. Sa razvojem modernog sveta i tehnologije, pojavili su se i novi ciljevi i uloge botaničkih bašta. Uloge i ciljevi postojanja botaničkih bašti mogu se ogledati u očuvanju i održivosti postojanja različitih sorti, planiranju i kreiranju edukativnih programa o zaštiti i očuvanju životne sredine, razvoju i implementaciji dendrologije, proceni uticaja na životnu sredinu, etnobiološkim istraživanjima, hortikulturnim i laboratorijskim istraživanjima, razvoju sistematike, programima za smanjenje zagađenja i monitoringa, očuvanju i upravljanju *ex situ* i *in situ* zaštitom, kao i rešavanja problema nedostatka hrane za čovečanstvo. Za široku populaciju, botaničke bašte su mesta koje ljudima pruža prirodan, psihofizički ugodan osećaj, gde se oni vraćaju prirodnoj i psihički prihvatljivoj sredini. Kroz ciljane i dobro osmišljene programe u botaničkim baštama vrši se edukacija dece, omladine i šire populacije, što predstavlja dobru bazu u razvoju svesti očuvanja zaštite biljaka, celokupnog biodiverziteta i prirode uopšte.

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