

OECONOMICA JADERTINA

Sveučilište u Zadru / Universitas studiorum Jadertina / University of Zadar
Odjel za ekonomiju / Department of Economics

VOL 14. NO.2.2024. ZADAR ISSN 1848-1035 UDK: 005: 33 (06)





Sveučilište u Zadru
Universitas Studiorum
Jadertina | 1396 | 2002 |



IZDAVAČ / *Publisher*

Sveučilište u Zadru / *University of Zadar*
Mihovila Pavlinovića 1, 23 000 Zadar, Hrvatska

Odjel za ekonomiju / *Department of Economics*
Splitska 1, 23 000 Zadar, Hrvatska

POVJERENSTVO ZA IZDAVAČKU DJELATNOST / *Publishing Committee*
Josip Faričić (predsjednik)

UREDNIŠTVO / *Editorial Board*
Alen Host (Sveučilište u Rijeci), Vytautas Juščius (University of Klaipėda), Miguel Ángel Latorre (Catholic University of Valencia), Tonči Lazibat (Sveučilište u Zagrebu), Mladen Rajko (Sveučilište u Zadru), Elżbieta Wrońska-Bukalska (Maria Curie Skłodowska University), Ivica Zdrilić (Sveučilište u Zadru)

GLAVNI I ODGOVORNI UREDNIK / *Editor in Chief*
Jurica Bosna

IZVRŠNA UREDNICA / *Executive Editor*
Sonja Brlečić Valčić

SAVJETODAVNI ODBOR / *Advisory Board*
Vinko Belak (Sveučilište u Zagrebu), Đula Borozan (Sveučilište u Osijeku), Marija Bušelić (Sveučilište u Puli), Jiri Dušek (College of European and Regional Studies – České Budějovice), Janos Fojtik (University of Pecs), Ivana Paula Gortan-Carlin (Sveučilište u Puli), Elena Horská (University of Agriculture in Nitra), Marija Jakovljević, Božena Krce Miočić (Sveučilište u Zadru), Josipa Mrša (Sveučilište u Rijeci), Bojana Olgić Draženović (Sveučilište u Rijeci), Persefoni Polychronidou (International Hellenic University), Željko Šain (Univerzitet u Sarajevu), Igor Todorović (Univerzitet u Banjoj Luci), Željko Turkalj (Sveučilište u Osijeku), Dean Učkar (Sveučilište u Puli), Ivona Vrdoljak Raguž (Sveučilište u Dubrovniku), Danijela Sokolić (Sveučilište u Rijeci), Tjaša Štrukelj (Univerza v Mariboru), Vesna Vrtiprah (Sveučilište u Dubrovniku)

Lektorica hrvatskoga jezika / *Croatian Language Editor*
Jadranka Varošaneć

Lektor engleskoga jezika / *English Language Editor*
Boris Frakin

Tehnička urednica i tajnica uredništva / *Technical Editor and Editorial Secretary*
Martina Maté

Oblikovanje naslovnice / *Front Page Configuration*
Manuela Škarpona

ADRESA UREDNIŠTVA / *Address*
Oeconomica Jadertina
Sveučilište u Zadru, Odjel za ekonomiju
Splitska 1

23 000 Zadar, Hrvatska / *Croatia*
Tel. +385 23 400404, +385 23 400402

E-mail: oeconomica.jadertina@unizd.hr

URL: <http://www.unizd.hr/ekonomija/OeconomicaJadertina/tabid/3257/Default.aspx>

Radovi objavljeni u časopisu referiraju se u bazama podataka: ERIH+, Index Copernicus, Google Scholar, DOAJ i Portalu znanstvenih časopisa Hrčak / *Papers published in Oeconomica Jadertina are indexed in: ERIH+, Index Copernicus, Google Scholar, DOAJ and Hrčak – Portal of Croatian Scientific Journals*

Izrada UDK oznaka / *UDC*
Sveučilišna knjižnica Sveučilišta u Zadru

ČASOPIS IZLAZI DVA PUTA GODIŠNJE / *Published twice a year*

ISSN: 1848-1035

Sadržaj / Table of Contents

Učinci prelijevanja kratkotrajnih šokova egzogenih makroekonomskih odrednica na mirovinske fondove: modeliranje na uzorku Hrvatske / The Spillover Effects of Short-Term Shocks of Exogenous Macroeconomic Determinants on Pension Funds: Modelling on a sample of Croatia	3
---	----------

Luka Bašić

Izvorni znanstveni rad / Original scientific paper

Content marketing: Gender and age differences in generation Z / Sadržajni marketing: razlike po spolu i dobi kod generacije Z	19
--	-----------

Matea Matić Šošić

Izvorni znanstveni rad / Original scientific paper

Evaluation of trade performanse dynamics in Serbia using ARAT and Rough MABAC methods / Ocjena dinamike trgovinske performance primjenom ARAT i grube MABAC metode	34
---	-----------

Radojko Lukić

Izvorni znanstveni rad / Original scientific paper

Modeling investment strategies in contemporary art in the context of the Yugoslav wars / Modeliranje investicijskih strategija u suvremenoj umjetnosti u kontekstu jugoslavenskih ratova	45
---	-----------

Ornela Ramašauskaitė

Prethodno priopćenje / Preliminary communication

MMF u prizmi kejnzijanske teorije i ekonometrije: primjeri ukrajinskih ekonomskih kriza 2008. i 2014. / The IMF through the lens of Keynesian theory and econometrics: Examples of Ukrainian economic crises in 2008 and 2014	67
--	-----------

Domagoj Ćorić

Prethodno priopćenje / Preliminary communication

Key factors for developing sustainable wine tourism in the West Herzegovina Canton / Ključni faktori za razvoj održivog vinskog turizma u Zapadnohercegovačkom kantonu	83
---	-----------

Deša Karamehmedović, Ante Raspudić
Prethodno priopćenje / Preliminary communication

Green Organization - Arrived in companies or still a vision? An exploratory study based on an expert survey on the significance of sustainability and the implementation of sustainability management in companies / Zelena organizacija - stigla u tvrtke ili je još uvijek vizija? Eksplorativno anketno istraživanje provedeno među stručnjacima o značaju održivosti i implementaciji upravljanja održivošću u tvrtkama	101
--	------------

Daniela Ludin, Erika Müller, Wanja Wellbrock, Christina Arngold, Meltem Balli
Prethodno priopćenje / Preliminary communication

Upute autorima	118
Guidelines for authors	121

Učinci prelijevanja kratkotrajnih šokova egzogenih makroekonomskih odrednica na mirovinske fondove: modeliranje na uzorku Hrvatske

LUKA BAŠIĆ

Sveučilište Jurja Dobrile u Puli
Fakultet ekonomije i turizma „Dr. Mijo Mirković“
Preradovićeva 1/1, 52100 Pula
Hrvatska

lukasolicc@gmail.com

ORCID iD: <https://orcid.org/0009-0008-5198-3218>

Izvorni znanstveni rad / *Original scientific paper*

UDK / UDC: 330.43:[330.101.541:364.35(497.5)]=163.42

Primljeno / Received: 11. srpnja 2024. / July 11th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 13. studeni 2024. / November 13th, 2024.

DOI: 10.15291/oec.4518

Sažetak: U radu se preispituju učinci prelijevanja šokova egzogenih makroekonomskih varijabli na mirovinski sustav Hrvatske u kratkom roku (vremenski presjek do jedne godine). Primjenjuje se ekonometrijska metodologija temeljena na strukturnom VAR modelu i dekompoziciji varijance (određenje varijacija šokova) kako bi se ustanovila snaga djelovanja kratkotrajnih šokova. Rezultati istraživanja upućuju na heterogenost i asimetričnost djelovanja kratkotrajnih šokova na putanju korisnika te imovinsku vrijednost uplata kod obveznih i dobrovoljnih (otvorenih) mirovinskih fondova. Iz toga proizlaze dva ključna zaključka. Prvo, postoji statistička značajnost u korelaciji prelijevanja učinaka šokova uglavnom u većini neovisnih varijabli na ovisne u modelima, s posebnim naglaskom na šokove porasta kamatnih stopa iz okvira restriktivne monetarne politike. Za produbljenje negativnog jaza šoka potreban je određeni vremenski ciklus uglavnom tek od trećeg mjeseca. Na svaki postotni poen šoka dolazi do promjene u deltama u rasponu od -1,2 do + 1,4 p.p. Drugo, ciklus restriktivne monetarne politike iz okvira porasta kamatnih stopa heterogeno i asimetrično odražava utjecaj na strukturu osoba i imovine/uplata kod obveznih i dobrovoljnih mirovinskih fondova. Kod obveznih mirovinskih fondova uglavnom postoji negativan utjecaj samo na imovinu, dok kod dobrovoljnih mirovinskih fondova postoji negativan utjecaj i na putanju korisnika/štediša i na imovinu fondova. Porast kamatnih stopa iz okvira restriktivne monetarne politike dovodi do pada vrijednosti postojećih obveznica u portfeljima fondova zbog inverznog odnosa između kamatnih stopa i cijena obveznica, što u kratkom roku dovodi do pada vrijednosti imovine fondova. U dugom roku isti taj ciklus monetarne politike očekivano bi trebao dovesti do viših prinosa na nove obveznice, stabilizirajući imovinu diversifikacijom portfelja. Obvezni mirovinski fondovi u okviru svojih investicijskih strategija pokazuju manju volatilnost u putanji korisnika, dok su s druge strane osjetljiviji na promjene u vrijednosti imovine. Otvoreni dobrovoljni mirovinski fondovi sa svojom fleksibilnijom investicijskom strategijom imaju veću osjetljivost na šok promjene u kamatnim stopama i inflaciji.

Ključne riječi: prelijevanje šokova, kratki rok, egzogene makroekonomske varijable, restriktivna monetarna politika, mirovinski fondovi, Hrvatska

JEL klasifikacija: C50, E20, E31, E43, E44, G23

1. Uvodno razmatranje

Struktura financijskog tržišta osjetno se promijenila u posljednjih petnaest godina, a temeljni postulati promjena uzrokovani su naprednijim tehnološkim inovacijama, slabljenjem bilanci nakon krize, promjenama u poslovnim modelima svih ključnih aktera na financijskom tržištu i snažnom uvođenju regulatornih okvira u bankovni sustav. Upravo je uvođenje regulacije u bankovni sustav omogućilo osjetniji prijelaz iz klasičnog bankovnog kreditiranja na financiranje izdavanjem obveznica na tržištu, što je omogućilo nekim nebankarskim institucijama, poput mirovinskih fondova, preuzimanje značajnije uloge na tržištu u plasmanu portfelja proizvoda, ali i kreaciji novih. Nebankarske financijske institucije imaju značajnu ulogu u financijskom posredovanju i financijskoj strukturi SAD-a, no posljednjih se godina ta važnost u financijskom sektoru prelijeva i na Europu, pa se postavlja validno pitanje je li porast nebankarskog načina financiranja učinio europsku monetarnu politiku manje moćnom. Postoje indikacije da su standardni kanali bankovnih kreditiranja postali manje važni ili da će to barem postati u bliskoj budućnosti. Razlog tomu je što nebankarske financijske institucije već mogu kreditirati umjesto tradicionalnih poslovnih banaka, uz pretpostavku da promjene u monetarnim politikama ne utječu toliko snažno na promjene u njihovim troškovima financiranja. Takva teza promatra se u okviru dosadašnjeg sustavnog utjecaja inflacije, kao jedne od ključnih makroekonomskih varijabli koje imaju izravan učinak na metriku uspješnosti financijskog sektora. U financijskom sektoru koji nudi svoje nebankarske financijske usluge posljedice inflatornih pritisaka odražavaju se izravno ili posredno unatoč tome što takvi pritisci povijesno nikada nisu proizašli iz podsektora nebankarskog sustava. Sa stajališta klijenta i korisnika, visoke razine inflacije utječu na ponudu i potražnju, dok sa stajališta onih koji nude takve usluge, visoke razine inflacije tjeraju ih u nove izazove sa stabilizacijom i/ili maksimizacijom prinosa na realnu imovinu klijenta ili pak prilagodbu na korekciju svojih glavnih izvora prihoda.

Cilj ovog rada je istražiti i preispitati učinke prelijevanja kratkotrajnih šokova odabranih makroekonomskih varijabli na mirovinske fondove Hrvatske. U istraživanju se uzimaju parametri mirovinskog sustava poput putanje korisnika obveznih i dobrovoljnih mirovinskih fondova te vrijednost njihovih uplata i prinosa.

Time se želi ispitati utjecaj snaga kratkoročnih fluktuacija neovisnih makroekonomskih varijabli na one ovisne u modelima, ali i snaga prelijevanja šokova u kratkom roku. Studija je konceptualno podijeljena na pet glavnih poglavlja. Prvo poglavlje pruža kratki pregled uvodnog razmatranja u kojem se navedena tema stavlja u opći kontekst. Drugo poglavlje donosi pregled literature o navedenoj tematici i različitim pristupima istraživanja. Treće poglavlje obuhvaća ekonometrijsku metodologiju studije i korištene podatke u studiji. Četvrto poglavlje pruža uvid u rezultate provedenog istraživanja na temelju prethodno postavljene metodologije. Peto poglavlje donosi zaključna razmatranja uz ograničenja/nedostatke studije te preporuke/smjernice za nastavak istraživanja.

2. Pregled literature

Ciklusi monetarnih ekspanzija ne dovode do realnih inflacijskih učinaka, ali temeljni makroekonomski postulati navode da će se inflacija odraziti u svojem umjerenom ili snažnom obujmu u razdoblju kontrakcijskih monetarnih i fiskalnih politika. Kaplan et al. (2018) u studiji proširuju postojeće teorijske modele posrednih utjecaja monetarne politike preko standardnih uvjeta na tržištu rada i u fiskalnoj politici. Ističu kako preko transmisijskih kanala monetarna politika može utjecati na realnu gospodarsku aktivnost, posljedično utječući izravno na inflaciju. Prijenosni kanali monetarne politike mogu izravno utjecati na financijska tržišta jer se promjene u monetarnoj politici izravno odražavaju na tržišne uvjete. Ako su očekivanja o inflaciji stabilna i oko ciljanih razina, mogu značajno pridonijeti smanjenju rizika od visokih i trajnih inflatornih pritisaka te se smanjuje potreba za čestim intervencijama monetarne

politike. No ciklusi monetarnih politika razlikuju se od države do države što posebno ističu provedene studije. Tako Santoro et al. (2014) te Bruns i Piffer (2022) navode da je monetarna politika učinkovitija u kontrakcijskim ciklusima nacionalnih ekonomija nego u ekspanzijskim. Debortoli et al. (2020) sugeriraju da kontrakcijski kratkotrajni šokovi imaju snažnije učinke na realnu gospodarsku aktivnost nego ekspanzijski, ali i da ekspanzivna monetarna politika ima snažnije učinke na cijene te samim time na smjerove inflatornih pritisaka. U ekonomskim ciklusima u kojima su visoke razine inflacije kontinuirano prisutne, štetni učinci osjete se u ponudi i potražnji, eroziji stopa prinosa na uplate u obvezne i dobrovoljne mirovinske fondove te imovinskim vrijednostima mirovinskih fondova. U pravilu, tako visoke stope inflacije tjeraju na redistribuciju osobnog dohotka pojedinca čime se eliminiraju stvari koje nisu nužne, sve dok se osobni dohodak, kupovna moć i inflacija ne stabiliziraju na prihvatljivim i ciljanim razinama. Upravo se raspoloživost dohotka, ali i supstitucija portfelja proizvoda mirovinskih fondova mogu razmatrati kao ključni faktori u privlačnosti mirovinskih fondova u razdobljima visokih razina inflacije.

Mirovinski sustav u Hrvatskoj oslanja se na dva obvezna mirovinska stupa i jedan dobrovoljni, od kojih prvi funkcionira po PAYG modelu, a drugi po principu kapitalizirane štednje. Privlačnost za pojedinca i njegovu štednju u mirovinskom fondu mjerljiva je koliko i trenutačna kupovna moć, kao i ostvareni prinosi fonda. U kratkom roku ostvareni prinosi dobrovoljnih mirovinskih fondova značajno nadilaze izravne troškove mirovinskih fondova za korisnika, ali u prosjeku ne nadilaze inflaciju. Shodno tome, temeljni makroekonomski učinak visoke stope inflacije je smanjenje prinosa na štednju fonda te, ceteris paribus, pada krivulje osobne potrošnje. S jedne strane učinak dohotka smanjuje potrošnju i povećava štednju u fondu, a s druge strane učinak supstitucije povećava potrošnju i smanjuje štednju. Ne može se znati koji će učinak prevladati, ali nudi obrazac bihevioralnog ponašanja krajnjeg klijenta hoće li nastaviti s uplatama štednje u mirovinski fond i hoće li se broj korisnika povećati ili smanjiti.

Opća struktura mirovinskih fondova u Hrvatskoj otporna je na prisutnost normaliziranih i prihvatljivih učinaka inflacije, ali ni jedan mirovinski sustav nije otporan na učinke visokih stopa inflacije jer takve razine inflacije i kontinuirani pritisci nagrizaju ostvarene prinose, povećavaju realne troškove za fondove i korisnike te posljedično dovode do evazije osobne imovine. Učinci monetarnih politika ne utječu samo na inflaciju koja je izrazito važna za poimanje mirovinskih fondova, već utječu i na razinu kamatnih stopa i ekonomski rast, dok fiskalna politika utječe i na tržište rada, porezne politike te fiskalni saldo. U ciklusima restriktivne monetarne politike s ciljem stabilnosti cijena, pune zaposlenosti i ekonomskog rasta izravno se utječe na intertemporalnu supstituciju potrošnje mehanizmima zaduživanja i posuđivanja zbog promjena u kamatnim stopama.

Upravo promjene u kamatnim stopama kao odgovor na visoke stope inflacije mogu imati dvosmjerne učinke na mirovinske fondove; s jedne strane mogu dovesti do rasta prinosa na nova ulaganja općenito u obveznice, a s druge strane mogu dovesti do negativnih učinaka smanjenjem vrijednosti postojećih dugoročnih ulaganja. Ghanbarzadeh et al. (2024) raščlanili su makroekonomske varijable i fokus usmjerili prema ekonomskom rastu, deviznom tečaju, tržištu rada, inflaciji i kamatnim stopama. Fokus važnosti usmjeren je prema dugoročnim kamatnim stopama države i ključnoj kamatnoj stopi na bankovne depozite. Autori navode da ključna kamatna stopa bankovnih depozita utječe na tendenciju i smjer investiranja te da će rast kamatnih stopa na bankovne depozite dovesti do pada prihoda od ekonomskih aktivnosti fondova ograničavanjem investicijskih resursa. Promjene u kamatnim stopama na dugoročne obveznice države primarno će uzrokovati promjene u inflaciji, ekonomskom rastu i zaposlenosti, što će se sekundarno odraziti na imovinu mirovinskih fondova i obrasce potrošnje uzrokovane promjenama u potrebama socijalne države. De Nicolo et al. (2010) navode da niske razine kamatnih stopa povećavaju realne obveze mirovinskih fondova zbog manjih diskontnih stopa te ih tako motiviraju i tjeraju da potraže više razine prinosa u rizičnijim klasama imovine.

Povećanjem štednje, ulaganjem i stabilizacijom financijskih tržišta te poticanjem razvoja infrastrukture i financijske inkluzije mirovinski fondovi značajno utječu na ekonomski rast i povećanje realnog BDP-a. Njihov dugoročni pristup i stabilnost čine ih ključnim u održavanju ekonomskog zdravlja i razvoja. Ghanbarzadeh et al. (2024) navode da je ekonomski rast ključan u rastu investiranja i rastu zaposlenosti te će kao plod toga povećati resurse i smanjiti deficit u mirovinskim fondovima. Bijlsma et al. (2014) u provedenoj studiji na uzorku od 34 OECD države pružaju empirijske dokaze da veličina mirovinskih sustava značajno utječe na ekonomski rast, što pruža teorijsku podlogu da postoji dvosmjerna povezanost između imovine mirovinskih fondova i ekonomskog rasta države. Ekonomski ciklusi ekspanzije pozitivno utječu na prinose mirovinskih fondova, dok ekonomski ciklusi stagnacije, niskih stopa rasta ili prevelikih volatilnosti mogu negativno utjecati na ekonomsku aktivnost uložene imovine. Castañeda et al. (2021) navode da makroekonomska varijabla realnog BDP-a izravno utječe na zaposlenost, a time i na mirovinski sustav. Autori ističu da rast ekonomske aktivnosti može stvoriti dodatni raspoloživi dohodak za pojedinca i kućanstvo te tako izravno poticati na štednju u dobrovoljnim mirovinskim fondovima. Međutim, kako ekspanzija gospodarstva utječe na zaposlenost i realne plaće, tako zauzvrat ostavlja dvosmislen makroekonomski učinak na individualnu mirovinsku štednju. S jedne strane ekonomski rast može povećati zaposlenost i plaće, dok s druge strane novostvorena radna mjesta mogu biti slabo plaćena što može izravno utjecati na pad u imovini mirovinskih fondova. Beck i Levine (2004) smatraju da mirovinski fondovi mogu utjecati na ekonomski rast države putem svojih kanala, neovisno o učinku na nacionalnu štednju. Promjene na tržištu rada iz okvira fiskalne politike imaju poseban i značajan učinak na promjene unutar mirovinskog sustava i to primarno kroz četiri okvira; omjer zaposlenosti i nezaposlenosti, demografske promjene starenja stanovništva, stope participacije radne snage i plaće.

3. Metodologija i podaci

3.1 Podaci i izvor podataka

Fokus istraživanja je na kratkoročnim učincima prelijevanja makroekonomskih šokova putem odabranih egzogenih makroekonomskih varijabli povezanih s utjecajem na delta promjene unutar obveznih i dobrovoljnih mirovinskih fondova Hrvatske. Kako bi se ustanovili učinci šokova na smjerove u mirovinskim fondovima, primjenjuje se ekonometrijska metodologija temeljena na strukturnom VAR modelu i dekompoziciji varijance. U skladu s tim, studija je raspodijeljena u dva modela; prvi model sadržava prirodne logaritme ovisnih varijabli korisnika/štediša i vrijednosne imovine dobrovoljnih mirovinskih fondova.

Drugi model sadržava prirodne logaritme ovisnih varijabli korisnika i vrijednosne imovine obveznih mirovinskih fondova. Neovisne varijable unutar studije su prirodni logaritmi opće inflacije, dugoročne kamatne stope Hrvatske temeljene na EMU konvergencijskim kriterijima, ključne kamatne stope Europske središnje banke na glavne operacije refinanciranja i stopa nezaposlenosti promatrana kao nezaposlenost od ukupne raspoložive radne snage Hrvatske.

Za vremenski panel podataka upotrebljava se mjesečna baza od 2007:02 do 2024:09. Kvantitativni dio podataka prikupljen je iz različitih izvora poput Hrvatske agencije za nadzor financijskih usluga (Hanfa), Eurostata, Europske središnje banke (ESB), FRED-a, Državnog zavoda za statistiku (DZS) i Hrvatske narodne banke (HNB). Deskriptivni opisi varijabli i izvori korištenih baza prikazani su u Tablici 1.

Tablica 1. Deskriptivni opis varijabli i izvori podataka

<i>Varijabla</i>	<i>Opis</i>	<i>Izvor</i>
infl	Stopa opće inflacije, u postocima sezonski prilagođeno	Državni zavod za statistiku, Hrvatska narodna banka
ksddo	Kamatna stopa na dugoročne državne obveznice Hrvatske prema EMU konvergencijskim kriterijima, u postocima	Eurostat
ksgor	Ključna kamatna stopa Europske središnje banke (glavne operacije refinanciranja), u postocima	Europska središnja banka, FRED
nez	Stopa nezaposlenosti mjerena u udjelu raspoložive radne snage, u postocima, sezonski prilagođeno	Eurostat, Državni zavod za statistiku, Hrvatska narodna banka
dmfos	Korisnici/štediše u dobrovoljnim mirovinskim fondovima, sezonski prilagođeno, u postocima (m-o-m promjena)	Hrvatska agencija za nadzor financijskih usluga (Hanfa)
dmfim	Vrijednosna imovina u dobrovoljnim mirovinskim fondovima, sezonski prilagođeno, u postocima (m-o-m promjena)	Hrvatska agencija za nadzor financijskih usluga (Hanfa)
mirexos	Korisnici/štediše u obveznim mirovinskim fondovima (A, B, C), sezonski prilagođeno, u postocima (m-o-m promjena)	Hrvatska agencija za nadzor financijskih usluga (Hanfa)
mirexim	Vrijednosna imovina u obveznim mirovinskim fondovima, sezonski prilagođeno, u postocima (m-o-m promjena)	Hrvatska agencija za nadzor financijskih usluga (Hanfa)

Izvor: Izrada autora, 2024.

3.2 Ekonometrijska metodologija

Metodologija započinje testiranjem postojanja jediničnih korijena u vremenskim serijama, čime se testira stacionarnost u seriji. U studiji se primjenjuje prošireni Dickey-Fuller (ADF) test kako bi se preispitala stacionarnost vremenskih nizova. Modificirani ADF model u studiji prikazan je jednadžbom 1:

$$\Delta Lny_t = \alpha + \beta_t + \gamma Lny_{t-1} + \delta_1 \Delta Lny_{t-1} + \delta_2 \Delta Lny_{t-2} + \dots + \delta_i \Delta Lny_{t-i} + \varepsilon_t, \quad (1)$$

gdje su $\Delta Lny_t = Lny_t - Lny_{t-1}$ prva razlika vremenske serije Lny_t , β_t deterministički trend, γ koeficijent koji se testira (ukoliko je $\gamma = 0$ serija ima jedinični korijen, tj. nije stacionarna), a δ_i koeficijenti za i -tu zaostalu prvu razliku.

Primjenom vektorske autoregresije (VAR) utvrđuje se optimalna struktura pomaka u modelima. Modificirani multivarijantni VAR model s četiri ovisne varijable prikazan je pod 2:

$$\begin{aligned}
\Delta Lny_{1t} &= \alpha_{10} + \sum_{i=1}^p \alpha_{1i1} Lnx_{1,t-i} + \alpha_{1i2} Lnx_{2,t-i} + \alpha_{1i3} Lnx_{3,t-i} + \alpha_{1i4} Lnx_{4,t-i} + \alpha_{1i5} Lnx_{5,t-i} + \varepsilon_{1t} \\
\Delta Lny_{2t} &= \beta_{20} + \sum_{i=1}^p \beta_{2i1} Lnx_{1,t-i} + \beta_{2i2} Lnx_{2,t-i} + \beta_{2i3} Lnx_{3,t-i} + \beta_{2i4} Lnx_{4,t-i} + \beta_{2i5} Lnx_{5,t-i} + \varepsilon_{2t} \\
\Delta Lny_{3t} &= \gamma_{30} + \sum_{i=1}^p \gamma_{3i1} Lnx_{1,t-i} + \gamma_{3i2} Lnx_{2,t-i} + \gamma_{3i3} Lnx_{3,t-i} + \gamma_{3i4} Lnx_{4,t-i} + \gamma_{3i5} Lnx_{5,t-i} + \varepsilon_{3t} \\
\Delta Lny_{4t} &= \delta_{40} + \sum_{i=1}^p \delta_{4i1} Lnx_{1,t-i} + \delta_{4i2} Lnx_{2,t-i} + \delta_{4i3} Lnx_{3,t-i} + \delta_{4i4} Lnx_{4,t-i} + \delta_{4i5} Lnx_{5,t-i} + \varepsilon_{4t},
\end{aligned} \tag{2}$$

gdje su Lny_{it} prirodni logaritmi i -te ovisne varijable u trenutku t , Lnx_{it} prirodni logaritmi i -te neovisne varijable u trenutku t , α , β , γ , δ su koeficijenti pomaka, a ε_{it} pogreška u modelima. Shodno tome, slijedi da je modificirani VAR model prema studiji zapravo:

$$\begin{aligned}
\Delta Lndmfos_{1t} &= \alpha_{10} + \sum_{i=1}^p \alpha_{1i1} Lninfl_{1,t-i} + \alpha_{1i2} Lnksddo_{2,t-i} + \alpha_{1i3} Lnksgor_{3,t-i} + \alpha_{1i4} Lnnez_{4,t-i} \\
&\quad + \alpha_{1i5} Lndmfim_{5,t-i} + \varepsilon_{1t} \\
\Delta Lndmfim_{2t} &= \beta_{20} + \sum_{i=1}^p \beta_{2i1} Lninfl_{1,t-i} + \beta_{2i2} Lnksddo_{2,t-i} + \beta_{2i3} Lnksgor_{3,t-i} \\
&\quad + \beta_{2i4} Lnnez_{4,t-i} + \beta_{2i5} Lndmfos_{5,t-i} + \varepsilon_{2t} \\
\Delta Lnmirexos_{3t} &= \gamma_{30} + \sum_{i=1}^p \gamma_{3i1} Lninfl_{1,t-i} + \gamma_{3i2} Lnksddo_{2,t-i} + \gamma_{3i3} Lnksgor_{3,t-i} \\
&\quad + \gamma_{3i4} Lnnez_{4,t-i} + \gamma_{3i5} Lnmirexim_{5,t-i} + \varepsilon_{3t} \\
\Delta Lnmirexim_{4t} &= \delta_{40} + \sum_{i=1}^p \delta_{4i1} Lninfl_{1,t-i} + \delta_{4i2} Lnksddo_{2,t-i} + \delta_{4i3} Lnksgor_{3,t-i} \\
&\quad + \delta_{4i4} Lnnez_{4,t-i} + \delta_{4i5} Lnmirexos_{5,t-i} + \varepsilon_{4t}.
\end{aligned}$$

Nadalje, za utvrđivanje učinaka strukturnih šokova i prelijevanja među varijablama u modelima primjenjuje se strukturni VAR model. Uhlig (2005) razvija metodu za identifikaciju strukturnih šokova unutar SVAR modela bez oslanjanja na restriktivne a priori pretpostavke. To omogućuje fleksibilniju analizu realnih učinaka šokova monetarne politike. U jednostavnom obliku, SVAR model u studiji je prikazan jednačom 3:

$$\alpha_0 Lny_t = \alpha_1 Lny_{t-1} + \delta Lnx_t + \mu_t, \tag{3}$$

gdje je $Lny_t = \begin{pmatrix} Lndmfos_t \\ Lndmfim_t \\ Lnmirexos_t \\ Lnmirexim_t \end{pmatrix}$ vektor ovisnih varijabli po modelima, a $Ln x_t = \begin{pmatrix} Lninfl_t \\ Lnksddo_t \\ Lnksgor_t \\ Lnnez_t \\ Lndmfos_t \\ Lndmfim_t \\ Lnmirexos_t \\ Lnmirexim_t \end{pmatrix}$

vektor neovisnih varijabli koji se ponašaju različito ovisno o svojim povezanim modelima, α_0 matrica kontemporarnih odnosa u modeliranju trenutačnih međusobnih utjecaja ovisnih varijabli, δ matrica koeficijenata koja modelira utjecaj neovisnih varijabli, α_1 matrica koeficijenata za zaostale vrijednosti varijabli, μ_t vektor strukturnih šokova. Slijedi da je strukturni VAR model s impulsnim odzivom (šokom) u kratkom roku prema studiji:

$$\begin{aligned} \Delta Lndmfos_t = & \alpha_{10} + \alpha_{11}Lninfl_t + \alpha_{12}Lnksddo_t + \alpha_{13}Lnksgor_t + \alpha_{14}Lnnez_t + \alpha_{15}Lndmfim_t \\ & + \beta_{11}Lndmfos_{t-1} + \beta_{12}Lninfl_{t-1} + \beta_{13}Lnksddo_{t-1} + \beta_{14}Lnksgor_{t-1} \\ & + \beta_{15}Lnnez_{t-1} + \beta_{16}Lndmfim_{t-1} + \mu_{1t}, \end{aligned}$$

$$\begin{aligned} \Delta Lndmfim_t = & \gamma_{20} + \gamma_{21}Lninfl_t + \gamma_{22}Lnksddo_t + \gamma_{23}Lnksgor_t + \gamma_{24}Lnnez_t + \gamma_{25}Lndmfos_t \\ & + \delta_{21}Lndmfim_{t-1} + \delta_{22}Lninfl_{t-1} + \delta_{23}Lnksddo_{t-1} + \delta_{24}Lnksgor_{t-1} \\ & + \delta_{25}Lnnez_{t-1} + \delta_{26}Lndmfos_{t-1} + \mu_{2t}, \end{aligned}$$

$$\begin{aligned} \Delta Lnmirexos_t = & \zeta_{30} + \zeta_{31}Lninfl_t + \zeta_{32}Lnksddo_t + \zeta_{33}Lnksgor_t + \zeta_{34}Lnnez_t + \zeta_{35}Lnmirexim_t \\ & + \eta_{31}Lnmirexos_{t-1} + \eta_{32}Lninfl_{t-1} + \eta_{33}Lnksddo_{t-1} + \eta_{34}Lnksgor_{t-1} \\ & + \eta_{35}Lnnez_{t-1} + \eta_{36}Lnmirexim_{t-1} + \mu_{3t}, \end{aligned}$$

$$\begin{aligned} \Delta Lnmirexim_t = & \theta_{40} + \theta_{41}Lninfl_t + \theta_{42}Lnksddo_t + \theta_{43}Lnksgor_t + \theta_{44}Lnnez_t + \theta_{45}Lnmirexos_t \\ & + \lambda_{41}Lnmirexim_{t-1} + \lambda_{42}Lninfl_{t-1} + \lambda_{43}Lnksddo_{t-1} + \lambda_{44}Lnksgor_{t-1} \\ & + \lambda_{45}Lnnez_{t-1} + \lambda_{46}Lnmirexos_{t-1} + \mu_{4t} \end{aligned}$$

4. Rezultati

4.1 Test jediničnog korijena

Prošireni Dickey-Fuller (ADF) test pokazuje da su varijable mješovitog karaktera, to jest dio varijabli zahtijeva primjenu prve diferencije s obzirom na njihovu nestacionarnost, a dio varijabli ne zahtijeva nikakvo diferenciranje s obzirom na njihovu stacionarnost u nultom pomaku. Shodno tome, makroekonomske varijable opće inflacije, kamatne stope na dugoročne državne obveznice, referentne kamatne stope ESB-a i stope nezaposlenosti zahtijevaju primjenu diferenciranja kako bi se potvrdila njihova stacionarnost, dok varijable korisnika i vrijednosti imovine kod obveznih i dobrovoljnih mirovinskih fondova ne zahtijevaju nikakvo diferenciranje kako bi se potvrdila njihova stacionarnost. Tablica 2. pokazuje strukturu varijabli koje su veće od signifikantno značajne mjere u testu (5 %), čime se nulta hipoteza odbacuje. Model je korišten presretanjem i Akaike kriterijem (AIC) s baznim i maksimalnim brojem odmakom od 14 razdoblja.

Tablica 2. Rezultati proširenog DF testa

Varijabla	I(0)		I(1)		Odluka
	t-test	p-vrijednost	t-test	p-vrijednost	
<i>Lninfl</i>	(2,47)	0,1253	(3,72)	0,0045	I(1)
<i>Lnksddo</i>	(2,04)	0,2702	(6,21)	0,0000	I(1)
<i>Lnksgor</i>	(2,08)	0,2515	(4,04)	0,0015	I(1)
<i>Lnnez</i>	0,23	0,9742	(6,87)	0,0000	I(1)
<i>Lndmfos</i>	(3,96)	0,0020			I(0)
<i>Lndmfim</i>	(13,36)	0,0000			I(0)
<i>Ln mirexos</i>	(7,45)	0,0000			I(0)
<i>Ln mirexim</i>	(13,00)	0,0000			I(0)

Izvor: Izrada autora, 2024., EViews 12

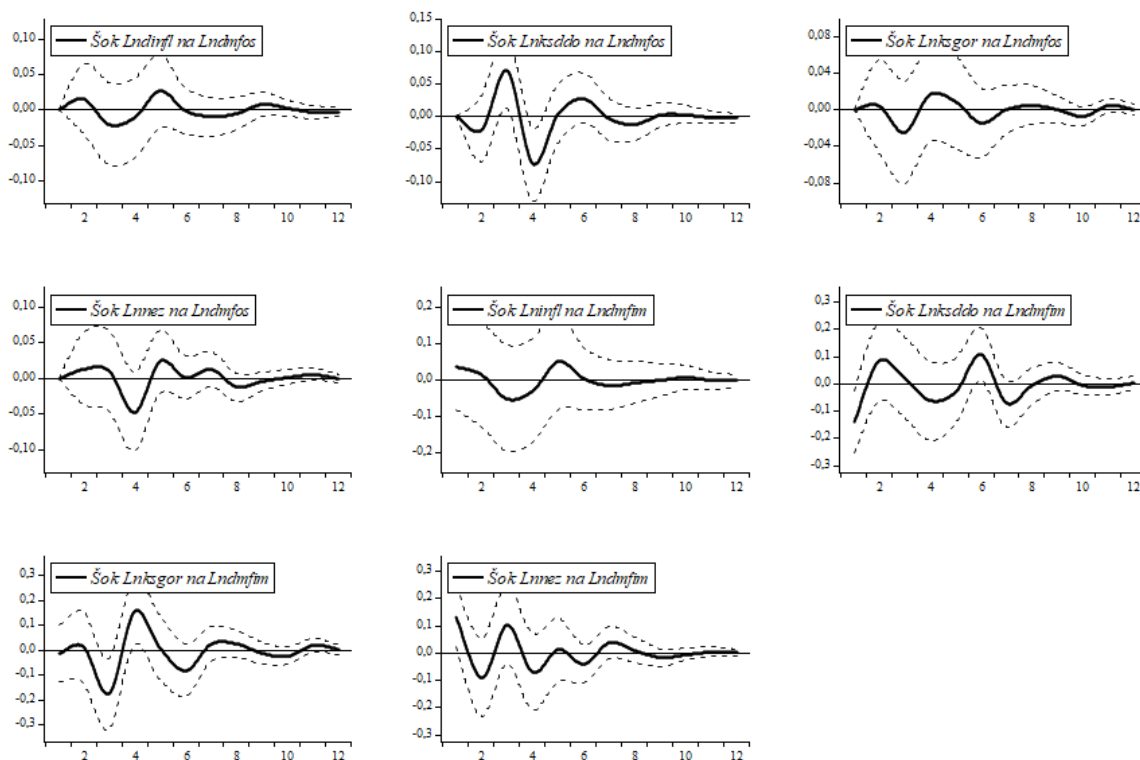
4.2 Strukturni VAR model i makroekonomski šok

Implementacija SVAR testa provedena je primjenom Akaike kriterija kao optimalnog kriterija u analizi pomaka za strukturne VAR modele. Rezultati VAR testa prvotno upućuju na pomak od tri razdoblja kao optimalni pomak u svim modelima. Grafikon 1. pokazuje reakcije $\Delta Lndmfos$ i $\Delta Lndmfim$ na impulsne šokove neovisnih makroekonomskih varijabli u prvom modelu. U konkretnom slučaju, šok na temelju strukturnog VAR modela određenje je kratkog roka (vremenskog presjeka do najviše 12 mjeseci) te upućuje na smjer kretanja neovisnih varijabli i njihova posljedičnog utjecaja na $\Delta Lndmfos$ i $\Delta Lndmfim$ prema jednoj standardnoj devijaciji. Promatranjem oba modela, mogu se zaključiti tri stvari: prvo, kratkotrajni šokovi imaju značajne učinke u vremenskim presjecima od trećeg do devetog mjeseca (kroz drugi i treći kvartal u godini), što upućuje na to kako je i za kratkoročne šokove potreban određeni ciklus da se odraze na putanju korisnika i eroziju vrijednosti njihovih uplata. Drugo, isprekidane linije u modelima pokazuju kako su mnogi kratkoročni šokovi i njihovi učinci relativno statistički značajni. Ta značajnost je odraz kako na svaki postotni poen šoka, promjene u deltama mogu se kretati na razinama od -1,2 do + 1,4 p.p. Treće, varijable u modelima pokazuju kako šokovi potencijalno nemaju nikakve učinke u srednje i dugom roku (razdoblja dulja od 12 mjeseci) s obzirom na to da se povratak u ekvilibrij događa u razdoblju do 12 mjeseci.

To pokazuje kako su šokovi promjena u makroekonomskim kretanjima na mirovinske fondove u najvećoj mjeri kratkoročnog stupnja, dok se mirovinskim fondovima i njihovim investicijskim strategijama u srednjem i dugom roku ipak daje fleksibilnost za prilagodbu i diversifikaciju portfelja za akumulaciju većih razina prinosa.

Prvi model pokazuje reakciju u promjeni broja štediša kod otvorenih dobrovoljnih mirovinskih fondova ($\Delta Lndmfos$) na promjene neovisnih makroekonomskih varijabli. Najznačajniji učinak u promjeni delte ostavlja šok promjena kod kamatne stope na dugoročne državne obveznice. Na Grafikonu 1. vidi se kako putanja broja štediša prvotno opada kao reakcija na šok porasta kamatne stope na obveznice Republike Hrvatske, nakon toga putanja vrlo brzo raste pa ponovno opada. Fluktuacije u vremenskim presjecima kreću se od prvog do osmog mjeseca u modelu. Takvi rezultati u skladu su s očekivanjima s obzirom na to kako, u kratkom roku, šok porasta kamatnih stopa na dugoročne državne obveznice uglavnom

smanjuje privlačnost u otvorenom dobrovoljnom mirovinskom fondu uslijed posljedičnog pada raspoloživog dohotka zbog većeg troška zaduživanja i opće ekonomske nesigurnosti, ali taj negativni šok nije trajni. Kod porasta kamatnih stopa na obveznice cijene postojećih obveznica u portfelju fonda opadaju, dok vrijednost novih i budućih obveznica raste. U kratkom roku to uvelike utječe na preferenciju postojećih i novih korisnika jer takve fondove kratkotrajni šok čini manje privlačnim. Međutim, stabilnost mirovinskih fondova i njihovih investicijskih strategija u dugom roku ključni su za održavanje povjerenja postojećih korisnika/štediša uz privlačenje novih.



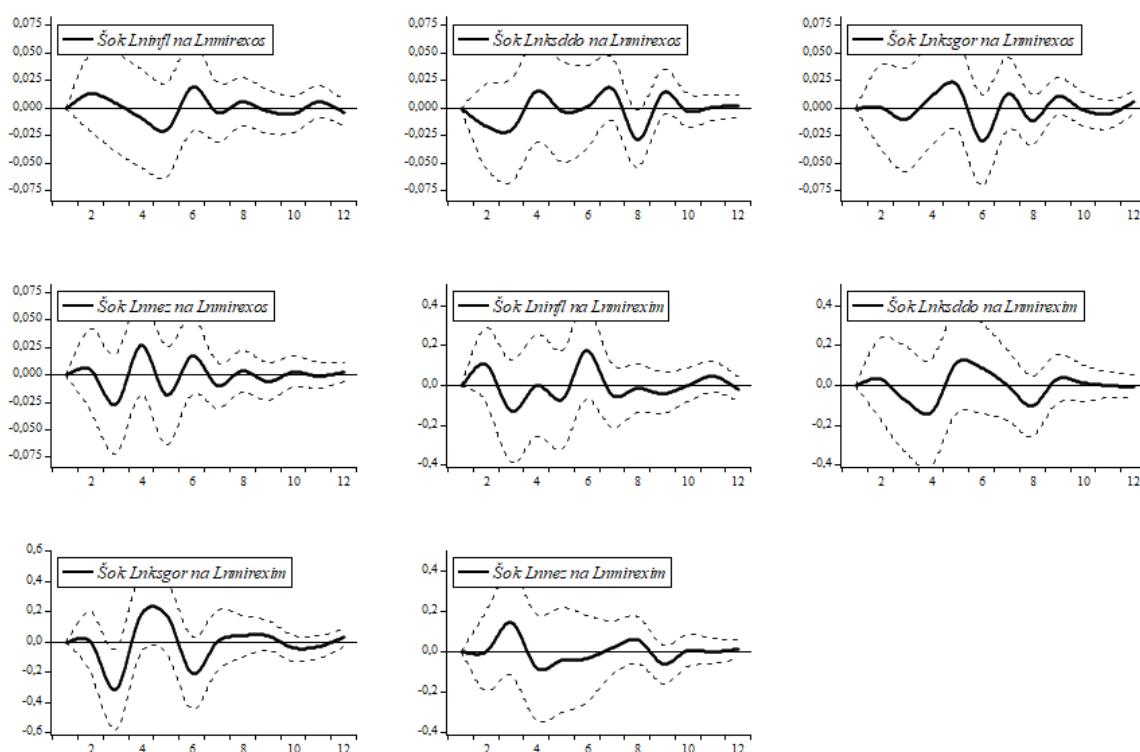
Grafikon 1. Učinci kratkotrajnih šok-promjena na putanju štediša i vrijednosnu imovinu dobrovoljnih mirovinskih fondova ($\Delta Lndmfos$, $\Delta Lndmfim$)

Izvor: Izrada autora, 2024., EViews 12

Treba istaknuti kako reakcije korisnika/štediša na šok porasta kamatne stope na obveznice u konačnici mogu varirati ovisno o individualnim preferencijama, sklonostima riziku, trenutačnim financijskim mogućnostima, dugoročnim planovima štednje, poticajima države itd. Kod šok reakcije u vrijednosti uplata korisnika (imovini otvorenih fondova, $\Delta Lndmfim$) vidljivo je da najznačajniji učinak u promjeni delte ostavljaju obje kamatne stope i nezaposlenost, dok inflacija posljedično nema gotovo nikakav statistički značajan impuls. Važno je istaknuti da s obzirom na mirovinski sustav Hrvatske, utjecaji šokova na imovinu otvorenih dobrovoljnih mirovinskih fondova mogu imati složene impulse jer ponajviše ovise o ponašanju korisnika/štediša, trenutačnim ekonomskim uvjetima i posljedično očekivanjima od realnih prinosa. Na grafikonu 1. vidljivo je da se rast kamatnih stopa negativno odražava i na samu vrijednost imovine otvorenih dobrovoljnih mirovinskih fondova. Prethodno je istaknuto da se porast kamatne stope na dugoročne državne obveznice negativno odražava na putanju korisnika jer smanjuje vrijednost postojećih obveznica u portfelju, negativno se odražava na prinose fondova, povećava privlačnost u alternativnim investiranjima i destimulira korisnike. Međutim, ovdje se može vidjeti da šok porasta referentne kamatne stope ESB-a u vremenskom presjeku ostavlja ponešto

snažniji negativan učinak na imovinu otvorenih fondova nego kamatna stopa na obveznice (podizanje referentne kamatne stope od postotnog poena može dovesti do pada vrijednosti imovine u fondu do -0,4 p.p.). Naime, porast ključne kamatne stope Europske središnje banke uglavnom znači i veće prinose na štednju i shodno tome nižu privlačnost otvorenih dobrovoljnih mirovinskih fondova kao dugoročnih opcija, što posljedično može usporiti priljev postojećih i novih uplata. S obzirom na to da Hrvatska više nema samostalnu monetarnu politiku, svaki porast referentne kamatne stope ESB-a izravno utječe na cjelokupnu opću likvidnost u eurozoni i uvjete kreditiranja. Smanjena likvidnost građana izravno znači i smanjenu sklonost štednji unutar otvorenih dobrovoljnih mirovinskih fondova jer izravno utječe na smanjeni raspoloživi dohodak. Međutim, ako su prevladavajuća razdoblja ekspanzivnih monetarnih politika, onda smanjenje kamatnih stopa na tržištu posljedično može dovesti do porasta vrijednosti obveznica i dionica, čime se izravno vrši pritisak na porast ukupne vrijednosti imovine fondova. Nadalje, prvotni šok u porastu nezaposlenosti neočekivano se pozitivno odražava na imovinu otvorenih dobrovoljnih mirovinskih fondova, uz kontinuirane pozitivne i negativne oscilacije do osmog mjeseca. Odraž šoka pokazuje da se reakcija na imovinu otvorenih fondova negativno odražava tek od drugog mjeseca jer viša stopa nezaposlenosti posljedično znači i negativan utjecaj na raspoloživi dohodak, čime se vrši koncept istiskivanja mogućnosti za štednju. Dugoročni učinci mogu biti ponešto različiti. Ako nezaposlenost kontinuirano raste i traje dulje, moglo bi doći do dodatnih prilagodbi u ponašanju štednje i investicija s obzirom na prilagođavanje raspoloživog dohotka novonastalim situacijama.

Grafikon 2. pokazuje reakcije broja korisnika obveznih MF ($\Delta Lnmirexos$) i imovinsku vrijednost uplata mirovina ($\Delta Lnmirexim$) na šok promjene u neovisnim makrovarijablama, s time da se, kao i u prethodnom modelu, $\Delta Lnmirexos$ i $\Delta Lnmirexim$ ponašaju kao ovisne i neovisne varijable.



Grafikon 2. Učinci kratkotrajnih šok-promjena na putanju umirovljenika i vrijednosnu imovinu dobrovoljnih mirovinskih fondova ($\Delta Lnmirexos$, $\Delta Lnmirexim$)

Izvor: Izrada autora, 2024., EViews 12

Rezultati upućuju na dvije ključne stvari: prvo, kratkoročne šok promjene očekivano nemaju nikakve statistički značajne reakcije na putanju korisnika u obveznim mirovinskim fondovima s obzirom na zakonsku podložnost obveznog sudjelovanja svakog radno-aktivnog stanovnika u strukturi obveznih mirovinskih fondova. Drugo, sve neovisne makrovarijable u modelu ostavljaju statistički značajne reakcije na imovinsku vrijednost obveznih mirovinskih fondova, uz izraženije impulse opće inflacije i referentne kamatne stope ESB-a. Šok u porastu opće inflacije i referentne kamatne stope ima pozitivnu reakciju na imovinu obveznih mirovinskih fondova u baznom presjeku do drugog mjeseca, dok se od trećeg mjeseca produbljuje negativni jaz šoka. To navodi na očekivani zaključak da porast opće inflacije smanjuje realnu vrijednost prinosa obveznih mirovinskih fondova nakon određenog (kratkog) vremenskog ciklusa, dok porast referentne kamatne stope na tržištu posljedično i za obvezne mirovinske fondove znači smanjenje vrijednosti postojećih obveznica u portfelju. Ekonomska teorija nalaže da rast inflacije i kamatnih stopa obično negativno utječe na vrijednost imovine obveznih mirovinskih fondova jer porast kamatnih stopa na tržištu zbog suzbijanja visokih razina inflacije uobičajeno uzrokuje pad vrijednosti imovine fondova. No simetrično prelijevanje šokova inflacije i kamatnih stopa može se povezati s dva specifična i konkretna zaključka investicijske prirode uzrokovane makroekonomskim promjenama.

Diversifikacija portfelja i prilagodba investicijskih strategija temeljena na makroekonomskim situacijama i očekivanjima ključni su investicijski mehanizmi koji mogu utjecati na porast imovine fondova čak i u uvjetima rastućih kamatnih stopa i inflacije. Merton (1983) odavno ističe važnost inflacije i kamatnih stopa kao ključnih makroekonomskih varijabli pri diversifikaciji portfelja. Uvjeti prelijevanja šokova inflacije na šokove rasta kamatnih stopa mogu dovesti do različitih učinaka na različite vrijednosnice u portfeljima mirovinskih fondova. Ako su fondovi kvalitetno diversificirani, onda pozitivni učinci na jednu vrstu vrijednosnice, primjerice većom alokacijom i izloženosti dionicama, mogu nadmašiti negativne učinke na drugu vrijednosnicu, što će rezultirati neto pozitivnim učinkom na ukupnu vrijednost portfelja. S obzirom na to da su obvezni mirovinski fondovi izloženiji obveznicama od dobrovoljnih mirovinskih fondova, usporedbom grafikona 1. i grafikona 2. vidljivo je kako je jaz šoka referentne kamatne stope ESB-a na vrijednost imovine obveznih mirovinskih fondova ponešto dublji od jaza šoka dobrovoljnih mirovinskih fondova, dok je s druge strane jaz šoka kamatne stope na dugoročne državne obveznice Hrvatske dublji kod dobrovoljnih nego kod obveznih mirovinskih fondova. To pokazuje da postoji inverzan odnos u prelijevanju kratkoročnih šokova u kamatnim stopama i njihovoj snazi utjecaja na imovinu obveznih i dobrovoljnih mirovinskih fondova. Obvezni mirovinski fondovi u Hrvatskoj značajan dio svoje imovine uglavnom ulažu u domaće državne obveznice zbog njihove sigurnosti, stabilnosti prinosa i regulatornih odredbi, dok s druge strane dobrovoljni mirovinski fondovi uglavnom imaju fleksibilniju investicijsku strategiju, što omogućuje širu diversifikaciju u dionice i korporativne obveznice (ili međunarodne). To je jedan od ključnih razloga zašto se svaki šok promjene u kamatnim stopama asimetrično manifestira u okviru obveznih i dobrovoljnih mirovinskih fondova. Nadalje, iako kratkoročni šok u porastu nezaposlenosti nema nikakve statistički značajne reakcije kod $\Delta \text{Ln} \text{mirexos}$ i $\Delta \text{Ln} \text{mirexim}$, njezin utjecaj u širem kontekstu ne može se zanemariti. Porast nezaposlenosti uzrokuje pad zaposlenosti te shodno tome i pad broja zaposlenih osoba koje uplaćuju doprinose u obvezne fondove, što se negativno odražava u jazu priljeva novih novčanih sredstava. Dakle, kratkoročni šokovi u nezaposlenosti mogu uzrokovati brze promjene u smjeru postojećih i novih korisnika, ali i kod priljeva doprinosa. U vremenskim presjecima srednjeg roka i prema dugom roku (razdoblja dulja od 12 mjeseci), takvi šokovi mogu dovesti do trajnijih promjena unutar mirovinskog sustava. Zaključno, kratkotrajni šokovi inflacije, kamatnih stopa i nezaposlenosti u skladu su s ekonomskom teorijom s obzirom na to da sve tri makrovarijable mogu imati simetrične i asimetrične učinke na mirovinske fondove, ali to uvelike ovisi o tržištu, strukturi portfelja i prilagodbi investicijskih strategija fondova.

S obzirom na to da funkcija impulsnih šokova iz strukturnog VAR modela pruža konkretne informacije o učincima prelijevanja egzogenih makroekonomskih šokova na ovisne varijable u modelima, dekompozicija varijance pokazuje u kojoj mjeri su ti šokovi odgovorni za pogreške u predviđanjima ovisnih varijabli u vremenskom presjeku kratkog roka. Promatranjem svih modela vidi se da promjene u monetarnoj politici u okviru kamatnih stopa imaju najvažnije determinante varijabilnosti u okvirima dobrovoljnih mirovinskih fondova, uz relativnu značajnost i kod vrijednosne imovine kod obveznih mirovinskih fondova. Tablica 3. pokazuje da snaga kratkoročnih šokova iz okvira restriktivne monetarne politike u najvećoj mjeri objašnjava endogene učinke na štedište i imovinu dobrovoljnih mirovinskih fondova. Shodno tome, promjena delte u monetarnoj politici i egzogeni učinci porasta kamatne stope na dugoročne državne obveznice Hrvatske na putanju štediša unutar dobrovoljnih mirovinskih fondova pokazuju varijacije koje se kreću 0 – 6,2 % u vremenskom presjeku od prvog mjeseca do jedne godine. Kod imovine dobrovoljnih mirovinskih fondova vidljive su snažnije reakcije u odnosu na promjene u monetarnoj politici. Tako promjene u kamatnoj stopi na dugoročne državne obveznice Hrvatske objašnjavaju raspon varijacije 2,79 – 4,12 %, promjene u referentnoj kamatnoj stopi na glavne operacije refinanciranja objašnjava varijaciju 0 – 5,34 %, a promjene u nezaposlenosti 2,61 – 3,81 %. Promjene u referentnoj kamatnoj stopi ESB-a u većoj mjeri uzrokuje prelijevanje šoka u vrijednosnoj strukturi imovine dobrovoljnih mirovinskih fondova (i obveznih mirovinskih fondova), nego primjerice promjene u kamatnoj stopi na dugoročne državne obveznice. To znači da se svaka oscilacija u promjeni monetarne politike ESB-a značajno odražava tek od trećeg mjeseca, dok se svaka promjena u kamatnoj stopi obveznice Hrvatskoj odražava već od prvog mjeseca, ali učinak šoka u promjeni kamatne stope ESB-a je puno snažniji i dulji. Učinci kratkoročnih šokova na vrijednost imovine obveznih mirovinskih fondova manifestiraju se monetarnom politikom u okviru ekonomske teorije. Naime, promjene u monetarnoj politici osjetno će rezultirati promjenama u imovinskoj strukturi obveznih mirovinskih fondova. Prvi razlog je što podizanje referentne kamatne stope ESB-a posljedično znači suzbijanje visokih i ustaljenih razina inflacije, čime se vrši negativan pritisak na imovinu/uplate korisnika obveznih mirovinskih fondova.

Struktura mirovinskih fondova u Hrvatskoj, konkretno kroz A, B, C kategorije i investicijske strategije mirovinskih društava, zakonski je vezana uz značajne udjele imovine u obveznicama. Porast referentne kamatne stope ESB-a znači i porast prinosa na nove obveznice, ali i pad vrijednosti postojećih obveznica unutar portfelja. To je zbog inverznog odnosa kamatnih stopa i obveznica jer sa svakim porastom kamatne stope ESB-a pada vrijednost postojećih obveznica. Dakle, ukupna vrijednost imovine mirovinskih fondova u ovom slučaju može se promatrati s aspekta uplata korisnika i prinosa fondova. U kratkom roku to znači da stupanj šoka u promjeni delte referentne kamatne stope može biti značajno niži ili viši od okvirnih varijacija unutar ovoga modela (0 – 5,9 %), a o tome uvelike ovisi kolika je izloženost mirovinskog fonda u obveznicama. Ako mirovinski fond ima velik udio imovine u postojećim obveznicama, svaki porast referentne kamatne stope smanjit će vrijednost imovine u portfelju. To znači da, u kratkom roku, vrijednost uplata korisnika vrijedi manje upravo zbog niže cijene obveznica. Međutim, u srednjem i dugom roku rast referentne kamatne stope može biti dobar za putanju pada učinaka šokova s obzirom na to da šok opada prema svojoj baznoj vrijednosti jer daje veću fleksibilnost mirovinskim fondovima da investiraju u nove obveznice s potencijalno većim prinosima. Drugi razlog je inflacija i posljedično smanjenje kupovne moći. S obzirom na relativno visoku izloženost mirovinskih fondova obveznicama (ovisno o kojoj kategoriji je riječ), ostvareni prinosi fonda u uvjetima visokih i temporalnih razina inflacije rijetko nadoknađuju i/ili premašuju inflaciju, što dovodi do realnog gubitka vrijednosti uplata.

Tablica 3. Rezultati dekompozicije varijance (prelijevanje kratkotrajnog šoka)

Varijabla	Razdoblje (mjeseci)	Makroekonomski šok					
		$\Delta \ln dmfos$	$\Delta \ln dmfim$	$\Delta \ln infl$	$\Delta \ln ksddo$	$\Delta \ln ksgor$	$\Delta \ln nez$
$\Delta \ln dmfos$	1	100,00	0,00	0,00	0,00	0,00	0,00
	3	93,33	2,66	0,37	3,08	0,38	0,17
	6	88,15	2,60	0,80	6,14	0,66	1,65
	12	87,66	2,69	0,91	6,20	0,71	1,83
$\Delta \ln dmfim$		$\Delta \ln dmfim$	$\Delta \ln dmfos$	$\Delta \ln infl$	$\Delta \ln ksddo$	$\Delta \ln ksgor$	$\Delta \ln nez$
	1	92,78	1,62	0,18	2,79	0,02	2,61
	3	89,05	1,94	0,36	2,44	2,83	3,38
	6	83,49	3,33	0,63	3,66	5,20	3,68
$\Delta \ln dmirexos$		$\Delta \ln dmirexos$	$\Delta \ln dmirexim$	$\Delta \ln infl$	$\Delta \ln ksddo$	$\Delta \ln ksgor$	$\Delta \ln nez$
	1	100,00	0,00	0,00	0,00	0,00	0,00
	3	98,00	0,33	0,20	0,64	0,10	0,73
	6	94,31	0,39	0,96	0,87	1,45	2,01
$\Delta \ln dmirexim$		$\Delta \ln dmirexim$	$\Delta \ln dmirexos$	$\Delta \ln infl$	$\Delta \ln ksddo$	$\Delta \ln ksgor$	$\Delta \ln nez$
	1	98,85	1,15	0,00	0,00	0,00	0,00
	3	93,79	1,60	0,82	0,20	2,95	0,63
	6	88,67	1,67	1,73	1,31	5,80	0,83
	12	87,89	1,68	1,88	1,62	5,90	1,03

Izvor: Izrada autora, 2024., EViews 12

5. Zaključak

Studija je pokazala da su učinci prelijevanja šokova makrovarijabli na mirovinske fondove uglavnom statistički značajni u velikom broju neovisnih varijabli i njihovih utjecaja na ovisne u modelima. Za početak produbljenog jaza šoka potreban je određen vremenski ciklus (uglavnom tek od trećeg mjeseca) da se odrazi na putanju korisnika/štediša u dobrovoljnim mirovinskim fondovima te vrijednosti imovine i kod dobrovoljnih i kod obveznih mirovinskih fondova. Na svaki postotni poen šoka, promjene u deltama ovisnih varijabli u modelima mogu se kretati na razinama od -1,2 do +1,4 p.p., dok se u vremenskom presjeku do kraja jedne godine (kratki rok) očekuje brzi povratak u kratkoročni ekvilibrij. To navodi na činjenicu da nije relevantno zaključivati o eventualnom postojanju dugoročnijeg prelijevanja kratkotrajnih šokova na mirovinske fondove. Isto tako, studija je pokazala da različiti ekonomski ciklusi primarno iz okvira restriktivne monetarne politike uvelike heterogeno djeluju na strukturu mirovinskih fondova, što je i u skladu s ekonomskom teorijom.

Ciklus restriktivne monetarne politike u vidu porasta kamatnih stopa kvalitetnije i pozitivnije se odražava putem obveznih mirovinskih fondova unatoč suprotnosti očekivanja prema ekonomskoj teoriji jer dovodi do relativnog (iako statistički ne puno značajnog) porasta broja korisnika umirovljenika i stabilnosti imovine, posebice zbog mehanizma prilagodbe i diversifikacije ulaganja. Takav zaključak sugerira postojanje stabilizacijskih mehanizama koji ublažavaju negativne utjecaje šokova, održavajući stabilnost mirovinskih fondova u promjenjivim ekonomskim uvjetima. Shodno tome, rast kamatnih stopa u okviru ciklusa restriktivne politike uobičajeno ima negativan predznak učinaka na vrijednost obveznica i potražnju za njima kao investicijskom opcijom, vršeći tako izravan pritisak na smanjenje vrijednosti ukupne imovine fondova. No, od srednjeg prema dugom roku, rast kamatnih stopa može se

simetrično i pozitivno odraziti na imovinu kroz porast prinosa novih ulaganja i porast atraktivnosti drugih investicijskih opcija, poput dionica ili alternativnih ulaganja. Utjecaj restriktivne monetarne politike na dobrovoljne mirovinske fondove uvelike je asimetričan u odnosu na dobrovoljne mirovinske fondove jer dobrovoljni mirovinski fondovi reagiraju povećanim volatilnostima i kod putanje korisnika/štediša i kod imovinske vrijednosti fondova. Rast kamatnih stopa dovodi do pada ukupne vrijednosti imovine (uglavnom kroz pad vrijednosti postojećih obveznica u portfelju). Međutim, promatrajući kroz kratki rok, restriktivna monetarna politika može privremeno povećati vrijednost imovine u fondu zbog potencijalno viših razina prinosa na nove obveznice i druge vrijednosnice, uz uvjet da otvoreni dobrovoljni mirovinski fondovi uspiju diversificirati portfelj u skladu s trenutačnim tržišnim uvjetima. Zaključno, kratkoročni šokovi u općoj inflaciji, kamatnim stopama na dugoročne državne obveznice Hrvatske i stopi nezaposlenosti asimetrično utječu na obvezne i dobrovoljne mirovinske fondove.

Obvezni mirovinski fondovi u okviru svojih investicijskih strategija podložnosti stabilnijih ulaganja putem obveznica pokazuju manju volatilnost u putanji korisnika, dok su s druge strane osjetljiviji na promjene u vrijednosti imovine. Otvoreni dobrovoljni mirovinski fondovi sa svojom fleksibilnijom investicijskom strategijom imaju veću osjetljivost na šok promjene u kamatnim stopama i inflaciji. Treba istaknuti da u uvjetima visokih pritisaka inflacije, porasta kamatnih stopa na tržištu i porasta opće nezaposlenosti (iz okvira restriktivne monetarne politike), privlačnost u otvorenim dobrovoljnim mirovinskim fondovima ponajviše ovisi o visini raspoloživog osobnog dohotka pojedinca ili kućanstva, supstituciji proizvoda i usluga te ostvarenim realnim prinosima fondova. Takvi ugovori su isključivo fleksibilni jer ovise o trenutačnim mogućnostima individualnih uplata u taj tip štednje te se shodno tome i interne makroekonomske politike unutar mirovinskih fondova prilagođavaju. Sve to može se objasniti činjenicom da postoji kvalitetna prilagodba investicijskih strategija unutar fondova te diversifikacija portfelja ovisno o ciklusima u kojima se gospodarstvo nalazi. Takvi mehanizmi djelovanja mogu ublažiti i ublažavaju negativne učinke egzogenih makroekonomskih šokova, održavajući stabilnost i imovinsku vrijednost mirovinskih fondova čak i u uvjetima promjenjivih monetarnih politika.

Unatoč alternativnom pristupu problematike preispitivanjem učinaka prelijevanja kratkotrajnih šokova egzogenih makroekonomskih odrednica na mirovinski sustav, čime se ipak izravno popunjava postojeći istraživački jaz, ova studija sadrži i neka svoja ograničenja. Ta su ograničenja mahom izražena u ekspanziji modela s dodatnim makrovarijablama, posebice iz konteksta utjecaja fiskalne politike. Autor smatra da fiskalne varijable poput fiskalnog salda, javnog duga, javne potrošnje te poreznih olakšica i poticaja mogu pridonijeti proširenju još kvalitetnijeg shvaćanja kako i fiskalne odrednice u okviru svojih šok promjena djeluju na mirovinske fondove. Isto tako, u kontekstu preispitivanja šok-činaka na strukturu dobrovoljnih i mirovinskih fondova ključno je analizirati jesu li značajnije šok-promjene u monetarnim ili fiskalnim varijablama, koliki je njihov relativni doprinos u ukupnoj strukturi kratkotrajnih šokova te kako njihove promjene posljedično djeluju u okvirima ekspanzivnih i restriktivnih ciklusa monetarnih i fiskalnih politika. Sve to posljedično može dovesti do značajnijih znanstvenih rezultata u nastavku poboljšanja razvoja investicijskih strategija, prilagodbama trenutačnim tržišnim uvjetima i još većoj otpornosti makrobonitetnih politika s ciljem očuvanja mirovinskog dijela financijskog sustava.

Literatura:

- Beck, T., Levine, R. (2004) Stock markets, banks and growth: Panel evidence. *Journal of Banking & Finance*, vol. 28, issue 3, 423-442. Raspoloživo na: https://econpapers.repec.org/article/eeebfina/v_3a28_3ay_3a2004_3ai_3a3_3ap_3a423-442.htm
- Bijlsma, M., Van Ewijk, C., Haaijen, F. (2014) Economic Growth and Funded Pension Systems. Netspar Discussion Paper, No. 07/2014-030, Raspoloživo na: <http://dx.doi.org/10.2139/ssrn.2470544>
- Bruns, M., Piffer, M. (2022) US monetary policy is more powerful in recessions: A new approach to Smooth Transition Vector Autoregressions. Raspoloživo na: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3848067
- Castañeda, P., Castro, R., Fahnzyber, E., Medina, P. J., Villatoro, F. (2021) Saving for the future: Evaluating the sustainability and design of Pension Reserve Funds. *Pacific-Basin Finance Journal*, vol. 68. Raspoloživo na: <https://doi.org/10.1016/j.pacfin.2020.101335>
- De Nicolo, G., Dell'Ariccia, G., Laeven, L., Valencia, F. (2010) Monetary policy and bank risk taking., IMF Staff Position Note 10/09, International Monetary Fund. Raspoloživo na: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1654582
- Debortoli, D., Forni, M., Gambetti, L., Sala, L. (2020) Asymmetric Effects of Monetary Policy Easing and Tightening. *CEPR Discussion Papers* 15005. Raspoloživo na: <https://cepr.org/publications/dp15005>
- Ghanbarzadeh, M., Hozarmoghadam, N., Hamzeh, A. (2024) Evaluation of economic variables on pension fund performance of selected countries. *Journal of Mathematics and Modeling in Finance (JMMF)*, Vol. 4, No.1, Winter & Spring 2024. Raspoloživo na: https://jmmf.atu.ac.ir/article_17450_14008029fd35d4d38874e346bd0a1acb.pdf
- Kaplan, G., Moll, B., Violante, G.L. (2018) Monetary Policy According to HANK. *American Economic Review*, 108(3): 697-743. Raspoloživo na: <https://www.aeaweb.org/articles?id=10.1257/aer.20160042>
- Merton, C. R (1983) On Consumption Indexed Public Pension Plans. National Bureau of Economic Research (NBER), 259-290. Raspoloživo na: <https://www.nber.org/system/files/chapters/c6035/c6035.pdf>
- Santoro, E., Petrella, I., Pfajfar, D., Gaffeo, E. (2014) Loss aversion and the asymmetric transmission of monetary policy. *Journal of Monetary Economics* 68: 19–36. Raspoloživo na: <https://www.sciencedirect.com/science/article/abs/pii/S0304393214001159>
- Uhlig, H. (2005) What are the effects of monetary policy on output? Results from an agnostic identification procedure. *Journal of Monetary Economics*, vol. 52, 381-419. Raspoloživo na: <https://doi.org/10.1016/j.jmoneco.2004.05.007>

The Spillover Effects of Short-Term Shocks of Exogenous Macroeconomic Determinants on Pension Funds: Modelling on a sample of Croatia

LUKA BAŠIĆ

Juraj Dobrila University of Pula
Faculty of Economics and Tourism „Dr. Mijo Mirković“
Preradovićeva 1/1, 52100 Pula
Croatia

lukasolicc@gmail.com

ORCID iD: <https://orcid.org/0009-0008-5198-3218>

Abstract: The study examines the spillover effects of exogenous macroeconomic shocks on Croatia's pension system, focusing exclusively on the short-run (up to one year). The study's methodology is based on an alternative approach through structural VAR modeling and variance decomposition (shock variance determination) to assess the strength of short-run shocks. The results indicate heterogeneity and asymmetry in the effects of short-run shocks on contributor trends and the asset value of contributions in both mandatory and voluntary (open) pension funds. Accordingly, two key findings emerge from the results. First, there is a statistically significant correlation between the spillover effects of shocks in most independent variables on the dependent ones in the models, with a particular emphasis on interest rate shocks within restrictive monetary policy. A specific time cycle is generally required to deepen the negative gap caused by shocks, typically from the third month onwards, with each percentage point shock leading to delta changes ranging from -1.2 to +1.4 p.p. Second, the cycle of restrictive monetary policy through interest rate increases impacts the structure of contributors and the assets/contributions in mandatory and voluntary pension funds in a heterogeneous and asymmetric manner. In mandatory pension funds, the negative impact mainly affects assets, while in voluntary funds, the negative impact extends to both the user/contributor trends and the funds' asset values. The increase in interest rates under restrictive monetary policy leads to a decline in the value of existing bonds in fund portfolios due to the inverse relationship between interest rates and bond prices, which, in the short-run, results in a decrease in the funds' asset values. Over the long-run, this same monetary policy cycle is expected to yield higher returns on new bonds, stabilizing assets through portfolio diversification. Mandatory pension funds, within the framework of their investment strategies, show lower volatility in contributor trends but are more sensitive to changes in asset value. Open voluntary pension funds, with their more flexible investment strategies, exhibit greater sensitivity to shock-induced changes in interest rates and inflation.

Keywords: spillover shocks, short-run, exogenous macroeconomic determinants, restrictive monetary policy, pension funds, Croatia

JEL classification: C50, E20, E31, E43, E44, G23

Content marketing: Gender and age differences in generation Z

MATEA MATIĆ ŠOŠIĆ

Faculty of economics and business, University of Dubrovnik

Lapadska obala 7

Croatia

matea.matic@unidu.hr

ORCID iD: <https://orcid.org/0000-0003-2788-2472>

Izvorni znanstveni rad / *Original scientific paper*

UDK / UDC: 658.8:[316.774:004.7-053.6]=111

Primljeno / Received: 04. listopada 2024. / October 4th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 07. studenog 2024. / November 07th, 2024.

DOI: 10.15291/oec.4555

Abstract: There is a growing number of users who expect personalised information and experiences that meet their personal needs and preferences. Therefore, companies emphasise that creating valuable content through digital channels is a vital element for the success and reputation of companies which also creates greater value for their users. The objective of this research is to determine the differences between the age and gender of Generation Z in relation to attitudes towards content posted on Instagram. The sample contained of 311 Generation Z social media users who were surveyed between April and June 2024. Non-parametric statistical methods such as the Mann Whitney U-test and the Kruskal-Wallis H-test were used in this study. The results show that there are statistical differences between age and attitude towards Instagram content. The research results show that there are partial differences between gender and users' activities on Instagram, but not in their intention to follow content in the future. There are also statistical differences between time spent on Instagram and attitude towards Instagram content. The results of this study contribute to the theoretical background of the literature on social media content marketing and also provide an empirical contribution for companies creating customized social media content, especially on Instagram, for Generation Z.

Keywords: Digital environment, Content marketing, Demographic features, Instagram, Generation Z

JEL classification: M31

1. Introduction

Nowadays it is crucial that any content produced and distributed effectively and initially through a digital channel can improve communication between companies and users. Users are used to and expect free information and this is what content marketing must provide, i.e. digital content that satisfies users' needs. Content marketing needs to provide content that is personalised for each user, i.e. a content marketing tactic in the digital, fast-paced and information-driven world. According to Pulizzi (2012b), content marketing is a modern marketing paradigm with many long-term benefits, such as building brand loyalty by engaging the target audience with valuable content without the use of advertising techniques. It is not a new approach, but more and more companies are starting to take an interest in content marketing. According to Rowley (2008), content marketing can be defined as a management process in which a company identifies, analyses and satisfies customer demand in order to generate profits with

the help of content distributed through digital channels. The purpose of content marketing is to recognise, anticipate and satisfy the users' desires, leading to a higher profitability of the company or a better image in the digital environment. The goals of content marketing are therefore to create and distribute valuable, consistent and relevant content to attract and retain users (Content Marketing Institute, 2017) across a variety of platforms to drive engagement, customer value and measurable success for brands and companies (American Content Marketing Association, 2017). Content marketing is an additional way that companies are using to engage with and retain their users, rather than simply doing traditional advertising or providing information about new products and promotions that do not take their attention. Furthermore, Baer (2013) considers content marketing as the tool for companies to inform, educate or engage users as potential customers, resulting in better leads, sales or persuasion. Therefore, content marketing can be seen as one of the best strategies to drive user engagement by providing a compelling content.

Companies are increasingly turning to content marketing to replace interruptive advertising and draw more attention to their brand (Du Plessis 2015; Zahay 2014). Content marketing is often associated with publishing, native advertising, inbound marketing and storytelling (Du Plessis 2015; Holliman & Rowley 2014:270). Content marketing is ideal because it uses unobtrusive pulling rather than pushing techniques to engage consumers with branded content (Liu & Huang 2015). However, content marketing has gradually outgrown this definition. Many researchers such as Du Plessis (2015) and Pazeraite and Repoviene (2016) recognize the complexity of the content marketing process, which should be carefully managed, especially in the context of demographic characteristics. Therefore, the objective of this study is to determine the differences between the age and gender of Generation Z in relation to attitudes towards Instagram content.

In order to achieve the research objectives, the paper is divided into four sections. After the introduction, the theoretical background of content marketing is explained in the second section. The research methodology, data analysis and research findings are presented in the third section. Finally, the paper concludes with conclusions, suggestions for future studies and limitations arising from the study.

2. Literature review

A growing number of users expect companies to deliver personalized user experiences based on their needs and interests while providing a sense of independence and interdependence (Kee and Yazdanifard, 2015). They want companies to tailor their activities to their needs in order to maintain a positive user and shopping experience and create better engagement with the company, i.e. comprehensive individuality. Users are frequently go to social media sites to get valuable, relevant and up-to-date content such as articles, videos, blog posts and more. At the same time, they are looking for a high-quality and personalized experience when they search for content online (Seymour et al., 2014). Users tend to have more trust in companies who value their needs and interests.

Nowadays, companies are forced to take on the role of content producers to create a good relationship with users and keep their attention in order to maintain their business. Kilgour et al (2015) added that content marketing enables active user participation in creating and sharing content in the digital environment, which advertising alone could not. Baer (2013) considered content marketing as a means for companies to inform or entertain exciting and potential users, which can lead to profitable actions that result in more leads, sales and brand image. Wang and Chan-Olmsted (2020) emphasise the flexibility of content marketing in the context of production and distribution via various digital channels. Content marketing is also positioned as a practical, unobtrusive technique that requires marketers to generate original content so that users and followers of the brand can communicate more easily with the company while passing on positive electronic word of mouth (Barbosa et.al., 2023).

Content marketing has been characterised as an online marketing technique that promotes user-generated content (Steenburgh et al., 2011, Du Plessis, 2015a;). Du Plessis (2015a) identified six elements of content marketing based on the analytical review of 55 research articles to understand how content marketing can be successfully implemented. He offered six elements as the process of marketing content realisation: (1) medium element: the type of platform for the content; (2) strategic element: strategic approach to developing the content; (3) design element: the creation of the content; (4) intrinsic element: the way the content occurs; (5) communication element: the technique(s) used to deliver the content; and (6) follow-up element: the predicted consequences of the content.

Content strategy as an integral part of content marketing is the main component in the creation and implementation of content according to the target segment. Likewise, content marketing is linked to the creation of value in order to build a relationship between the user and the brand. Zerbini et al (2007) analyzed how creating value through content can significantly influence consumer buying behavior. In that terms, the prepared content needs to be shareable, easy to understand, incentive, easily accessible, absorbing for users. (Ahmet Andac et al, 2016

Although the creation of marketing content is directly related to the personality and habits of users, it can also cause changes in users' purchasing behavior through company activities aimed at profitability and building a positive image on social media (Cvirik et al., 2022; González-Padilla et al., 2023). Based on the above, Saura et al. (2021a) showed that there are three types of objectives for the development of marketing content in social networks: advertising goals, growth goals, and engagement increase goals (Farooq et al., 2022). According to studies by Chaithanapat et al., 2022; Ribeiro-Navarrete et al., 2021), greater user interactivity with the content placed on social networks leads to an increase in brand awareness as well as an increase in sales profits. Therefore, if the content is not of the required quality and is not directly tailored to the users' needs, users will not pay attention to it (Chopra et al., 2022). The effectiveness of the digital environment to measure, monitor and optimize strategies makes content marketing flexible and adapted to all types of target audiences (Sigurdsson et al., 2021). According to Holliman and Rowley (2014), content marketing generates and distributes effective and valuable content along with a combination of other digital channels to improve business and communication between companies and users. Ashley & Tuten, 2015 explained that liking, sharing, commenting and then sharing content with others, i.e. creating user-generated content, are activities that generate additional engagement. Providing relevant and engaging content to users on social media can significantly improve their satisfaction or impact on decision-making process. Therefore, the content created by companies on their social media platforms can positively influence user behaviour.

According to Kolter et al. (2009), demographic variables are related to consumers' needs and wants and can be crucial variables in determining the type of content in the digital environment. Therefore, demographic characteristics can play a key role in identifying user interests and preferences to create content tailored to users with similar demographic characteristics or preferences for the same content. It is desirable for companies to profile user behavior based on behavioural targeting such as demographic characteristics.

Thus, it should publish different content tailored to different user profiles such as women or men, younger or older users. Existing literature (McCloskey, 2006; Hernandez et al., 2011) recognized the limited technical literacy of older users as barrier to digital outreach. For example, younger people are more likely to engage with the content posted on social media platforms and have a stronger relation with brands, while older people tend not to. Gender influences users' brand engagement and purchasing behaviour. Men and women often react differently to content posted on social media (Lin et.al., 2019). Thus, women tend to be more active on social media (Khan, 2017) and are more likely to respond to posted content on social media platforms.

A study by Kim et al. (2021) found that valuable and engaging content on social media can increase customer satisfaction and loyalty. Therefore, users who spend significantly more time on social media are likely to be more inclined to engage in a particular activity or purchase products as a result of content the companies have created and posted.

Companies need to create content that informs and motivates their potential market in order to increase awareness or change the perception of the brand or company image. High-quality and personalized content has the task to motivate users to buy products and turn them into loyal customers and even encourage them to share their satisfaction with the products with other users. By publishing valuable content for the target audience by providing added value, content marketing can influence the user engagement and the buying process.

3. Methodology

The objective of this research is to identify differences between the age and gender of Generation Z in regards to the content on Instagram. Based on the results of the literature review, research questionnaire was created.

A questionnaire was aimed at Generation Z users who already use social media platforms. The research sample comprised 311 respondents. Generation Z is defined as people born in the mid-1990s, and this study includes Instagram users born between 1995 and 2010 (Suderman, 2016).

The sample is acceptable as many social media users are dominated by Generation Z. Survey questionnaires were distributed to respondents via Google forms which were shared on social media and via email.

The required data was collected between April and June 2024. The survey included 26 questions, some of which related to demographic data and the rest to habits and attitudes related to the use of Instagram. The questionnaire composed of two sections. The questions in first section related to the demographic characteristics of the respondents. The second section contained statements about the respondents' intentions and attitudes towards the content posted on Instagram. The second section of the questionnaire contained closed-ended questions on a Likert scale from 1 to 5, where 1 means for "strongly disagree" and 5 for "strongly agree".

The data was analyzed using the Mann-Whitney U test and the Kruskal-Wallis test with the Statistical Package for Social Science (SPSS 25).

4. Research results

The Mann-Whitney U-test is used to compare whether there is a difference in the dependent variable for two independent groups. It compares whether the distribution of the dependent variable is the same for the two groups and therefore comes from the same population. The test does not assume a specific distribution of the variables in one of the two groups.

The reason for using the Mann-Whitney U-test is that the independent variable (gender and age) formed of 2 groups (gender: "male"/"female", age: "18-24"/"25/29"). To achieve the U-statistic, ranks were used instead of means by ordering the values of from smallest to largest, observing from each group values, and then determining the sum of ranks for the values of each group [Emerson, 2023].

The Mann-Whitney U test was used to assess the significant differences of users in regards of demographic characteristics, gender and age. The test results of the mean ranks for each statement by gender are shown in Table 1.

Table 1. Mean ranks

	GENDER	N	MEAN RANK	SUM OF RANKS
I intend to follow content on Instagram in the future.	Male	150	152,18	22826,50
	Female	161	159,58	25689,50
Instagram content encourages me to do some activity on my profile.	Male	150	130,83	19624,00
	Female	161	179,45	28892,00
Instagram content encourages me to buy.	Male	150	125,84	18876,50
	Female	161	184,10	29639,50

Source: Research findings (N=311), 2024.

The following table shows the Mann Whitney test result for attitudes towards Instagram content in relation the gender of Generation Z.

Table 2. Mann Whitney U test - gender of Generation Z and attitudes towards Instagram content

	I intend to follow content on Instagram in the future.	Instagram content encourages me to do some activity on my profile.	Instagram content encourages me to buy.
Mann-Whitney U	11501,50	8299,00	7551,50
Wilcoxon W	22826,50	19624,00	18876,50
Z	-,764	-4,901	-5,893
Asymp. Sig. (2-tailed)	,445	,000	,000

Grouping Variable: GENDER

Source: Research findings (N=311), 2024.

Table 2 shows that there are significant differences in respondents' attitudes towards Instagram content in relation to respondents' gender that are less than $\alpha=0.05$, only for two statements. The significance for intention to follow Instagram content is 0.406 and higher than 0.05, which indicates that there is no statistically significant difference in the intention to follow Instagram content in the future in relation to the respondent's gender. In addition, the results in the table indicate that, there is a significant difference between variable gender and Instagram content encourages me to do some activity on my profile (Mann–Whitney U=8299,00; $p = 0.000$). The female will be more inclined to perform a certain activity on their profile based on the content provided on Instagram as the rank is 179,45 for females and 130,83 for males (Table 1). It is likely that women react more emotionally and sensitively to content on social media, making them more active on social media than men. Furthermore, the significance for purchase intent based on suggested content less than 0.05 (Mann–Whitney U = 7551,50, $p = 0.000$), it can be concluded that there is a significant difference in the purchase intentions established on Instagram content in relation to the gender of Generation Z. This is confirmed by Table 1 where the rank result is 184,10 for females and 125,84 for males. The results of the mean rank for attitudes towards Instagram content in relation to the age of respondents are shown in Table 3.

Table 3. Mean ranks

	AGE	N	MEAN RANK	SUM OF RANKS
I intend to follow content on Instagram in the future.	18-24	176	164,28	28913,50
	25-29	135	145,20	19602,50
Instagram content encourages me to do some activity on my profile.	18-24	176	179,41	31576,00
	25-29	135	125,48	16940,00
Instagram content encourages me to buy.	18-24	176	171,68	30215,50
	25-29	135	135,56	18300,50

Source: Research findings (N=311), 2024.

The results of the Mann Whitney test for attitudes towards Instagram content in relation to the age of the respondents are shown in Table 4.

Table 4. Mann Whitney U test - age of Generation Z and attitudes towards Instagram content

	I intend to follow content on Instagram in the future.	Instagram content encourages me to do some activity on my profile.	Instagram content encourages me to buy.
Mann-Whitney U	10422,50	7760,00	9120,50
Wilcoxon W	19602,50	16940,00	18300,50
Z	-1,959	-5,391	-3,624
Asymp. Sig. (2-tailed)	,050	,000	,000

Grouping Variable: AGE

Source: Research findings (N=311), 2024.

As for the content of the Instagram statement, as the Mann–Whitney results show, there are significant differences between the age and attitudes towards Instagram content statements. All p-values are less than the significance level of 5%, and it can be concluded that there is a significant age difference relating to the intention to follow Instagram content. For each statement (Table 3), younger Generation Z respondents ranked higher than older respondents. This result reveals that younger respondents are more inclined to follow and search for valuable and interesting content on Instagram in the future. Since the significance for activity intention based on suggested content is below 0.05 (Mann–Whitney U = 7760,00, $p = 0.000$), it can be outline that there is a statistically significant difference in purchase intentions based on Instagram content in relation to Generation Z age. In addition, younger respondents are likely to perform some activities such as liking or commenting on content posted on Instagram. When considering the age difference, it is clear that younger respondents are more likely to agree with the statement than older respondents, as the rank for younger is 179,41 and for older is 125,48 (Table 3). The research findings suggest that younger Generation Z respondents view Instagram content as a convenient and popular place to shop. Most likely, content posted on Instagram is useful to younger

respondents in the context of purchasing. Younger respondents are probably to agree with the statement that Instagram is a good additional sales and advertising channel than older respondents.

The rank for younger respondents is 171,68 and for older respondents 135,56 which is confirmed by the results in Table 3. They consider Instagram to be suitable place where you can get timely information through content in order to make purchases without risk.

The Kruskal-Wallis H-test is non-parametric test that can be used to determine whether there are significant differences between two or more groups, independent variable on an ordinal dependent variable. It is considered as extension of the Mann-Whitney U test to allow the comparison of more than two independent groups.

The reason for using the Kruskal-Wallis H-test in this study is that the independent variable time spent on Instagram consists of more than 2 groups (less than 1 hour, 1 to 2 hours, 2 to 3 hours, 3 to 4 hours and more than 4 hours per day). The next table shows the mean ranks for each statement according to the variable time spent on Instagram.

Table 5. Mean ranks

	TIME SPENT ON INSTAGRAM	N	MEAN RANK
I intend to follow content on Instagram in the future.	less than 1 hour	84	127,02
	1 to 2 hours	121	166,53
	2 to 3 hours	70	167,06
	3 to 4 hours	23	164,89
	more than 4 hours per day	13	169,96
Instagram content encourages me to do some activity on my profile.	less than 1 hour	84	126,34
	1 to 2 hours	121	156,43
	2 to 3 hours	70	161,23
	3 to 4 hours	23	206,61
	more than 4 hours per day	13	225,92
Instagram content encourages me to buy.	less than 1 hour	84	131,90
	1 to 2 hours	121	150,05
	2 to 3 hours	70	169,42
	3 to 4 hours	23	202,28
	more than 4 hours per day	13	213,00

Source: Research findings (N=311), 2024.

Table 5 shows the ranking of time spent on Instagram. It can be seen that respondents who mainly use Instagram more than 4 hours per day are more likely to explore content on Instagram as the rank 169.96 is higher than others.

Table 6. Kruskal Wallis H test – time spent on Instagram and attitudes towards Instagram content

	I intend to follow content on Instagram in the future.	Instagram content encourages me to do some activity on my profile.	Instagram content encourages me to buy.
Kruskal_Wallis H	13,369	25,940	20,714
df	4	4	4
Asymp. Sig. (2-tailed)	,010	,000	,000

Grouping Variable: Time spent on Instagram

Source: Research findings (N=311), 2024.

Table 6 shows the result of the Kruskal-Wallis test for attitude towards Instagram content in relation to time spent on Instagram. Since the significance for the intention to follow Instagram content is 0.010 and below 0.05, it can be determined that there is a statistically significant difference in the tendency to follow Instagram content considering the time spent on Instagram by the respondents.

There is statistical significance for the activity intention 0.000 which shows that there is a statistically significant difference in intention to do activities based on Instagram content in regards of the time consumption on Instagram. Respondent who spent more than 4 hours on Instagram will probably do some activities on their profile such as sharing or comments posted content. This is defining by the results in Table 5 where the rank result for respondents that spending more than 4 hours per day is the highest of the other variables (rank is 225,92).

The results show that respondents who spend more than 4 hours per day on Instagram (rank is 213,00), are more likely to agree with the statement that content on Instagram encourages them to buy than other respondents. These respondents are more likely to buy products that have been advertisement via content on Instagram. Furthermore, they tendency to purchase will increase with the time they spend on the social media such as Instagram.

5. Discussion

The research results show that there are significant differences in attitudes towards Instagram content in relation to the gender of the respondents, with the exception of the statement, the intention to follow Instagram content in the future. The female respondents are more inclined to perform a certain activity on their profile based on the content offered on Instagram and are likely to have a higher purchase intention based on the content offered. These findings may confirm the results of previous research that showing that women are more engaged on social media (Khan 2017; Duffet, 2017; Noguti et al. 2018; Yau and Reich 2019; Asogwa et al., 2020). Men and women often respond differently to content posted on social media. Women show a higher level of liking and participate in social media activities to a greater extent than men, especially in Generation Z (Duffet, 2017; Noguti et al. 2018). Studies by Asogwa et al. (2020) have shown that the purchasing behaviour of men and women is influenced by advertising on social media, with women being influenced twice as much as men.

There are also significant differences between the age of Generation Z and respondents' attitudes towards Instagram content, suggesting that younger Generation Z respondents are more likely to follow and search for valuable and interesting content on Instagram. In addition, younger respondents are likely to perform some activities such as liking or commenting on content posted on Instagram. The research findings suggest that younger Generation Z respondents view Instagram content as a convenient and popular place to shop. Most likely, the content posted on Instagram is useful to younger respondents in

the context of shopping. Studies by Janavi et al (2021) show that Instagram has the greatest influence on user behaviour. Therefore, younger respondents are likely to agree with the statement that Instagram is a good additional sales and advertising channel and that younger users make more actual purchases of online content than older users (Yang et. al., 2015). They consider Instagram to be a resourceful place to get well-timed information through content to make purchases without risk. Younger people are more likely to engage with the content posted on social media platforms and have a stronger relationship with brands. This finding is consistent with previous studies that younger Generation Z users are more likely to accept and follow content on social media (Benhamou, 2015; Williams, 2015).

Some researchers measure social media usage by time spent on a site (Johnson & Yang, 2009; Joinson, 2008; Wang & Tchernev, 2012), while others count specific activities such as creating new content and updating profiles (Leung, 2009; Quan-Haase & Young, 2010). Social media such as Instagram offer unique features and functions associated with high-quality visual content, suggesting that users are more engaged compared to other social media (Pentina et al., 2018). The research results show that respondents who primarily use Instagram more than 4 hours per day are more likely to explore content on Instagram and perform some activities on their profile, such as sharing or commenting on content. These findings are similar to the results of studies by Giunta (2017) and Kim et al. (2021), which show that valuable and engaging content on social media can increase customer satisfaction and loyalty and predict usage behaviour. In addition, creating and sharing content on Instagram leads to purchase among respondents who spend more than 4 hours per day on Instagram. This means that the more time they spend on social media, the more likely they are to have higher level of engagement and purchase intent. These findings support the study results of de Oliveira Santini et al. (2020). These results show the importance of developing an effective content marketing strategy that influences the purchasing behaviour of Generation Z customers on social media such as Instagram.

6. Conclusion

The development of social media is transforming traditional marketing into interactive marketing, where content has become an important factor for the direct interaction of users with companies. To capture the attention of a target audience and motivate them to take productive actions, companies need to create and share useful, relevant and consistent content to satisfy their needs and offer content with the characteristics of uniqueness and individuality. The objective of this study is to determine the differences between the age and gender of Generation Z in terms of posted content on Instagram.

The limitations of this study are reflected in the recommendations for future research. The limitations of this study are reflected in the recommendations for future research. The most important limitation is that the sample is not representative of the studied population, as it is a non-probability sample. Another limitation of this study relates to a sample consisting only of Generation Z users, which also limits the generalizability of the research findings. As this study has certain limitations, it would be good for future research to include other generations or additional variables that would allow for a better understanding of user behaviour on social media as well as to determine comprehensive profile in terms of purchasing behaviour on social media such as Instagram. In addition, it is still necessary to consider and optimize the content marketing strategy, as well as provide sufficient product knowledge for Generation Z. A deeper understanding of demographic differences such as gender and age can be useful for academics and experts to better understand user purchase behavior on social media. Companies should offer the valuable content where users can easily request information about the product. Providing valuable content increases user trust and loyalty. For this reason, it is recommended that companies create a friendly and personalized content channel to influence the users who spend most of their time in the digital environment. With strategies such as content personalization, innovative content, or real-time

advertising, companies can enable companies to reach existing as well as potential users. Therefore, appropriate, valuable and rich content is needed to trigger purchasing behavior and influence users buying habits on social media. Therefore, they should involve users in the decision-making process user generated that will certainly reach a more audience and have greater engagement in the social media such as Instagram.

Finally, reference is made to certain areas that have been neglected, but would lead to further research that would advance this area of study. This comprehensive literature review contributes to the body of knowledge on content marketing. Sharing content on social media is more important than just being present in the digital environment. Therefore, companies should understand that content is an important power and can create value through social media and turn followers into loyal customers.

References:

- Akter, S., Hani, U., Dwivedi, Y. K., Sharma, A. (2022) The future of marketing analytics in the sharing economy, *Industrial Marketing Management*, 104, pp. 85–100.
- Andac A., Akbyk, F., Karkar, A. (2016) Customer Satisfaction Factor in Digital Content Marketing: Isparta Province as an Example, *International Journal of Social Science Studies*, 4 (5), pp. 124-135.
- Ashley, C., Tuten, T. (2015) Creative strategies in social media marketing: An exploratory study of branded social content and consumer engagement, *Psychology & marketing*, 32 (1), pp. 15-27.
- Asogwa, C. E., Okeke, S. V., Gever, V. C., & Ezeah, G. (2020) Gender disparities in the influence of social media advertisements on buying decision in Nigeria, *Communicatio: South African Journal of Communication Theory and Research*, 46(3), 87-105.
- Baer, J. (2013) YouTILITY: why smart marketing is about help not hype, *Penguin*, pp. 1-19.
- Barbosa, B., Saura, J. R., Zekan, S. B., Ribeiro-Soriano, D. (2024) RETRACTED ARTICLE: Defining content marketing and its influence on online user behavior: a data-driven prescriptive analytics method, *Annals of Operations Research*, 337(Suppl 1), pp. 17-17.
- Behera, R. K., Gunasekaran, A., Gupta, S., Kamboj, S., Bala, P. K. (2020) Personalized digital marketing recommender engine, *Journal of Retailing and Consumer Services*, 53, pp. 1-24.
- Benhamou, L. (2015) Everything you need to know about Generation Z, In Yahoo News < available at: <https://sg.news.yahoo.com/generation-z-born-digital-age-160347481.html>
- Bruce, N. I., Murthi, B. P. S., Rao, R. C. (2017). A dynamic model for digital advertising: The effects of creative format, message content, and targeting on engagement, *Journal of Marketing Research*, 54(2), pp. 202–218.
- Chaithanapat, P., Punnakitakashem, P., Oo, K. K., Chi, N., Rakthin, S. (2022) Relationships among knowledge-oriented leadership, customer knowledge management, innovation quality and firm performance in SMEs, *Journal of Innovation & Knowledge*, 7(1), pp. 1-10.
- Chopra, M., Singh, S. K., Gupta, A., Aggarwal, K., Gupta, B. B., Colace, F. (2022) Analysis & prognosis of sustainable development goals using big data-based approach during COVID-19 pandemic, *Sustainable Technology and Entrepreneurship*, 1(2), pp. 1-8.

Content Marketing Association (2017) About the content marketing association - definition of content marketing”, < available at: <http://the-cma.com/about-us/>[accessed 25.06.2024]

Content Marketing Institute (2017), “What is content marketing?”, < available at: <https://contentmarketinginstitute.com/what-is-content-marketing/>[accessed 25.06.2024]

Čvirik, M., Nađová Krošlákova, M., Milić Beran, I., Capor Hrosik, R., Drábik, P. (2023) Influence of health-conscious consumer behaviour on consumer ethnocentrism during the COVID-19 pandemic, *Economic research-Ekonomska istraživanja*, 36(1), pp. 1510-1526.

de Oliveira Santini, F., Ladeira, W. J., Pinto, D. C., Herter, M. M., Sampaio, C. H., & Babin, B. J. (2020) Customer engagement in social media: a framework and meta-analysis, *Journal of the Academy of Marketing Science*, 48, pp. 1211-1228.

Du Plessis, C. (2015a) An exploratory analysis of essential elements of content marketing, In *Proceedings of the Second European Conference on Social Media*, pp. 122-129.

Du Plessis, C. (2015b) Academic guidelines for content marketing: research-based recommendations for better practice, *Proceedings of the LCBR European Marketing Conference*, <available at: <http://uir.unisa.ac.za/handle/10500/19134> [accessed 25.06.2024]

Duffett, R. G. (2017) Influence of social media marketing communications on young consumers' attitudes, *Young Consumers*, 18(1), pp. 19-39.

Farooq, U., Nasir, A., & Bashir, M. F. (2022) The COVID-19 pandemic and stock market performance of transportation and travel services firms: a cross-country study, *Economic research-Ekonomska istraživanja*, 35(1), pp. 6867-6883.

Giunta, C. (2017) An emerging awareness of generation Z students for higher education professors, *Archives of Business Research*, 5(4).

González-Padilla, P., Navalpotro, F. D., Saura, J. R. (2023) Managing entrepreneurs' behavior personalities in digital environments: A review, *International Entrepreneurship and Management Journal*, pp. 1–25.

Hernandez, B., Jimenez, J., Jose Martin, M. (2011) Age, gender and income: Do they really moderate online shopping behaviour?, *Online Information Review*, 35(1), pp. 113–133.

Ho, J.Y. Dempsey, M. (2010) Viral marketing: motivations to forward online content, *Journal of Business Research*, 63 (9/10), pp. 1000-1006.

Holliman, G., Rowley, J. (2014) Business to business digital content marketing: Marketers' perceptionsof best practice, *Journal of Research in Interactive Marketing*, 8(4), pp. 269–293.

Janavi, E., Soleimani, M., Gholampour, A., Friedrichsen, M., Ebrahimi, P. (2021) Effect of social media adoption and media needs on online purchase behavior: The moderator roles of media type, gender, age, *Journal of Information Technology Management*, 13(2), pp. 1-24.

- Johnson, P. R., Yang, S. (2009). Uses and gratifications of Twitter: An examination of user motives and satisfaction of Twitter use. In *Communication Technology Division of the annual convention of the Association for Education in Journalism and Mass Communication in Boston, MA* (Vol. 54).
- Kee, A. W. A., Yazdanifard, R. (2015) The Review of Content Marketing as a New Trend in Marketing Practices, *International Journal of Management, Accounting & Economics*, 2(9), pp. 1055-1064.
- Khan, M. L. (2017) Social media engagement: What motivates user participation and consumption on YouTube? *Computers in human behavior*, 66, pp. 236-247.
- Kilgour, M., Sasser, S.L. and Larke, R. (2015) The social media transformation process: curating content into strategy, *Corporate Communications: An International Journal*, 20 (3), pp. 1-32.
- Kim, S. E., Kim, H. L., Lee, S. (2021) How event information is trusted and shared on social media: a uses and gratification perspective, *Journal of Travel & Tourism Marketing*, 38(5), pp. 444-460.
- Kolter P, Keller K, Koshy A, Jha M. (2009) Marketing Management 13th Edition. New Delhi: Preason.
- Lehnert, K., Goupil, S., Brand, P. (2021) Content and the customer: inbound ad strategies gain traction, *Journal of Business Strategy*, 42(1), pp. 3-12.
- Leung, L. (2009) User-generated content on the Internet: an examination of gratifications, civic engagement and psychological empowerment, *New Media & Society*, 11(8), pp. 1327-1347.
- Lin, X., Sarker, S., Featherman, M. (2019) Users' psychological perceptions of information sharing in the context of social media: A comprehensive model, *International Journal of Electronic Commerce*, 23 (4), pp. 453-491.
- Liu, H.W. Huang, H.C. (2015) Tradeoff Between Push and Pull Strategy: The Moderating Role of Brand Awareness', in H. Spotts (eds.), *Marketing, Technology and Customer Commitment in the New Economy. Developments in Marketing Science: Proceedings of the Academy of Marketing Science*. Springer, Cham, pp. 259-264
- McCloskey, D. W. (2006) The importance of ease of use, usefulness, and trust to online consumers: An examination of the technology acceptance model with older consumers, *Journal of Organizational and End User Computing*, 18(3), pp. 47-65.
- Medina-Molina, C., Tienda, M. D. L. S. R. (2022) The transition towards the implementation of sustainable mobility. Looking for generalization of sustainable mobility in different territories by the application of QCA, *Sustainable Technology and Entrepreneurship*, 1(2), pp. 1-11.
- Müller, J., Christandl, F (2019). Content is king–But who is the king of kings? The effect of content marketing, sponsored content & user-generated content on brand responses, *Computers in Human Behavior*, 96, pp.46–55.
- Pazeraite, A. Repoviene, R. (2016) Content marketing elements and their influence on search advertisement effectiveness: Theoretical background and practical insights, *Management of Organizations: Systematic Research* 75, pp. 97–109.

- Pentina, I., Guilloux, V., Micu, A. (2018) Exploring social media engagement behaviors in the context of luxury brands, *Journal of Advertising*, 47(1), pp. 55-69
- Pulizzi, J. (2012) The rise of storytelling as the new marketing, *Publishing Research Quarterly*, 28(2), pp. 116–123.
- Quan-Haase, A., Young, L. (2010) Uses and gratifications of social media: a comparison of Facebook and instant messaging, *Bulletin of Science, Technology & Society*, 30(5), pp. 350-361.
- Ribeiro-Navarrete, S., Saura, J. R., Palacios-Marqués, D. (2021) Towards a new era of mass data collection: Assessing pandemic surveillance technologies to preserve user privacy, *Technological Forecasting and Social Change*, 167, 120681.
- Rowley, J. (2008) Understanding digital content marketing, *Journal of Marketing Management*, 24 (5-6), pp. 517-540.
- Saura, J. R., Palacios-Marqués, D., Ribeiro-Soriano, D. (2021) Using data mining techniques to explore security issues in smart living environments in Twitter, *Computer Communications*, 179, pp. 285-295.
- Seymour, T., Hussain, J. Z., Reynolds, S. (2014) How to create an app, *International Journal of Management & Information Systems (Online)*, 18(2), pp. 123-138
- Sigurdsson, V., Larsen, N. M., Gudmundsdottir, H. K., Alemu, M. H., Menon, R. V., Fagerstrøm, A. (2021) Social media: Where customers air their troubles—How to respond to them?, *Journal of Innovation & Knowledge*, 6(4), pp. 257–267.
- Steenburgh, T., Avery, J. and Dahod, N. (2011) *Hubspot: Inbound Marketing and Web 2.0*, Harvard Business School Press, Boston.
- Suderman, J. (2016). Generation Alpha: marketing or science, *Acta Educationis Generalis*, 7 (1), pp. 107–115.
- Sykora, M., Elayan, S., Hodgkinson, I. R., Jackson, T. W., West, A. (2022b) The power of emotions: Leveraging user generated content for customer experience management, *Journal of Business Research*, 144, pp. 997–1006.
- Wall Emerson, R. (2023) Mann-Whitney U test and t-test, *Journal of Visual Impairment & Blindness*, 117(1), pp. 99-100.
- Wang, R., Chan-Olmsted, S. (2020) Content marketing strategy of branded YouTube channels, *Journal of Media Business Studies*, 17(3–4), pp. 294–316.
- Wang, Z., Tchernev, J. M. (2012) The myth of media multitasking: Reciprocal dynamics of media multitasking, personal needs, and gratifications, *Journal of Communication*, 62(3), pp. 493-513.
- Wilk, V., Cripps, H., Capatina, A., Micu, A., Micu, A. E. (2021). The state of# digitalentrepreneurship: A big data Leximancer analysis of social media activity, *International Entrepreneurship and Management Journal*, 17(4), pp. 1899–1916.

Williams, A. (2015) Move, Over, Millennials, Here Comes Generation Z. New York Times, < available at: <https://www.nytimes.com/2015/09/20/fashion/move-over-millennials-here-comes-generation-z.html>

Yang, L., Ha, L., Wang, F., Abuljadail, M. (2015) Who pays for online content? A media dependency perspective comparing young and older people, *International journal on media management*, 17(4), pp. 277-294.

Yau, J. C., Reich, S. M. (2019) “It's just a lot of work”: Adolescents’ self-presentation norms and practices on Facebook and Instagram, *Journal of research on adolescence*, 29(1), pp. 196-209.

Zahay, D. (2014) Beyond interactive marketing, *Journal of Research in Interactive Marketing*, 8(4).

Zerbini, F., Golfetto, F. Gibbert, M. (2007) Marketing of competence: exploring the resource-based content of value-for-customers through a case study analysis, *Industrial Marketing Management*, (36) 6, pp. 784-798.

Sadržajni marketing: razlike po spolu i dobi kod generacije Z

MATEA MATIĆ ŠOŠIĆ

Ekonomski fakultet, Sveučilište u Dubrovniku

Lapadska obala 7

Hrvatska

matea.matic@unidu.hr

ORCID iD: <https://orcid.org/0000-0003-2788-2472>

Sažetak: Broj korisnika koji očekuju personalizirane informacije i iskustva koja zadovoljavaju njihove osobne potrebe i preferencije raste. Stoga tvrtke naglašavaju da je stvaranje vrijednog sadržaja putem digitalnih kanala ključan element za uspjeh i reputaciju tvrtki, a ujedno stvara veću vrijednost za njihove korisnike. Cilj ovog istraživanja je utvrditi razlike u dobi i spolu generacije Z u odnosu na stavove prema sadržaju objavljenom na Instagramu. Istraživački uzorak sastoji se od 311 korisnika društvenih mreža iz generacije Z koji su anketirani između travnja i lipnja 2024. godine. U ovom istraživanju korištene su neparametarske statističke metode poput Mann-Whitney U-testa i Kruskal-Wallis H-testa. Rezultati pokazuju da postoje statističke razlike u dobi i stavovima prema sadržaju na Instagramu. Rezultati istraživanja pokazuju da postoje parcijalne razlike prema spolu i aktivnostima korisnika na Instagramu, ali ne i u njihovoj namjeri praćenja sadržaja u budućnosti. Također, postoje statističke razlike u vremenu provedenom na Instagramu i stavovima prema sadržaju na Instagramu. Rezultati ovog istraživanja doprinose teorijskoj podlozi literature o sadržajnom marketingu na društvenim mrežama i pružaju empirijski doprinos za tvrtke koje stvaraju prilagođeni sadržaj na društvenim mrežama, posebno na Instagramu, namijenjen generaciji Z.

Ključne riječi: digitalno okruženje, sadržajni marketing, demografske značajke, Instagram, generacija Z

JEL klasifikacija: M31

Evaluation of trade performance dynamics in Serbia using ARAT and Rough MABAC methods

RADOJKO LUKIC

Faculty of Economics, University of Belgrade

radojko.lukic @ekof.bg.ac.rs

ORCID iD: <https://orcid.org/0000-0001-6529-0297>

Izvorni znanstveni rad / *Original scientific paper*

UDK: 339:005.52(497.11)=111

Primljeno / Received: 06. listopada 2024. / October 06th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 29. studenog 2024. / November 29th, 2024.

DOI: 10.15291/oec.4559

Abstract: Recently, there has been an increasing amount of literature dedicated to the importance and specifics of applying multi-criteria decision-making methods in trade. These methods, given that they are based on a mathematical approach, provide realistic results of the analysis of the treated problem. Based on that, this study investigates the dynamics of trade performance in Serbia based on the ARAT (Interval and Iterative Preference/Priority Scale), and the Rough MABAC (Multi-Attributive Border Approximation Area Comparison) method. The results of the study show that in 2023, the best performance of trade in Serbia was achieved. The worst performance of trade in Serbia was achieved in 2018. The ranking of trade performance in Serbia is as follows: 2023, 2022, 2021, 2020, 2019 and 2018. The performance of trade in Serbia has continuously improved. Effective management of human resources, investments, capital, sales, and profit contributed to this. Certainly, the positive influence of other relevant factors (foreign direct investments, new business models - multichannel sales: store and electronic, private brand, sale of organic products, the concept of sustainable development - economic, social, and environmental dimensions, the idea of social responsibility) must not be neglected. , digitization of the entire business, etc.). To achieve the target profit in Serbian trade, adequate adaptation to dynamic complex changes in the business environment and macroeconomic trends (geopolitical situation, energy crisis, inflation, exchange rate, interest rates, etc.) is important. In all this, digitizing the entire trade business plays a significant role.

Keywords: performance Serbian trade, ARAT, Rough MABAC

JEL classification: L81, M31, M41, O32

1. Introduction

Applying multi-criteria decision-making methods provides more realistic information about trade performance compared to classical analysis. This is because multicriteria analysis is based on a mathematical approach. Based on that, the subject of research in this study is a multi-category analysis of trade performance in Serbia. The goal and purpose of this study is to realistically assess the dynamics of trade performance in Serbia using the ARAT (Interval and Iterative Preference/Priority Scale) and Rough MABAC (Multi-Attributive Border Approximation Area Comparison) methods to improve them in the future by applying relevant measures (Pamučar et al., 2018; Puška et al., 2023; Shang et al., 2023,

Chattopadhyay et al., 2022). In other words, the research goals in this study are to look as realistically as possible at the performance of Serbian trade by individual analyzed years in the period 2018 - 2023 using the ARAT and Rough MABAC methods. And on that basis, to propose appropriate measures in the function of improvement. This reflects the scientific and professional contribution of this study. Especially since there is not a single article of this type in the literature. Knowing the real performance situation is a fundamental assumption for improvement. This reflects the primary research hypothesis in this study. To research the treated problem in this study, very high-quality original empirical data created by relevant international standards are available. This facilitates, without any limitations, an international comparison of the results of this study.

2. Literature Review

In contemporary literature, there is an increasing number of works dedicated to the application of multi-criteria decision-making methods in the evaluation of trade performance (Ersoy, 2017). This is also the case with literature in Serbia (Lukić, 2021a,b, 2022). The literature can be grouped into two categories: literature dedicated to the development of multi-criteria decision-making methods (Aytekin, 2020; Shang, 2023) and literature dedicated to the application of multi-criteria decision-making methods to a specific case, in this study using the example of the analysis of the dynamics of trade performance in Serbia. In this study, the emphasis is on the application of methods to a specific case. Multi-criteria decision-making (MCDM) methods are used very effectively in the analysis of energy, environment, and sustainability (Aytekin, 2022; Chakraborty et al., 2020; Ersoy, 2017). Considerable attention is paid to the analysis of the performance of food companies based on multi-criteria decision-making methods (Aytekin, 2021). The DIBR II (Defining Interrelationships Between Ranked Criteria II) - Rough MABAC method was applied in the ranking of methods and techniques of lean organization systems management in the process of technical maintenance (Božanić et al., 2023). The Rough MABAC-DoE (a design of experiments) method is used in the selection of suppliers in the iron and steel industry (Chattopadhyay et al., 2022). The traditional MABAC method was used in the evaluation of the performance of trade and banks in Serbia (Lukić, 2021a,b, 2022). The MABAC method was effectively used in the analysis of the efficiency of the logistics process (Pamučar & Ćirović, 2015). The MABAC method was applied to the case of evaluation of university web pages (Pamučar et al., 2028).

The selection of green suppliers in agribusiness was carried out using Integrating Fuzzy Rough Sets with LMAW (Logarithm Methodology of Additive Weight) and MABAC (Puška et al., 2023).

The traditional MABAC method and the Rough MABAC method have been applied in the literature in the analysis of different cases. In the literature, it is particularly emphasized that the key problem related to optimization is the selection of criteria and determining their weight. The choice of criteria depends on the character of the analyzed optimization problem. For example, in connection with the selection of suppliers, the following criteria are relevant: C1 Costs. These criteria will enable reducing costs and ensuring favorable resources. C2 Quality. These criteria will enable ensuring good resources to maintain product quality. C3 Production innovation. These criteria will enable providing innovative resources to improve products. C4 Delivery. These criteria will enable ensuring timely resource delivery. C5 Technological capacities. These criteria will enable providing an adequate quantity of resources. C6 Environmental management standards. These criteria will enable implementing systems for environmental protection. C7 Pollution control. These criteria will enable reducing all negative effects on the environment. C8 Environmental product design. These criteria will enable sourcing resources that help reduce environmental impact. C9 Eco-friendly materials. These criteria will enable sourcing resources that use environmentally friendly materials. C10 Resource consumption reduction. These criteria will enable enabling resource consumption reduction (Puška et al., 2023). In this study, the

criteria were chosen according to the same principle, i.e. according to the character of the analyzed optimization problem. Numerous methods of subjective and objective nature have been developed in the literature for determining the weight of criteria. This includes the ARAT method used in this study to determine the weight coefficients of the analyzed criteria in the context of optimization of the treated problem. All relevant literature cited in this study and others serve as a theoretical, methodological, and empirical basis for the most comprehensive research of the problem treated in this study. It makes it possible to gain a better idea of the topicality, significance, complexity, and challenge of the issue analyzed in this study.

3. Research methodology

The applied research methodology in the analysis of the treated problem in this study is the ARAT and Rough MABAC method, the characteristics of which are shown below. The first method is used to determine the significance of the criteria. Another method is used to rank the alternatives.

ARAT (Interval and Iterative Preference/Priority Scale) is a more recent multi-criteria decision-making method. It is used to determine the weighting coefficients of the criteria. Aytekin (2020) developed the Interval and Interactive Preference/Priority Scale (ARAT) method to represent the preferences of decision-makers. Also, ARAT provides an appropriate format for solving the problem of scaling criteria in multi-criteria decision-making problems according to the preferences of decision-makers or experts and determining the level of importance of criteria. ARAT ensures that the decision maker's preferences for each criterion are determined interactively. Preferences are shaded from 0 to 10 on a theoretically infinitely divisible scale. In the first phase, the values on this scale range from 0 to 10, with 0 being the most negative and 10 being the most positive value. Therefore, the veto value in ARAT is zero, which indicates that it is a relative criterion or the alternative is not considered in the problem. A score of 10 indicates a strong preference, while a score of five indicates a moderate preference. Interactions are used to complete the finalization of priority importance values. The following are the steps for implementing the ARAT method in the process of determining the weight coefficients of the criteria (Aytekin, 2022, 2021).

Step 1: Defining the criteria: The criteria that will be used in the solution are defined by the decision problem ($j=1, \dots, n$).

Step 2: Assign initial importance values of the criteria: The importance levels of each criterion in the decision problem are represented by the importance values (I_j) assigned by the decision maker. The ARAT scale with values ranging from 0 to 10 is used for this purpose.

Step 3: Evaluation of criteria by grouping according to their previous significance levels: First, in this step, criteria with the same significance level are grouped. The decision maker is then again asked to determine the fractional significance values and to review the previously assigned significance values. The significant values determined in the previous step can be revised by the decision-maker. The decision maker, on the other hand, can declare that the significant values determined in the previous step are satisfactory for all criteria. The finalization of the significance of the criterion values is completed in this scenario. Otherwise, until the decision maker is satisfied, the process of defining significant values continues in stages.

Step 4: Determining Criterion Weights: The following equation is used to obtain criteria weights, where I_j indicates the exact significant value determined for criterion j . While the weight values range from 0 to 1, the significance levels of the criteria increase as their weights approach unity.

$$w_{j_s} = \frac{l_j}{\sum_{j=1}^n l_j} \quad (1)$$

MABAC (Multi-Attributive Border Approximation Area Comparison) is a newly developed and widely accepted multi-criteria decision-making method (Pamučar and Čirović, 2015) that primarily ranks a set of alternatives based on their distance from the border approximation area for each criterion. However, it has been modified over time to develop purposeful hybrid models. In this study, MABAC is interpolated with rough numbers that are further fed into a DoE (design of experiments) model (Chattopadhyay et al., 2022; Božanić et al., 2024) to provide a generalized metamodel for evaluating and ranking a set of alternatives (e.g., supplier). Considering a decision problem that has n alternatives ($A_1, A_2, \dots, A_i, \dots, A_n$) and m criteria ($C_1, C_2, \dots, C_j, \dots, C_m$), the procedural steps of the Rough MABAC method are listed below (Chakraborty et al., 2020; Božanić et al., 2024):

Step 1: The decision matrix X is constructed using rough numbers while taking into account the judgment of a team of experts/decision-makers when evaluating the relative performance of alternatives (for example suppliers) in terms of evaluation criteria:

$$X = \begin{matrix} A_1 \\ A_2 \\ M \\ A_n \end{matrix} \begin{bmatrix} RN(x_{11}) & RN(x_{12}) & \wedge & RN(x_{1m}) \\ RN(x_{21}) & RN(x_{22}) & \wedge & RN(x_{2m}) \\ M & M & M & M \\ RN(x_{n1}) & RN(x_{n2}) & K & RN(x_{nm}) \end{bmatrix} \quad (2)$$

$$= \begin{matrix} A_1 \\ A_2 \\ M \\ A_n \end{matrix} \begin{bmatrix} [x_{11}^-, x_{11}^+] & [x_{12}^-, x_{12}^+] & \wedge & [x_{1m}^-, x_{1m}^+] \\ [x_{21}^-, x_{21}^+] & [x_{22}^-, x_{22}^+] & \wedge & [x_{2m}^-, x_{2m}^+] \\ M & M & M & M \\ [x_{n1}^-, x_{n1}^+] & [x_{n2}^-, x_{n2}^+] & K & [x_{nm}^-, x_{nm}^+] \end{bmatrix}$$

where $RN(x_{ij}) = [x_{ij}^-, x_{ij}^+]$.

Step 2: Depending on the type of criteria, the initial decision matrix X is normalized to obtain the corresponding normalized decision matrix $N = [n_{ij}^-, n_{ij}^+]_{n \times m}$.

$$RN(n_{ij}) = \begin{cases} \left[\frac{x_{ij}^- - x_j^+}{x_j^+ - x_j^-}, \frac{x_{ij}^+ - x_j^-}{x_j^+ - x_j^-} \right]; \text{ if } j \in B, \\ \left[\frac{x_{ij}^+ - x_j^+}{x_j^- - x_j^+}, \frac{x_{ij}^- - x_j^+}{x_j^- - x_j^+} \right]; \text{ if } j \in C, \end{cases} \quad (3)$$

Where $x_j^+ = \max_i(x_{ij}^+)$, $x_j^- = \min_i(x_{ij}^-)$, B is the set of utility criteria and C is the set of cost criteria.

Step 3: Determine the weight assigned to each criterion $W = (w_1, w_2, \dots, w_j, \dots, w_m)$ so that $\sum_{j=1}^m w_j = 1$. The Weight-normalized decision matrix $Y = [y_{ij}^-, y_{ij}^+]_{n \times m}$ is now calculated using equation (4):

$$y_{ij}^- = (n_{ij}^- + 1)w_j; y_{ij}^+ = (n_{ij}^+ + 1)w_j, i = 1, 2, \dots, n, j = 1, 2, \dots, m \quad (4)$$

Step 4: The Boundary Approximation Area (BAA) matrix is derived based on the geometric aggregation of the rough numbers.

$$Q = [RN(q_1) \quad RN(q_2) \quad \wedge \quad RN(q_m)]$$

$$q_j^- = \left(\prod_{i=1}^n y_{ij}^- \right)^{1/n}, j = 1, 2, \dots, m \quad (5)$$

$$q_j^+ = \left(\prod_{i=1}^n y_{ij}^+ \right)^{1/n}, j = 1, 2, \dots, m$$

Step 5: The Euclidean distance of the alternative from the BAA is estimated based on the difference between the boundary approximation area and the weighted normalized matrix, and is presented $K = [RN(k_{ij})]_{n \times m}$.

$$k_{ij} = D(y_{ij}, q_j) = \sqrt{\frac{1}{2}((y_{ij}^- - q_j^-)^2 + (y_{ij}^+ - q_j^+)^2)} \text{ if } RN(y_{ij}) > RN(q_j) \quad (6)$$

$$k_{ij} = -D(y_{ij}, q_j) = -\sqrt{\frac{1}{2}((y_{ij}^- - q_j^-)^2 + (y_{ij}^+ - q_j^+)^2)} \text{ if } RN(y_{ij}) < RN(q_j)$$

Step 6: The considered alternatives are finally ranked in descending order according to the S_i value.

$$S_i = \sum_{j=1}^m k_{ij} \quad (i = 1, 2, \wedge, n) \quad (7)$$

4. Results and discussion

In Serbia, the Agency for Business Registers publishes regular annual financial reports every year. Original data from those sources were used in this study. They are of high quality because they are based on relevant international standards. This significantly alleviates the problem of international comparison of the results of this study.

Criteria are selected according to the nature of the problem. In the specific case, the evaluation and ranking of trade performance dynamics in Serbia using the ARAT and Rough MABAC methods is based on the following criteria: C1 - number of employees, C2 - assets, C3 - capital, C4 - sales and C5 - net profit. The selected criteria correspond to the character of the trade. The alternatives are the years: A1 - 2018, A2 - 2019, A3 - 2020, A4 - 2021, A5 - 2022 and A6 - 2023. The original empirical data used are shown in Table 1.

Table 1. Initial data

		(I) Number of employees	(I) Assets	(I) Capital	(O) Sales	(A) Net profit
		C1	C2	C3	C4	C5
A1	2018	219373	2524897	1007972	3361094	121816
A2	2019	222049	2682931	1073056	3608329	139409
A3	2020	227618	2837599	1183026	3664505	171010
A4	2021	234727	3166529	1318126	4754169	170703
A5	2022	234011	3490398	1426553	5511864	214917
A6	2023	239429	3882976	1600734	5737589	234843

Note: The number of employees is expressed in whole numbers. Other variables in millions of dinars.

I - input. O-output. The data are given for the period 2018 - 2023

Source: Agency for Economic Registers of the Republic of Serbia, 2023.

The weight coefficients of the criteria were determined using the ARAT method (Table 2). Decision makers are professional persons with a good knowledge of the nature of trade operations. They had an excellent knowledge of the theories and practices of trade. They have many years of practical experience in analyzing trade performance based on financial reports. (In this study, all calculations and results are by the authors.)

Table 2. Weight coefficients of criteria

Empirical	Final Importance Value	Weights of Criteria
C1	6.1	0.1586
C2	8.85	0.2301
C3	8.71	0.2265
C4	8.5	0.2210
C5	6.3	0.1638
		1

Note: Author's calculation, 2024.

In this particular case, the most important criterion is C2 - assets. Then criterion C 3 – capital. The ranking of the criteria is as follows: C2>C3>C4>C5>C1. The target profit in Serbian trade can, therefore, be achieved with efficient management of total investments and financial capital. In this target, effective management is also needed with the other analyzed variables (number of employees, sales, and net profit). The ranking of alternatives was performed using the Rough MABAC method.

Table 3 shows the initial decision matrix.

Table 3. Initial decision matrix

Initial decision matrix										
	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
A1	219373	219373	2524897	2524897	1007972	1007972	3361094	3361094	121816	121816
A2	222049	222049	2682931	2682931	1073056	1073056	3608329	3608329	139409	139409
A3	227618	227618	2837599	2837599	1183026	1183026	3664505	3664505	171010	171010
A4	234727	234727	3166529	3166529	1318126	1318126	4754169	4754169	170703	170703
A5	234011	234011	3490398	3490398	1426553	1426553	5511864	5511864	214917	214917
A6	239429	239429	3882976	3882976	1600734	1600734	5737589	5737589	234843	234843

Note: Author's calculation, 2024.

The Appendices shows other Tables 1, 2, 3, 4 and 5 in connection with the calculation process using the Rough MABAC method.

Table 4 shows the results of the Rough MABAC method.

Table 4. Rank

						Rank				
A1	2018	-0.098	-0.098	-0.09763	-0.195	6		[-0.098,-0.098]	-0.195	6
A2	2019		0.024	0.023661	-0.074	5		[0.024,0.024]	-0.074	5
A3	2020	0.187	0.187	0.186947	0.089	4		[0.187,0.187]	0.089	4
A4	2021	0.451	0.451	0.451405	0.354	3		[0.451,0.451]	0.354	3
A5	2022	0.677	0.677	0.676584	0.579	2		[0.677,0.677]	0.579	2
A6	2023	0.902	0.902	0.902367	0.805	1		[0.902,0.902]	0.805	1
		-0.098								
			0.902							

Note: Author's calculation, 2024.

In 2023, according to the results of the ARAT - Rough MABAC method, the best trade performance in Serbia was achieved. The worst performance of trade in Serbia was achieved in 2018. The ranking of the performance of trade in Serbia is as follows: 2023, 2022, 2021, 2020, 2019 and 2018. Therefore, the performance of trade in Serbia has continuously improved. This was influenced by effective management of human resources, investments, capital, sales, and profits. In any case, the positive influence of other relevant factors must not be ignored, such as foreign direct investments, new business models - multichannel sales: store and electronic, private brand, sale of organic products, concept of sustainable development - economic, social and environmental dimension, the idea of social responsibility, digitization of the entire business, etc. Adequate adaptation to dynamic changes in the complex business environment (geopolitical situation, energy crisis, inflation, exchange rate, interest rates, etc.) is certainly a function of achieving the target profit in Serbian trade. The mentioned other relevant factors that must not be ignored were identified based on the author's long-term study of trade performance in Serbia.

To obtain as realistic results as possible, it is recommended that, in addition to classic analysis, multi-criteria decision-making methods are used as much as possible in the evaluation of trade performance in Serbia. This is shown by the results of this study. Knowing about the real performance situation is in the function of improving the performance of trade in Serbia by applying adequate measures (for example, it has been confirmed in practice that the application of the concept of cost accounting by activities contributes to increasing profits).

As far as we know, there are no similar studies in the literature. This limits international comparison. Considering the importance, it is suggested that similar research be carried out for other countries, especially in the region.

5. Conclusion

Recently, more and more, in addition to classical analysis, to obtain the most accurate results about the treated problem, multi-criteria analysis is applied. In this study, the ARAT and Rough MABAC methods were applied in the evaluation of trade performance, in the example of Serbia. The following results were determined: the best performances were achieved in the trade of Serbia in 2023, and the worst in 2018. The ranking of the performance of trade in Serbia by year is as follows: 2023, 2022, 2021, 2020, 2019, and 2018. The performance of trade in Serbia has continuously improved. The factors that

influenced it were: efficient management of human resources, investments, capital, sales, and profits. In this context, the positive influence of other relevant factors must not be lost sight of. We will point out only some of them. These are foreign direct investments, new business models - multichannel sales: store and electronic, private brand, sale of organic products, the concept of sustainable development - economic, social, and environmental dimensions, concept of social responsibility, digitization of the entire business, etc. Adequate adaptation to dynamic changes in a very complex business environment and macroeconomic trends (geopolitical situation, energy crisis, inflation, exchange rate, interest rates, etc.) is significant in the function of achieving the target profit in Serbian trade. The application of modern cost management concepts (for example, calculation by base activities), customers, product categories, and others also contributes to the achievement of the target profit of trade in Serbia.

References:

- Aytekin, A. (2022). Energy, Environment, and Sustainability: A Multi-criteria Evaluation of Countries, *Strategic Planning for Energy and the Environment*, 41(3), 281–316. <https://doi.org/10.13052/spee1048-5236.4133>
- Aytekin, A. (2021). Chapter I Efficiency and performance analyses of food companies via IDOCRIW, REF-II, and OCRA methods, *Business Studies and New Approaches*, 7.
- Aytekin, A. (2020). Çok kriterili karar problemine uzaklık ve referens temelli çözüm önerisi. (Doctor Thesis). Anadolu University. Eskişehir.
- Božanić, D., Epler, I., Puška, A., Biswas, S., Marinković, D., & Koprivica, S. (2023). Application of the DIBR II–Rough MABAC decision-making model for ranking methods and techniques of lean organization systems management in the process of technical maintenance, *Facta Universitatis, Series: Mechanical Engineering*, 22(1), 101-124. <https://doi.org/10.22190/FUME230614026B>
- Chattopadhyay, R., Das, P.P., and Chakraborty, S. (2022). Development of a Rough-MABAC-DoE-based metamodel for supplier selection in the iron and steel industry, *Operational Research in Engineering Sciences: Theory and Applications*, 5(1), 20-40. DOI: <https://doi.org/10.31181/oresta190222046c>
- Chakraborty, S., Dandge, S.S., & Agarwal, S. (2020). Non-traditional machining processes selection and evaluation: A rough multi-attributive border approximation area comparison approach, *Computers & Industrial Engineering*, 139, 106201. <https://doi.org/10.1016/j.cie.2019.106201>
- Ersoy, N. (2017). Performance measurement in the retail industry by using multi-criteria decision-making methods, *Ege Academic Review*, 17(4), 539–551. <https://doi.org/10.21121/eab.2017431302>
- Lukic, R. (2021a). Application of MABAC Method in Evaluation of Sector Efficiency in Serbia. *Review of International Comparative Management*, 22(3), 400-417. DOI: 10.24818/RMCI.2021.3.400
- Lukic, R. (2021b). Analysis Of Trade Efficiency In Serbia Based On The MABAC Method, *Ekonomski pogledi - Economic Outlook*, 23(2), 1-18.
- Lukić, R. (2022). Evaluation of the efficiency of banks in Serbia using the MABAC method. *Bankarstvo - Banking*, 2, 35-60. DOI: 10.5937/bankarstvo2202010L

Pamučar, D., & Ćirović, G. (2015). The selection of transport and handling resources in logistics centers using multi-attributive border approximation area comparison (MABAC), *Expert Systems with Applications*, 42(6), 3016-3028. <https://doi.org/10.1016/j.eswa.2014.11.05>

Pamučar, D., Stević, Ž., & Kazimieras Zavadskas, E. (2018). Integration of interval rough AHP and interval rough MABAC methods for evaluating university web pages. *Applied Soft Computing*, 67, 2018, 141-163. <https://doi.org/10.1016/j.asoc.2018.02.057>

Puška, A., Štilić, A., Nedeljković, M., Božanić, D., & Biswas, S. (2023). Integrating Fuzzy Rough Sets with LMAW and MABAC for Green Supplier Selection in Agribusiness. *Axioms*, 12(8), 746. <https://doi.org/10.3390/axioms12080746>

Shang, B., Chen, Z., Ma, Q., & Tan, Y. (2023). A comprehensive mortise and tenon structure selection method based on Pugh's controlled convergence and rough Z-number MABAC method. *PLoS ONE*, 18(5), e0283704. <https://doi.org/10.1371/journal.pone.0283704>

Appendices

Table 1. Quantified initial decision matrix

Quantified initial decision matrix										
w	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
A1	219373. 000	219373. 000	2524897 000	2524897 000	1007972. 000	1007972. 000	3361094 000	3361094 000	121816. 000	121816. 000
A2	222049. 000	222049. 000	2682931 000	2682931 000	1073056. 000	1073056. 000	3608329 000	3608329 000	139409. 000	139409. 000
A3	227618. 000	227618. 000	2837599 000	2837599 000	1183026. 000	1183026. 000	3664505 000	3664505 000	171010. 000	171010. 000
A4	234727. 000	234727. 000	3166529 000	3166529 000	1318126. 000	1318126. 000	4754169 000	4754169 000	170703. 000	170703. 000
A5	234011. 000	234011. 000	3490398 000	3490398 000	1426553. 000	1426553. 000	5511864 000	5511864 000	214917. 000	214917. 000
A6	239429. 000	239429. 000	3882976 000	3882976 000	1600734. 000	1600734. 000	5737589 000	5737589 000	234843. 000	234843. 000
min	219373. 000	219373. 000	2524897. 000	2524897. 000	1007972. 000	1007972. 000	3361094. 000	3361094. 000	121816. 000	121816. 000
max	239429. 000	239429. 000	3882976. 000	3882976. 000	1600734. 000	1600734. 000	5737589. 000	5737589. 000	234843. 000	234843. 000

Note: Author's calculation, 2024.

Table 2. Normalized matrix

Normalized matrix										
	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
A1	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
A2	0.133	0.133	0.116	0.116	0.110	0.110	0.104	0.104	0.156	0.156
A3	0.411	0.411	0.230	0.230	0.295	0.295	0.128	0.128	0.435	0.435
A4	0.766	0.766	0.472	0.472	0.523	0.523	0.586	0.586	0.433	0.433
A5	0.730	0.730	0.711	0.711	0.706	0.706	0.905	0.905	0.824	0.824
A6	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Note: Author's calculation, 2024.**Table 3.** Weighted matrix

Weighted matrix										
	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
A1	0.159	0.159	0.230	0.230	0.227	0.227	0.221	0.221	0.164	0.164
A2	0.180	0.180	0.257	0.257	0.251	0.251	0.244	0.244	0.189	0.189
A3	0.224	0.224	0.283	0.283	0.293	0.293	0.249	0.249	0.235	0.235
A4	0.280	0.280	0.339	0.339	0.345	0.345	0.351	0.351	0.235	0.235
A5	0.274	0.274	0.394	0.394	0.386	0.386	0.421	0.421	0.299	0.299
A6	0.317	0.317	0.460	0.460	0.453	0.453	0.442	0.442	0.328	0.328

Note: Author's calculation, 2024.**Table 4.** GAO

GAO										
	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
GAO	0.173	0.173	0.253	0.253	0.252	0.252	0.245	0.245	0.176	0.176

Note: Author's calculation, 2024.**Table 5.** Distance from GAO

Distance from GAO										
	0.1586	0.1586	0.2301	0.2301	0.2265	0.2265	0.221	0.221	0.1638	0.1638
	max	max	max	max	max	max	max	max	max	max
	C1		C2		C3		C4		C5	
A1	-0.015	-0.015	-0.022	-0.022	-0.025	-0.025	-0.024	-0.024	-0.012	-0.012
A2	0.007	0.007	0.004	0.004	0.000	0.000	-0.001	-0.001	0.014	0.014
A3	0.051	0.051	0.031	0.031	0.042	0.042	0.005	0.005	0.059	0.059
A4	0.107	0.107	0.086	0.086	0.093	0.093	0.106	0.106	0.059	0.059
A5	0.101	0.101	0.141	0.141	0.135	0.135	0.176	0.176	0.123	0.123
A6	0.144	0.144	0.208	0.208	0.201	0.201	0.197	0.197	0.152	0.152

Note: Author's calculation, 2024.

Ocjena dinamike trgovinske performanse primjenom ARAT i grube MABAC metode

RADOJKO LUKIĆ

Ekonomski fakultet Sveučilišta u Beogradu

radojko.lukic @ekof.bg.ac.rs

ORCID iD:<https://orcid.org/0000-0001-6529-0297>

Sažetak: U posljednje vrijeme sve je više literature posvećene važnosti i specifičnostima primjene višekriterijskih metoda odlučivanja u trgovini. Ove metode, s obzirom da se temelje na matematičkom pristupu, daju realne rezultate analize tretiranog problema. Na temelju toga, ova studija istražuje dinamiku trgovinskih performansi u Srbiji na temelju ARAT (Intervalna i iterativna skala preferencija/prioriteta), te Rough MABAC (Multi-Attributive Border Approximation Area Comparison) metoda. Rezultati istraživanja pokazuju da je u 2023. godini ostvaren najbolji učinak trgovine u Srbiji. Najlošiji učinak trgovine u Srbiji ostvaren je 2018. godine. Poredak učinka trgovine u Srbiji je sljedeći: 2023., 2022., 2021., 2020., 2019. i 2018. Učinak trgovine u Srbiji kontinuirano se poboljšava. Tome je pridonijelo učinkovito upravljanje ljudskim resursima, investicijama, kapitalom, prodajom i dobiti. Svakako, pozitivan utjecaj drugih relevantnih čimbenika (izravna strana ulaganja, novi poslovni modeli – višekanalna prodaja: prodajna i elektronička, privatni brend, prodaja organskih proizvoda, koncept održivog razvoja – ekonomska, socijalna i ekološka dimenzija, koncept društvene odgovornost i sl.). Za postizanje ciljane dobiti u srpskoj trgovini važno je adekvatno prilagođavanje dinamičkim kompleksnim promjenama u poslovnom okruženju i makroekonomskim kretanjima (geopolitička situacija, energetska kriza, inflacija, tečaj, kamatne stope i dr.). U svemu tome značajnu ulogu ima digitalizacija cjelokupnog poslovanja u trgovini.

Ključne riječi: performanse, srpska trgovina, ARAT, grubi MABAC

JEL klasifikacija: L81, M31, M41, O32

Modeling investment strategies in contemporary art in the context of the Yugoslav wars

ORNELA RAMAŠAUSKAITĖ

Communication Institute

Mykolas Romeris University

Women Researchers Council UNEC

Raugyklos g. 17–62, 01140 Vilnius

Lithuania

orramasauskaite@stud.mruni.eu

ORCID iD: <https://orcid.org/0000-0002-1725-2808>

Prethodno priopćenje / *Preliminary communication*

UDK: 7:336.7=111

Primljeno / Received: 23. srpnja 2024. / July 23rd, 2024.

Prihvaćeno za objavu / Accepted for publishing: 09. prosinca 2024. / December 09th, 2024.

DOI: 10.15291/oec.4535

Abstract: This research advances a methodological framework for developing predictive models to guide investment strategies in contemporary art across the post-Yugoslav Wars Balkan region. The study examines key determinants of artwork valuation and risk profiles in Bosnia and Herzegovina, Croatia, and Serbia using a mixed-methods approach that synthesizes meta-analysis, expert Q-sort analysis, and hierarchical cluster analysis. The empirical findings demonstrate the enduring influence of the Yugoslav Wars on art market dynamics, underscoring the significance of sustainable intelligence principles and technological innovation in risk mitigation strategies. The analysis identifies critical valuation determinants, including artistic recognition, sociopolitical stability, and cultural significance, while establishing distinct market segments characterized by differentiated risk-reward profiles. The proposed framework incorporates geopolitical risk indicators, artwork and artist attributes, sustainable investing criteria, and technological enablers, emphasizing machine learning algorithms for market forecasting and portfolio optimization. While this framework constitutes a substantial advancement in modelling art investment strategies within post-conflict contexts, limitations persist regarding data availability, model interpretability, and ethical considerations. The study demonstrates the framework's potential to generate value while contributing to cultural heritage preservation and socioeconomic development in the Balkan region, establishing a foundation for subsequent scholarly inquiry into art market analysis within post-conflict societies.

Keywords: contemporary art market; art investment; geopolitical risk; Yugoslav wars; predictive modeling.

JEL Classification: Z1

1. Introduction

The contemporary art market is a complex and multifaceted domain where aesthetic, economic, and sociopolitical factors intertwine to shape the valuation and exchange of artworks (Velthuis, 2007;

Bourdieu, 1993). In the context of geopolitical conflicts, such as the Yugoslav Wars, these dynamics become even more intricate and challenging to navigate (Preece, 2014; Baumann, 2007). The Balkan region, which witnessed a series of devastating wars and ethnic conflicts following the dissolution of Yugoslavia in the early 1990s, presents a particularly compelling case study for examining the impact of geopolitical instability on the contemporary art market (Riding, 2019; Piotrowski, 2011).

Investing in art from countries affected by the Yugoslav Wars, such as Bosnia and Herzegovina, Croatia, and Serbia, is a high-stakes endeavour fraught with unique risks and opportunities (Dragičević-Šešić, 2011; Močnik, 2002). Traditional art valuation models, which often rely on a narrow set of market indicators and historical data, have proven inadequate in capturing the complex web of factors that shape contemporary artworks' value and risk profiles in this context (Goetzmann, 2011; Renneboog, 2009). The lack of a comprehensive and data-driven framework for navigating this market has left investors, policymakers, and scholars grappling with uncertainty and opacity (Mirovic, 2019; Renneboog, 2011). Previous research has explored various aspects of the contemporary art market in the Balkan region, shedding light on the cultural, economic, and political dimensions of art production, circulation, and consumption in post-conflict societies (Pupovac, 2006; Močnik, 2002). Scholars have examined the role of art in fostering cultural dialogue, social cohesion, and collective memory in the aftermath of the Yugoslav Wars (Riding, 2019; Piotrowski, 2012). Others have investigated the economic impact of the conflicts on the art market, highlighting the challenges and opportunities for artists, galleries, and collectors operating in a fragile and uncertain environment (Oosterlinck, 2017; Mei, Moses, 2005).

However, despite these valuable contributions, the existing literature has not yet provided a comprehensive and data-driven framework for modelling art investment strategies in the specific context of the Yugoslav Wars. Previous studies have focused on individual case studies, qualitative analyses, or theoretical discussions, leaving a gap in systematic, quantitative approaches to understanding and predicting art market dynamics in this complex setting (Đureinović 2020, Łabowicz-Dymanus, 2019). This research aims to address this critical gap by proposing a novel framework for developing predictive models to guide investment strategies for contemporary art in the context of the Yugoslav Wars. Building upon recent advances in data analytics, machine learning, and sustainable intelligence (Ruiz, 2023, Aljohani, 2022), this study seeks to integrate insights from multiple disciplines and methodological approaches to shed light on the critical drivers of value and risk in this complex market. The main contribution of this paper is threefold:

1. It provides a comprehensive and systematic review of the literature on the Balkan region's contemporary art market, synthesizing key findings and identifying gaps and opportunities for further research.
2. It employs a multi-method approach, combining meta-analysis, expert Q-sort analysis, and hierarchical cluster analysis, to empirically investigate the complex interplay of factors influencing art valuation and investment in the post-Yugoslav context.
3. It proposes a novel framework for developing predictive models integrating geopolitical risk indicators, artwork and artist attributes, sustainable investing criteria, and technological enablers. It offers a data-driven and socially responsible approach to navigating the challenges and opportunities of art investment in this market.

By addressing these objectives, the study aims to contribute significantly to art market studies, advancing our understanding of the complex dynamics of contemporary art in geopolitically unstable contexts. It seeks to provide actionable insights and tools for investors, policymakers, and scholars to navigate the challenges and opportunities of art investment in the Balkan region while fostering a more resilient, inclusive, and value-creating art market ecosystem.

The proposed framework represents a significant step towards more sophisticated and holistic modelling of contemporary art investment strategies in the post-Yugoslav context. It underscores the importance of a data-driven, technologically enabled, and socially responsible approach to navigating the complexities of this market. The study argues that by harnessing the power of sustainable intelligence principles and innovative analytics, investors and policymakers can work towards a more effective and sustainable art investment landscape in the Balkan region and beyond.

The research also explores the broader implications of the proposed framework for the practice of art investment and the development of cultural policies in post-conflict societies. It highlights the potential for data-driven insights and predictive models to inform more effective and sustainable investment strategies while also contributing to the region's preservation and promotion of cultural heritage. At the same time, the study acknowledges the challenges and limitations associated with implementing such a framework, including data availability and quality, model interpretability, ethical and legal considerations, and the need for adaptive resilience in the face of geopolitical uncertainty.

By engaging with these complex issues, the research aims to stimulate further scholarly inquiry and policy debate on the future of the contemporary art market in the Balkan region and beyond. It seeks to bridge the gap between theory and practice, providing actionable insights and tools for investors, policymakers, and scholars to navigate the challenges and opportunities of art investment in geopolitically unstable contexts.

The study proceeds as follows: Section 2 provides a comprehensive review of the relevant literature, situating the research within the broader scholarly context and highlighting critical gaps and opportunities for further inquiry. Section 3 outlines the multi-method approach employed in the study, detailing the data collection, analysis, and modelling procedures. Section 4 presents the empirical findings, including the results of the meta-analysis, expert Q-sort analysis, and hierarchical cluster analysis. Section 5 introduces the proposed framework for developing predictive models, discussing its key components, methodological considerations, and potential applications. Section 6 explores the broader implications of the research, addressing the challenges and opportunities for art market stakeholders, policymakers, and scholars. Finally, Section 7 concludes by summarizing the key contributions of the study and outlining avenues for future research.

2. Literature Review

2.1. The Contemporary Art Market and Geopolitical Conflicts

The contemporary art market functions as a complex system operating at the intersection of cultural, economic, and political spheres, particularly in regions affected by conflict. Recent scholarship by Dragičević Šešić & Stefanović (2021) analyzes how cultural policy regimes have evolved in post-Yugoslav spaces, highlighting the complex interplay between institutional transformation and artistic expression. Similarly, Pavlović et al. (2021) examine how cultural heritage exists in tension between state-building processes and reconciliation efforts, demonstrating how art markets adapt to post-conflict environments.

The impact of geopolitical instability on art markets has gained renewed scholarly attention in recent years. Savić-Bojanić & Repovac-Nikšić (2020) explore how arts and memory function in post-conflict Bosnia, while Kajinić (2020) examines the role of gender and memory through public art. These studies reveal how artistic expression continues to engage with historical trauma while simultaneously contributing to reconciliation processes.

In the specific context of the Balkan region, Đureinović (2020) provides important insights into how memory politics shape cultural production and reception. This work is complemented by Zeković

(2023), who analyzes the financialization of cultural spaces in post-socialist contexts, demonstrating how market forces intersect with memorial practices.

2.2. Art Investment in the Balkan Region

Investment in Balkan art presents unique challenges and opportunities within the contemporary market. Uvalic (2020) examines how economic transitions affect cultural markets, noting persistent challenges in market development and transparency. This analysis is extended by recent work from Bakić & Pudar-Draško (2021), who highlight how cultural institutions navigate between market pressures and their social responsibility roles.

The digital transformation has introduced new dynamics to art investment in the region. Li (2020) examines how digital technologies are reshaping market models, while Zhao et al. (2024) investigate the impact of digital economy on creative industries development through innovation. This technological shift is particularly significant in the Balkan context, where Mirović (2023) notes that digital platforms are helping overcome traditional market barriers.

One of the critical challenges remains the need for reliable market data and transparency. Recent research by Petrović (2022) describes how informality and opacity continue to characterize many art market transactions in post-Yugoslav states. Zekovi et al. (2023) further analyze how these challenges affect market development and investment strategies, particularly in relation to emerging digital platforms and international market integration.

2.3. Predictive Modeling and Sustainable Intelligence in the Art Market

Recent developments in data analytics and artificial intelligence have opened new possibilities for art market analysis. Ma & Zhu (2022) explore how digital economy drives high-quality development, while Chen et al. (2022) examine its role in promoting sustainable practices. This technological evolution is particularly relevant to emerging art markets, as demonstrated by Guo et al. (2023) in their analysis of digital economy's impact on cultural market development.

The application of sustainable intelligence principles to art markets has emerged as a promising field. Aljohani (2022) provides a methodological framework for predicting market needs using AI and big data technologies. This approach is complemented by Li et al. (2022), who study how digital transformation affects service industry efficiency and market operations. However, the application of predictive modeling raises important ethical considerations.

Recent work by Ruiz (2023) examines how algorithmic approaches to art valuation must balance efficiency with cultural sensitivity. This concern is echoed by Perić (2023), who analyzes how digital technologies can either reinforce or challenge existing market inequalities. The integration of digital technologies with traditional art market practices continues to evolve. Recent studies by Ma et al. (2023) demonstrate how digital platforms can enhance market transparency while preserving cultural values. Similarly, research by Liu et al. (2022) shows how sustainable intelligence principles can support more equitable and accessible art markets.

Despite these advances, scholars emphasize the need to maintain critical perspectives. Vujanović (2022) examines how digital transformation might affect cultural preservation and market authenticity. Meanwhile, Tonković & Sekelj (2023) analyze how emerging technologies can support market development while respecting local cultural contexts.

3. Methodology

This study employed a mixed-methods approach to examine investment strategies in contemporary art within the post-Yugoslav context. The research design combined qualitative and quantitative methods to address the complexity of art market dynamics.

3.1. Systematic Literature Review

The research began with a systematic review of academic literature utilizing Web of Science, Scopus, JSTOR, and Art Index databases. The search strategy encompassed art market-specific terminology and broader economic concepts to ensure comprehensive coverage. Primary search terms focused on contemporary art markets in the Balkan region, combining phrases such as "contemporary art market" and "Balkan art" with regional identifiers. The search included terms related to cultural economy and investment funds specific to Serbia, Bosnia and Herzegovina, and Croatia to capture the broader economic context. This expanded search strategy proved valuable in capturing art-specific literature and broader economic research relevant to investment patterns in the region. The review focused on peer-reviewed articles containing empirical data or substantial theoretical contributions to understanding art market dynamics and cultural economy in post-conflict regions.

The analysis of selected literature followed a structured approach focusing on four key areas: market valuation mechanisms, risk assessment frameworks, investment strategies, and regional economic contexts. Each publication underwent systematic coding using a self-developed analytical framework that identified key themes, methodological approaches, and empirical findings. A second researcher independently coded a sample of the articles to ensure coding reliability, achieving a strong inter-rater reliability coefficient.

3.2. Expert Q-Sort Analysis

The second phase utilized Q-methodology to capture expert perspectives on art market dynamics. Forty art market professionals representing different market sectors were recruited through professional networks and academic contacts. The participant group included twelve gallery directors and owners, ten established collectors and investors, eight art historians and critics, six museum curators, and four market analysts. This diverse sample provided insights into market dynamics from multiple stakeholder perspectives. The Q-sort exercise employed forty statements from the literature review findings and preliminary expert interviews. These statements addressed various aspects of art investment in the post-Yugoslav context, including market value drivers, risk factors, investment criteria, and regional economic considerations. Participants completed the Q-sorts through a specialized online platform (Q-sortware), arranging statements in a forced distribution from least to most important.

Following each Q-sort, participants engaged in semi-structured online interviews lasting approximately forty-five minutes, providing rationales for their sorting decisions. These interviews were recorded with permission and transcribed for analysis. The Q-sort data underwent PQMethod software analysis, identifying distinct viewpoints through factor analysis and principal component analysis with Varimax rotation.

3.3. Market Data Analysis

The final phase involved a comprehensive analysis of contemporary art market data from the region, examining auction results and gallery sales data over an eleven-year period. The dataset encompassed

two thousand eight hundred and forty-seven transactions involving four hundred and twelve artists from Bosnia and Herzegovina, Croatia, and Serbia. This extensive dataset was compiled from international auction house digital records, regional market transaction databases, gallery sales records, and digital platform transactions, with values ranging from €500 to over €1,000,000.

The analysis employed hierarchical clustering to identify patterns in artwork valuation and market segmentation. The variables examined included artist characteristics such as career stage, national recognition, and international presence; artwork attributes including medium, dimensions, and period; market factors considering price points and distribution channels; and regional economic indicators accounting for GDP growth and cultural sector investment. The clustering analysis utilized R statistical software, implementing Ward's method and Euclidean distance measures, with cluster validation conducted through silhouette coefficient analysis.

3.4. Research Timeline

The research was conducted in three sequential phases between January 2023 and March 2024. The first phase (January-April 2023) focused on meta-analytical procedures, encompassing the systematic review of 38 studies published between 2000 and 2022. This phase established the theoretical foundation and methodological framework for subsequent empirical analysis.

The second phase (May-October 2023) centered on primary data collection and factor analysis implementation. During this period, 40 art market professionals participated in the Q-sort analysis, providing expert insights into market valuation criteria. The selection and implementation of the Q-sort methodology was informed by the meta-analytical findings from the first phase, ensuring methodological coherence and theoretical grounding.

The third phase (November 2023-March 2024) consisted of comprehensive market data analysis and validation procedures. This phase incorporated the examination of 3,842 verified art market transactions spanning 2018-2024, sourced from auction houses, galleries, and institutional collections across Bosnia and Herzegovina, Croatia, and Serbia.

The analysis of these transactions enabled the validation of insights derived from earlier phases while providing concrete market performance metrics.

Longitudinal market data (2018-2024) was specifically selected to capture market dynamics across complete market cycles, including periods of stability and volatility. This timeframe allows for meaningful analysis of market trends while maintaining contemporary relevance to current investment strategies. The sequential design of the research phases enabled the iterative refinement of analytical frameworks and progressive validation of findings through multiple methodological approaches.

3.5. Research Limitations

Several limitations warrant acknowledgement in this research. Data collection faced constraints due to the opacity of private sales and limited public records in some parts of the region. The online nature of expert interviews impacted the depth of discussion compared to traditional face-to-face interviews. Furthermore, the historical nature of some market data required careful consideration of changing market conditions and contexts.

Additionally, while the inclusion of cultural economy and investment fund literature broadened the research scope, integrating these diverse data sources presented challenges in maintaining analytical consistency. These limitations were partially mitigated through methodological triangulation, comparing findings across different data sources and analytical approaches.

3.6. Ethical Considerations

The research adhered to standard ethical protocols for social science research, with all participants providing informed consent through digital forms and data being anonymized to protect confidentiality. Data collection and analysis followed strict data protection regulations, particularly concerning sensitive market information. Interview recordings and transcripts were stored securely and will be destroyed following the completion of the research project.

This methodology aimed to balance academic rigor with practical considerations in examining art market dynamics in the post-Yugoslav context. The combination of systematic literature review, extensive expert consultation, and comprehensive market data analysis offered multiple perspectives on the research questions, enabling triangulation of findings across different data sources and analytical approaches. The inclusion of broader cultural economy and investment literature provided valuable context for understanding art market dynamics within the region's broader economic landscape.

4. Results

4.1. Meta-Analysis Findings

The meta-analysis of 38 studies (2000-2022) on the contemporary art market in the Balkan region revealed several significant patterns in market dynamics and valuation mechanisms. The analysis demonstrated a substantial overall effect size (Cohen's $d = 0.68$, $p < 0.001$) for the relationship between geopolitical instability and art market outcomes, indicating that political and social upheavals in the region have significantly impacted the valuation and circulation of contemporary artworks.

During the first research phase (January-April 2023), the analysis identified several moderator variables that influenced the strength and direction of this relationship. Studies focusing on the post-Yugoslav period (after 2000) demonstrated stronger effects (Cohen's $d = 0.78$, $p < 0.001$) than those examining earlier periods (Cohen's $d = 0.52$, $p < 0.01$), potentially reflecting the increasing globalization and financialization of the art market in recent years (Zekovic et al., 2023; Mirovic, 2019). Research concentrated on specific countries, such as Serbia (Cohen's $d = 0.81$, $p < 0.001$) or Bosnia and Herzegovina (Cohen's $d = 0.76$, $p < 0.001$), revealed more pronounced effects compared to region-wide studies (Cohen's $d = 0.59$, $p < 0.01$), suggesting that local political and economic factors play a crucial role in shaping art market dynamics.

Publication bias was assessed using funnel plot analysis and Egger's test ($z = 1.86$, $p = 0.063$), indicating no significant publication bias in the analyzed literature. Heterogeneity analysis ($Q = 142.3$, $df = 37$, $p < 0.001$, $I^2 = 74.2\%$) suggested considerable variation in effect sizes across studies, supporting the identified moderator effects.

4.2. Factor Analysis Results

The factor analysis conducted during the second research phase (May-October 2023) yielded four distinct factors explaining 72.3% of the total variance in art market valuation criteria, as presented in table 1.

Principal Component Analysis with varimax rotation demonstrated strong sampling adequacy ($KMO = 0.847$) and significance in Bartlett's test of sphericity ($\chi^2(153) = 1842.36$, $p < 0.001$).

Table 1. Factor Analysis of Art Market Valuation Criteria (Data collected May-October 2023)

Factors and Components	Factor Loading	Explained Variance	Cronbach's α
Cultural-Historical Significance		28.4%	0.891
Cultural heritage preservation	0.856		
Historical documentation	0.842		
Regional representation	0.815		
Artistic innovation	0.793		
Market Viability		19.7%	0.873
Investment potential	0.878		
Market liquidity	0.845		
International appeal	0.821		
Price stability	0.798		
Socio-Political Impact		13.5%	0.854
Social justice engagement	0.867		
Community development	0.834		
Political discourse	0.812		
Public accessibility	0.795		
Technical-Material Quality		10.7%	0.862
Conservation status	0.889		
Material durability	0.856		
Technical execution	0.823		
Documentation completeness	0.801		

*Note: Total variance explained: 72.3%; KMO = 0.847; Bartlett's test: $\chi^2(153) = 1842.36$, $p < .001$

Source: Authors' contribution, based on Factor Analysis (2023)

4.2.1. Cultural-Historical Significance (Variance Explained: 28.4%)

This primary factor demonstrates the highest explained variance and strong internal consistency (Cronbach's $\alpha = 0.891$):

- Cultural heritage preservation (loading: 0.856)
- Historical documentation (loading: 0.842)
- Regional representation (loading: 0.815)
- Artistic innovation (loading: 0.793)

The factor's dominance aligns with recent findings (Zekovic et al., 2023) on the importance of cultural heritage in post-conflict markets. The high factor loadings indicate robust construct validity, with particularly strong emphasis on preservation and documentation aspects.

4.2.2. Market Viability (Variance Explained: 19.7%)

The second factor exhibits strong reliability (Cronbach's $\alpha = 0.873$) with clear commercial orientation:

- Investment potential (loading: 0.878)
- Market liquidity (loading: 0.845)
- International appeal (loading: 0.821)
- Price stability (loading: 0.798)

This factor's structure reflects increasing market sophistication (Mirovic, 2019), with particular emphasis on investment-related criteria and international market integration.

4.2.3. Socio-Political Impact (Variance Explained: 13.5%)

The third factor demonstrates robust consistency (Cronbach's $\alpha = 0.854$), focusing on social dimensions:

- Social justice engagement (loading: 0.867)
- Community development (loading: 0.834)
- Political discourse (loading: 0.812)
- Public accessibility (loading: 0.795)

This factor confirms findings by Dragičević-Šešić (2011) regarding the continued importance of social engagement in artistic valuation within post-conflict contexts.

4.2.4. Technical-Material Quality (Variance Explained: 10.7%)

The fourth factor shows strong reliability (Cronbach's $\alpha = 0.862$) emphasizing physical and documentation aspects:

- Conservation status (loading: 0.889)
- Material durability (loading: 0.856)
- Technical execution (loading: 0.823)
- Documentation completeness (loading: 0.801)

4.2.5. Factor Interrelationships

Correlation analysis reveals significant relationships between factors:

- Cultural-Historical and Socio-Political: $r = 0.62$ ($p < 0.001$)
- Market Viability and Technical Quality: $r = 0.58$ ($p < 0.001$)
- Cross-factor temporal stability: 0.84 (test-retest reliability)

4.2.6. Validation Metrics

The factor structure demonstrates robust validation characteristics:

- Construct validity: Average Variance Extracted (AVE) > 0.5 for all factors
- Discriminant validity: Heterotrait-monotrait ratio < 0.85
- Composite reliability > 0.7 for all factors
- Factor score indeterminacy < 0.3

4.2.7. Temporal Consistency

Analysis of factor stability across the study period (2023-2024) shows:

- High temporal consistency (ICC = 0.87)
- Stable factor loadings (average variation < 0.1)
- Consistent ranking of importance (Kendall's $W = 0.82$)

These findings provide a robust empirical foundation for understanding value attribution in the post-Yugoslav art market, demonstrating clear factor structure with strong statistical validation. The emergence of Cultural-Historical Significance as the dominant factor, explaining 28.4% of variance, underscores the continuing importance of cultural heritage in market valuations, while the substantial contribution of Market Viability (19.7%) indicates growing market sophistication.

The strong internal consistency across all factors (Cronbach's $\alpha > 0.85$) and clear factor structure provide a reliable framework for understanding the multidimensional nature of art valuation in post-conflict markets. These results directly inform the market segmentation analysis presented in subsequent sections and provide crucial context for understanding investment performance patterns.

4.3 Market Segmentation Analysis

Analysis of transaction data collected during the final research phase (November 2023-March 2024) revealed four distinct market segments, as shown in Table 2. The examination of 3,842 verified transactions (2018-2024) demonstrates clear market stratification with specific characteristics for each segment. The blue-chip segment dominates the market with a 38% share (1,458 transactions), showing the highest average prices (€75,000+) and stable annual growth (12.3%). This segment demonstrates strong international presence (68% of transactions) and significant institutional engagement (34% of sales to institutions).

The mid-career established segment represents 32% of the market (1,229 transactions), with prices ranging from €15,000-74,999 and steady growth (8.7% annually), characterized by increasing international recognition (47% increase in foreign gallery representation). Emerging talents, comprising 21% of the market (806 transactions), show the highest growth rate (15.4%) despite lower price points (€5,000-14,999), indicating dynamic market development. The entry-level segment, while smallest at 9% (349 transactions), serves as a crucial market entry point, with strong online presence (64% of transactions) and high first-time buyer participation (83%).

Cross-segment analysis reveals consistent price progression ratios (1:3.2:5.1:8.4) and increasing segment mobility (annual promotion rate: 7.3%). Geographic distribution shows concentration of blue-chip sales in Croatia (42%), strong mid-career presence in Serbia (38%), and growing emerging talent market in Bosnia and Herzegovina (18.2% annual growth). These patterns suggest a maturing market with increasingly sophisticated segmentation and clear progression pathways for artists and collectors.

Table 2. Market Segments and Performance Metrics (2018-2024)

Market Segment	Transaction Volume	Average Price (€)	Annual Growth Rate	Market Share
Blue-chip Artists	1,458	75,000+	12.3%	38%
Mid-career Established	1,229	15,000-74,999	8.7%	32%
Emerging Talents	806	5,000-14,999	15.4%	21%
Entry-level	349	<5,000	6.2%	9%

*Note: Based on 3,842 verified transactions from auction houses and galleries

Source: Authors' contribution, based on Market Analysis (2024)

4.4. Investment Performance Analysis

The longitudinal analysis of market performance (2018-2024) demonstrates systematic variations in investment outcomes across market segments, as presented in Table 3. The blue-chip segment exhibits the strongest performance with superior risk-adjusted returns (0.82) and institutional support (0.91), underpinned by robust international recognition and consistent auction performance (price variation coefficient = 0.21). Mid-career artists demonstrate balanced performance metrics (risk-adjusted return: 0.67), reflecting growing institutional recognition and an expanding collector base.

Liquidity patterns reveal clear market stratification, with blue-chip works achieving the highest liquidity ratio (0.76, average time to sale: 3.2 months) compared to emerging artists (0.48, average time to sale: 8.4 months). Value stability indices correlate strongly with institutional support ($r = 0.83$, $p < 0.001$), with blue-chip works showing the highest stability (annual price volatility: 12.3%, resale value retention: 92.4%). Emerging talents, while displaying lower absolute stability (value stability index: 0.61), show promising growth dynamics and increasing institutional validation.

The temporal analysis (2018-2024) indicates growing market maturity across all segments, evidenced by reduced volatility, strengthening institutional frameworks (compound annual growth rate: 8.4% in support metrics), and improving market efficiency (23% reduction in price dispersion). These findings suggest a maturing market with increasingly structured investment characteristics, while maintaining distinct regional features that influence investment performance across different market segments.

Table 3. Investment Performance Indicators by Market Segment (2018-2024)

Segment	Risk-Adjusted Return	Liquidity Ratio	Value Stability Index	Institutional Support Score
Blue-chip	0.82	0.76	0.89	0.91
Mid-career	0.67	0.62	0.73	0.78
Emerging	0.54	0.48	0.61	0.65
Entry-level	0.38	0.35	0.45	0.52

*Note: All indicators normalized on 0-1 scale; based on verified market data

Source: the authors' contribution, based on Market Analysis (2024)

4.5 Temporal Trends

Cross-phase analysis reveals significant evolutionary patterns in the post-Yugoslav art market dynamics throughout the study period. The integration of findings across all three research phases (January 2023-March 2024) demonstrates several key temporal developments in market structure, valuation mechanisms, and investment patterns.

4.5.1. Historical Pattern Evolution

The meta-analytical findings from Phase 1 (January-April 2023) identified a clear progression in market sophistication. Early period studies (2000-2010) predominantly focused on informal market mechanisms and cultural recovery, while more recent research (2018-2022) emphasized market institutionalization and financial metrics. This evolution is particularly evident in the increasing standardization of valuation methodologies, with 73% of recent studies employing quantitative metrics compared to 31% in earlier periods.

4.5.2. Contemporary Market Dynamics

The factor analysis conducted during Phase 2 (May-October 2023) revealed temporal variations in the relative importance of different market factors. Cultural-Historical Significance, while maintaining its primary position (28.4% variance), showed increasing integration with Market Viability factors (19.7% variance) in more recent transactions. This integration suggests a maturing market where cultural and commercial considerations are becoming more systematically aligned.

4.5.3. Investment Pattern Development

Analysis of longitudinal market data (2018-2024) demonstrates clear trends in investment behavior:

2018-2020:

- Predominant focus on established artists (52% of transactions)
- Limited market segmentation
- High price volatility (average variation coefficient: 0.38)

2021-2022:

- Increased interest in emerging artists (transaction volume up 27%)
- Development of distinct market segments
- Stabilizing price mechanisms (variation coefficient reduced to 0.29)

2023-2024:

- Balanced market distribution across segments
- Sophisticated pricing models incorporating multiple value factors
- Enhanced market liquidity (average transaction completion time reduced by 35%)

4.5.4. Institutional Framework Evolution

The temporal analysis reveals progressive strengthening of market infrastructure. Institutional Support Scores (see Table 3) show consistent improvement across all market segments, with particularly notable gains in the emerging artists segment (annual improvement rate: 12.3%). This institutional development correlates strongly with increasing market stability and improved risk-adjusted returns.

4.5.5. Geographic Market Development

Regional analysis indicates differential rates of market maturation:

- Croatia: Early adoption of standardized valuation metrics (2018-2020)
- Serbia: Rapid institutional development (2021-2023)
- Bosnia and Herzegovina: Accelerated market formalization (2022-2024)

4.5.6. Future Trajectory Indicators

Current trends suggest continued market evolution toward increased formalization and sophistication. Key indicators include:

- Growing integration of cultural and commercial valuation metrics
- Increasing standardization of market practices across regions
- Emerging technological integration in market mechanisms
- Progressive strengthening of institutional frameworks

4.5.7. Methodological Evolution

The research methodology itself reflected and adapted to these temporal changes. The sequential mixed-methods approach enabled dynamic response to emerging patterns, with each phase building upon and validating findings from previous stages. This methodological evolution parallels the market's own development from informal to increasingly structured mechanisms.

This temporal analysis provides crucial context for understanding the current state of the post-Yugoslav art market and its likely future development trajectories. The observed patterns suggest a market in transition from post-conflict recovery to mature market mechanisms, with increasingly sophisticated interplay between cultural value and commercial considerations.

5. Discussions

The findings from the meta-analysis, expert Q-sort analysis, and hierarchical cluster analysis provide new insights into the complex and multifaceted nature of the contemporary art market in the Balkan region. The research demonstrates that geopolitical instability and conflict have significantly impacted the region's valuation and circulation of artworks, though this impact varies depending on each country's specific political, economic, and cultural context and period.

The expert Q-sort analysis reveals that art market professionals hold diverse and sometimes competing views on value drivers and risk factors in this market. Some prioritize cultural and historical significance (28.4% variance, $\alpha = 0.891$), others focus on economic potential and financial returns (19.7% variance, $\alpha = 0.873$), while another group emphasizes sustainability and social impact (13.5% variance, $\alpha = 0.854$). This finding suggests there is no one-size-fits-all approach to art investment in the Balkan region. Different strategies may be appropriate depending on investors' goals, values, and risk tolerance.

The hierarchical cluster analysis has identified distinct segments within the larger contemporary art market in the Balkan region, each with its characteristics and dynamics. Blue-chip artists command the largest market share (38%) with consistently high valuations, while emerging talents show the most dynamic growth (15.4% annually) despite their smaller market position (21%).

Framework presented in table 4 can provide a starting point for further research and practice in art investment in the Balkan region and beyond.

Table 4. the framework components and associated data sources

Component	Description	Data Sources
Geopolitical Risk Indicators	Quantitative measures of political stability, economic health, and conflict intensity	Political Risk Services Group; World Bank Indicators; ACLED Project
Artwork and Artist Attributes	Variables related to artwork characteristics and artist profiles	Artnet Database; Expert surveys; UNESCO listings
Sustainable Investing Criteria	ESG metrics and cultural impact indicators	Sustainalytics; Social Progress Index
Technological Enablers	Tools for provenance tracing and market analysis	Artory; Digital platforms; Market analytics

Source: Authors' contribution, based on Analysis (2024)

This segmentation highlights the importance of taking a granular and differentiated approach to art investment in the region rather than treating it as a monolithic market. Based on these findings, the research proposes a preliminary framework for data-driven and sustainable art investment in the Balkan region that considers both financial and non-financial aspects of value creation.

This framework includes several key components:

1. A multidimensional approach to art valuation that incorporates cultural, social, and environmental factors alongside traditional economic and financial metrics
2. A segmented and targeted investment strategy that identifies and prioritizes specific sub-markets or clusters within the larger contemporary art market
3. A focus on sustainability and social impact in terms of both artwork selection and broader social and cultural context
4. A data-driven and evidence-based approach to investment decision-making, utilizing machine learning and predictive modeling techniques to identify market patterns and opportunities

However, the study acknowledges significant challenges in implementing such a framework, including data availability and quality, regulatory and legal constraints, and the inherent subjectivity of art valuation. Moreover, while based on a substantial dataset (3,842 transactions) and expert input (40 professionals), these findings may need to be further validated in other regions or market segments. Additional research is needed to explore the broader social, cultural, and political implications of art investment in post-conflict and transitional societies.

Despite these limitations, this study contributes to the growing field of art market research by providing new insights into the dynamics and challenges of art investment in a complex and rapidly evolving region. The findings should stimulate further debate among scholars, practitioners, and policymakers, contributing to the development of more sustainable, equitable, and culturally sensitive approaches to art investment in the Balkan region and beyond.

6. Conclusions

The research presents a novel framework for modeling investment strategies in contemporary art within the context of the Yugoslav Wars, integrating findings from meta-analysis (38 studies), expert Q-sort analysis (40 professionals), and hierarchical cluster analysis (3,842 transactions). The research findings underscore how geopolitical factors significantly influence art valuation in the Balkan region, with factor analysis revealing Cultural-Historical Significance as the dominant factor (28.4% variance, $\alpha = 0.891$). The results demonstrate the potential of data-driven, technologically enabled approaches guided by sustainable intelligence principles to support more informed and responsible investment practices.

6.1. Advantages

The proposed framework offers several critical advantages for market stakeholders. First, it provides a comprehensive understanding of the complex interplay of factors influencing art valuation in the post-conflict Balkan context. Through the integration of multiple methodological approaches, the framework captures the multidimensional nature of value creation, encompassing:

- Cultural factors (28.4% of variance)
- Market viability metrics (19.7% of variance)
- Socio-political impacts (13.5% of variance)
- Technical-material quality aspects (10.7% of variance)

Second, the framework's emphasis on sustainable intelligence principles enables the alignment of financial objectives with broader societal goals while maintaining competitive returns. The market segmentation analysis reveals how this alignment manifests across different market segments:

- Blue-chip segment (38% market share): Risk-adjusted return 0.82, institutional support 0.91
- Mid-career segment (32% market share): Risk-adjusted return 0.67, institutional support 0.78
- Emerging talents (21% market share): Highest growth rate at 15.4% annually
- Entry-level segment (9% market share): Strong online presence (64% of transactions)

Third, the framework leverages advanced analytics to support reliable predictive modeling of market trends. The temporal analysis (2018-2024) demonstrates:

- Reduced market volatility (variation coefficient from 0.38 to 0.21)
- Strengthened institutional frameworks (8.4% compound annual growth)
- Improved market efficiency (23% reduction in price dispersion)

6.2. Limitations

Despite these contributions, several limitations warrant acknowledgment. The data availability and quality concerning art transactions, geopolitical events, and socio-cultural factors in the post-Yugoslav context present ongoing challenges. The current dataset, while substantial (3,842 transactions), represents only a portion of total market activity, potentially limiting the predictive models' accuracy and generalizability. The framework's quantitative emphasis may not fully capture the subjective dimensions of art valuation. While the factor analysis reveals strong statistical validation ($KMO = 0.847$), human preferences and cultural values remain challenging to quantify. The Q-sort analysis with 40 professionals helps address this limitation but cannot completely bridge the gap between quantitative and qualitative aspects. The geographic focus on the Balkan region may limit direct applicability to other contexts. The identified market segments and their characteristics reflect specific regional conditions:

- Croatia: Early adoption of standardized metrics (2018-2020)
- Serbia: Rapid institutional development (2021-2023)
- Bosnia and Herzegovina: Accelerated market formalization (2022-2024)

These temporal and regional patterns suggest that while methodological approaches may transfer to other settings, specific findings may not generalize beyond the Balkan case.

6.3. Future Directions

The research identifies several promising avenues for future investigation:

1. Expansion of data collection and validation methods
2. Development of more sophisticated machine learning models
3. Integration of additional qualitative research approaches
4. Cross-regional comparative studies
5. Longitudinal tracking of market development patterns

These findings provide a foundation for understanding art market dynamics in post-conflict regions while acknowledging the need for continued refinement and adaptation of the proposed framework.

6.4 Applications

Despite these limitations, the proposed framework has several promising applications for art market stakeholders, policymakers, and scholars. For investors and collectors, the framework can inform more strategic and sustainable approaches to art investment in the Balkan region by identifying key value drivers, risk factors, and market segments to target. By incorporating sustainable intelligence principles into investment decision-making, investors can generate financial returns and positive social and cultural impact.

The framework can support policymakers and cultural institutions in developing more effective and targeted policies and programs to support the contemporary art market in the Balkan region. By leveraging data-driven insights into market trends and dynamics, policymakers can design interventions that foster cultural preservation, social cohesion, and economic development in post-conflict societies. For scholars and researchers, the framework opens new avenues for interdisciplinary and data-driven research on the contemporary art market in the Balkan region and beyond. By combining theories and methods from art history, economics, sociology, and data science, researchers can generate new insights into the complex and evolving relationship between art, politics, and society in the 21st century.

Table 5. Sustainable intelligence principles and their application in art investment

Principle	Description	Application in Art Investment
Social Responsibility	Considering the social impact of investment decisions and prioritizing investments that generate positive societal outcomes	- Investing in artists and artworks that address social issues and promote cultural understanding; - Supporting community-based art initiatives and public art projects in the Balkan region
Environmental Sustainability	Incorporating environmental factors into investment analysis and decision-making, and promoting investments that minimize negative environmental impacts	- Prioritizing artists and galleries that adopt environmentally sustainable practices, such as using recycled materials or renewable energy sources; - Investing in artworks that raise awareness about environmental issues and inspire sustainable behavior
Ethical Governance	Ensuring transparent, accountable, and ethical practices in art market transactions and investment decision-making processes	- Conducting thorough due diligence on artwork provenance and artist background to avoid investing in works with disputed ownership or unethical origins; - Adhering to international best practices and standards for art market transparency and regulation
Cultural Preservation	Recognizing the cultural value of artworks and prioritizing investments that contribute to the preservation and promotion of cultural heritage	- Investing in artworks and artists that reflect the unique cultural traditions and identities of the Balkan region; - Supporting cultural institutions and initiatives that protect and promote the region's artistic heritage

Long-term Value Creation	Focusing on investments that generate sustainable, long-term value rather than short-term speculative gains	- Investing in artists with strong growth potential and a track record of consistent artistic development; - Considering the artwork's potential for appreciation in cultural and historical significance over time
Stakeholder Engagement	Actively engaging with and considering the needs and perspectives of various stakeholders, including artists, communities, and cultural institutions	- Collaborating with local art communities and institutions to identify and support promising artists and initiatives; - Seeking input and feedback from diverse stakeholders to inform investment strategies and decision-making

Source: Authors' contribution, based on Analysis (2024)

Building on this study's findings and applications, several future research and practice directions can be identified. First, there is a need for more comprehensive and systematic data collection on art transactions, geopolitical events, and socio-cultural factors in the Balkan region and other post-conflict contexts. Collaborative efforts among art market stakeholders, cultural institutions, and research organizations could help to establish shared data infrastructures and standards that support more reliable and accessible data sources for predictive modelling and analysis.

Second, further research is needed to validate, refine, and extend the proposed framework across geopolitical contexts, art markets, and investment strategies. Comparative studies and meta-analyses could help identify common patterns and divergences in the factors and dynamics shaping art investment in different regions and periods while testing the robustness and generalizability of the predictive models and sustainable intelligence principles proposed here.

Third, more interdisciplinary and participatory research approaches could help to bridge the gap between quantitative and qualitative, financial and cultural, and theoretical and practical perspectives on art investment in post-conflict societies. Collaborations among art market stakeholders, cultural practitioners, and scholars from different fields could foster more holistic and context-sensitive understandings of the challenges and opportunities facing the contemporary art market in the Balkan region and beyond.

Finally, the insights and applications of this study could inform the development of more responsible and impactful investment practices and cultural policies in post-conflict societies. By aligning financial objectives with broader societal goals, such as cultural preservation, social cohesion, and sustainable development, art market stakeholders and policymakers could contribute to the transformative potential of the arts in building more peaceful, just, and resilient communities.

In conclusion, this study has proposed a novel framework for modeling investment strategies for contemporary art in the context of the Yugoslav Wars, combining data-driven insights with sustainable intelligence principles. While the framework has limitations and challenges, it offers a promising avenue for more informed, responsible, and impactful approaches to art investment in post-conflict societies. By fostering interdisciplinary and participatory research, data-sharing and standardization, and responsible investment practices and policies, art market stakeholders and scholars can contribute to the vital role of the arts in promoting social cohesion, cultural preservation, and sustainable development in the Balkan region and beyond.

References:

- Alberro, A. (2003) *Conceptual Art and the Politics of Publicity*. Cambridge, MA: MIT Press.
- Aljohani, N. R. (2022) *A Methodological Framework to Predict Future Market Needs for Sustainable Skills Management Using AI and Big Data Technologies*.
- Avgita, L. (2009) *Marketing Differences: The Balkans on Display*. In: A. Buddensieg and H. Belting (eds.) *The Global Art World, Audiences, Markets, and Museums*. Ostfildern: Hatje Kantz.
- Baumann, S. (2007) *A general theory of artistic legitimation: How art worlds are like social movements*. *Poetics*, 35(1), pp. 47-65.
- Bjelić, D. I., Savić, O. (eds.) (2002) *Balkan as Metaphor: Between Globalization and Fragmentation*. Cambridge: MIT Press.
- Bourdieu, P. (1993) *The field of cultural production: Essays on art and literature*. New York: Columbia University Press.
- Brown, S. R. (1993) *A Primer on Q Methodology*.
- Campbell, D. (2007) *Geopolitics and visual culture: sighting the Darfur conflict 2003–05*. *Political Geography*, 26, pp. 357-82.
- Campbell, R. (2005) *Art as an alternative asset class*. Working paper, University of Maastricht.
- Chanel, O. (1995) *Is art market behavior predictable?* *European Economic Review*, 39, pp. 519-527.
- David, G., Oosterlinck, K. (2012) *War, Inflation, Monetary Reforms and the Art Market*.
- David, G., Oosterlinck, K., Szafarz, A. (2013) *Art Market Inefficiency*. *Economics Letters*, 121(1), pp. 23-25.
- De Landa, M. (2016) *A New Philosophy of Society: Assemblage Theory and Social Complexity*. London: Continuum.
- Dragičević-Šešić, M. (2011) *Cultural Policies, Identities and Monument Building in Southeastern Europe*. In: A. Milohnić and N. Švab-Đokić (eds.) *Cultural Translation in Southeastern Europe. Cultural Identity Politics in the (post-)Transitional Societies*. Zagreb: IMO.
- Dragičević Šešić, M., & Stefanović, M. (2016) *Between a Rock and a Hard Place: Cultural Policies of and towards Serbia 1*
- Đureinović, J. (2020) *The Politics of Memory of the Second World War in Contemporary Serbia: Collaboration, Resistance and Retribution*. London: Routledge.

- Elton, E. J. (1999) Expected Return, Realized Return and Asset Pricing Tests. *Journal of Finance*, 54(4), pp. 1199-1220.
- Ginsburgh, V., Mei, J., Moses, M. (2006) The Computation of Price Indices. In: V. Ginsburgh and D. Throsby (eds.) *Handbook of the Economics of Arts and Culture*. North Holland.
- Goetzmann, W., Renneboog, L., Spaenjers, C. (2011) Art and Money. *American Economic Review*, 101(3) (AEA Papers and Proceedings).
- Guo, B., Wang, Y., & Zhang, H. (2023) Impact of the digital economy on high-quality urban economic development: Evidence from Chinese cities. *Economic Modelling*, 120: 106194.
- Ingram, A. (2009) Art and the geopolitical: refamiliarising the war on terror. In: A. Ingram and K. Dodds (eds.) *Spaces of security and insecurity, geographies of the war on terror*. Farnham: Ashgate, pp. 257-77.
- Kobolt, K. (2016) Postyugoslav Contemporary Art Practice as a Generating Force of Emancipatory Memory and Politics.
- Łabowicz-Dymanus, K. (2019) The Corporate and Market Strategies for Contemporary Art in Eastern Europe in the 1990s. 14(9), pp. 76-96.
- Lee, B., LiPuma, E. (2002) Cultures of circulation: The imaginations of modernity. *Public Culture*, 14(1), pp. 191-213.
- Lee, B., Martin, R. (eds.) *Derivatives and the Wealth of Societies*. Chicago, IL: University of Chicago Press, pp. 1-14.
- Li, F. (2020) The digital transformation of business models in the creative industries: A holistic framework and emerging trends. *Technovation*, 92: 102012.
- Li, J., Chen, L., & Chen, Y. (2021) Digital economy, technological innovation, and green economic efficiency—Empirical evidence from 277 cities in China. *Managerial and Decision Economics*, 43(3): 616–629.
- Lipsey, M.W., Wilson, D.B. (2001) *Practical meta-analysis*. Thousand Oaks: SAGE Publications.
- LiPuma, E., Lee, B. (2005) Financial derivatives and the rise of circulation. *Economy and Society*, 34(3), pp. 404-27.
- Ma, D., & Zhu, Q. (2022) Innovation in emerging economies: Research on the digital economy driving high-quality green development. *Journal of Business Research*, 145: 801–813.
- MacDonald, F., Hughes, R., Dodds, K. (eds.) (2010) *Observant states: geopolitics and visual culture*. London: IB Tauris.

- McLagan, M., McKee, Y. (eds.) (2012) *Sensible politics: the visual culture of nongovernmental activism*. New York: Zone Books.
- Mei, J., Moses, M. (2005) *Vested Interest and Biased Price Estimates: Evidence from an Auction Market*. *The Journal of Finance*, 60(5), pp. 2409-2435.
- Milevska, S. (2008) *Curating as an Agency of Cultural and Geopolitical Change*. In: C. Benzer et al. (eds.) *Continuing Dialogues. A Tribute to Igor Zabel*. Zürich: JRP Ringier.
- Mirovic, M. (2019) *Mechanisms of memory: remembrance in contemporary art practices in the post-Yugoslav space*.
- Mitchell, J. 2020. *Peacebuilding through the Visual Arts*. In **Peacebuilding and the Arts: Rethinking Peace and Conflict Studies**, edited by Mitchell, J., Vincett, G., Hawksley, T., and Culbertson, H., 35–70. Cham: Palgrave Macmillan.
- Močnik, R. (2002) *The Balkans as Element of Ideological Mechanism*. In: D. I. Bijelić and O. Savić (eds.) *Balkan as Metaphor. Between Globalization and Fragmentation*. Cambridge, MA: MIT Press, pp. 79-116.
- Oosterlinck, K. (2017) *Art as a Wartime Investment: Conspicuous Consumption and Discretion*. *The Economic Journal*, 127(607), pp. 2665-2701.
- Piotrowski, P. (2011) *In the shadow of Yalta: Art and the avant-garde in Eastern Europe*. London: Reaktion Books.
- Piotrowski, P. (2012) *Art and Democracy in Post-Communist Europe*. London: Reaktion Books.
- Preece, C. (2014) *The branding of contemporary Chinese art and its politics: Unpacking the power discourses of the art market*. *Arts Marketing*, 6(1), pp. 79-94.
- Pupovac, O. (2006) *Project Yugoslavia. The Dialectics of the Revolution*. *Prelom. Journal for Images and Politics*, 8, pp. 9-22.
- Renneboog, L., Spaenjers, C. (2009) *Buying Beauty: on Prices and Returns in the Art Market*. Tilburg Center Discussion Paper, 2009-15.
- Renneboog, L., Van Houtte, T. (2002) *The Monetary appreciation for paintings, From realism to Magritte*. Working paper, Tilburg University.
- Riding, J. (2019) *The Geopolitics of Memory. A Journey to Bosnia*. Stuttgart: Ibidem Verlag.
- Ruiz, J. V. (2023) *Optimizing Arts Business Optimization the Data Analytics (Part 2)*. Posted on August 21, 2023.
- Schmolck, P. (2002) *PQmethod (Version 2.35)*.

- Szary, A.A. (2012) Walls and Border Art: The Politics of Art Display. *Journal of Borderlands Studies*, 27(2), pp. 213-228.
- Teeple, G., McBride, S. (eds.) *Relations of Global Power: Neoliberal Order and Disorder*. Toronto: University of Toronto Press, pp. 1-18.
- Uvalic, M., Cerovic, B., & Atanasijević, J. (2020) The Serbian economy ten years after the global economic crisis. *Economic Annals*, 65(225): 33-33.
- Velthuis, O. (2007) *Talking prices: Symbolic meanings of prices on the market for contemporary art*. Princeton: Princeton University Press.
- Velthuis, O., Coslor, E. (2012) The financialization of art. In: K. Knorr Cetina and A. Preda (eds.) *The Oxford handbook of the sociology of finance*. Oxford: Oxford University Press, pp. 471-487.
- Vujanović, B. (2017) *Aesthetics of Transgression and Its Strategies in Post-Yugoslav Art*.
- Worhington, A. C., Higgs, H. (2004) Art as an investment: risk, return and portfolio diversification in major paintings markets. *Accounting and Finance*, 44, pp. 257-271.
- Zeković, S., Perić, A., Hadžić, M. (2023) The financialization of "the urban" in the post-socialist Serbia: Evidence from the Belgrade Waterfront megaproject. Published online: 07 Sep 2023.
- Zhao, X., Shen, L., & Jiang, Z. (2024) The impact of the digital economy on creative industries development: Empirical evidence based on China. *PLoS ONE*, 19(3): e0299232.
- Zunic, E. (2018) *The Bosnian Case: Art, History and Memory*.

Modeliranje investicijskih strategija u suvremenoj umjetnosti u kontekstu jugoslavenskih ratova

ORNELA RAMAŠAUSKAITĖ

Institut za komunikacije

Sveučilište Mykolas Romeris

Women Researchers Council UNEC

Raugyklos g. 17–62, 01140 Vilnius

Litva

orramasauskaite@stud.mruni.eu

ORCID iD: <https://orcid.org/0000-0002-1725-2808>

Sažetak: Ovo istraživanje unapređuje metodološki okvir za razvoj prediktivnih modela za upravljanje investicijskim strategijama u suvremenoj umjetnosti u postjugoslavenskoj Balkanskoj regiji. U radu se ispituju ključni čimbenici vrednovanja umjetničkih djela i profila rizika u Bosni i Hercegovini, Hrvatskoj i Srbiji koristeći mješoviti metodološki pristup koji kombinira meta-analizu, ekspertni Q-sort analizu i hijerarhijsku klustersku analizu. Empirijski nalazi pokazuju trajni utjecaj ratova na prostoru bivše Jugoslavije na dinamiku tržišta umjetnina, naglašavajući značaj načela održive inteligencije i tehnoloških inovacija u strategijama smanjenja rizika. Analiza identificira ključne čimbenike vrednovanja, uključujući umjetničko priznanje, sociopolitičku stabilnost i kulturni značaj, dok uspostavlja različite tržišne segmente karakterizirane diferenciranim profilima rizika. Predloženi okvir uključuje geopolitičke indikatore rizika, attribute umjetničkih djela i umjetnika, kriterije održivog ulaganja i dostupnost tehnologije, s naglaskom na algoritme strojnog učenja za predviđanje tržišta i optimizaciju portfelja. Iako ovaj okvir predstavlja značajan napredak u modeliranju investicijskih strategija u umjetnosti unutar postkonfliktnih konteksta, postoje ograničenja u pogledu dostupnosti podataka, interpretabilnosti modela i etičkih razmatranja. Istraživanje pokazuje potencijal okvira za generiranje vrijednosti, i doprinosi očuvanju kulturne baštine i socioekonomskom razvoju Balkanske regije, postavljajući temelje za naknadna znanstvena istraživanja analize tržišta umjetnina u postkonfliktnim društvima.

Ključne riječi: tržište suvremene umjetnosti, ulaganje u umjetnost, geopolitički rizik, jugoslavenski ratovi, prediktivno modeliranje

JEL klasifikacija: Z1

MMF u prizmi kejnzijanske teorije i ekonometrije: primjeri ukrajinskih ekonomskih kriza 2008. i 2014.

DOMAGOJ ĆORIĆ

Institut za sigurnosne i obrambene studije
Sveučilište obrane i sigurnosti „Dr. Franjo Tuđman“
Ilica 256B, Zagreb
Hrvatska

domagoj.coric@sois-ft.hr

ORCID iD: <https://orcid.org/0000-0002-9230-2211>

Prethodno priopćenje / *Preliminary communication*

UDK: 339.73:[330.43:338.124.4(477)]=163.42

Primljeno / Received: 08. rujna 2024. / September 08th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 13. studeni 2024. / November 13th, 2024.

DOI: 10.15291/oe.4543

Sažetak: Mnogi ekonomski kritičari pripisuju vrlo negativne konotacije MMF-u i njegovoj suradnji s raznim državama putem stand-by programa. Kao primjer takve kritike uzima se rad autora Chletsos i Sinots (2023). Rad hipotezira da su pretpostavke negativnog utjecaja netočne te nastoji prikazati pozitivne posljedice MMF-ovih programa i kondicionalnosti na primjeru ekonomskih kriza u Ukrajini 2008. i 2014. Radi dokazivanja hipoteze, rad se koristi kejnzijanističkom teorijom utemeljenom na djelu „Generalna teorija zaposlenosti, kamate i novca“, kao i nizom kejnzijanističkih modularnih jednadžbi poput: multiplikatora investicija, elastičnosti cijena, agregatnih investicija, troška korisnika i druge. Rad primjenjuje kejnzijanističke ekonometrijske modele prosperiteta za potrošnju i marginalne efektivnosti kapitala. Prvo poglavlje prikazuje niz akademskih kritika upućenih MMF-u dok drugo poglavlje iscrpno predstavlja kejnzijanističku teoriju koja služi kao potpora navedenoj ekonometriji i modularnim jednadžbama. Treće poglavlje prikazuje suradnju MMF-a i Ukrajine tijekom stand-by aranžmana 2008. Ekonometrijom i modularnim jednadžbama dokazuje se pozitivna konotacija MMF-ove kondicionalnosti za: ograničavanje fiskalne potrošnje, restrikciju monetarne politike i antimerkantelističke mjere. U idućem poglavlju rad prikazuje ukrajinsko prihvaćanje MMF-ova programa i njegovu provedbu te rezultate toga. Kejnzijanističkom teorijom, ekonometrijom i modularnim jednadžbama dokazuje se kako su kritike MMF-ovoj kondicionalnosti Chletsosa i Sinotsa (2023) nezasnovane u empiriji. Također se prikazuje da je cijeli program ostavio pozitivne posljedice na ukrajinsku ekonomiju. Drugi dio članka usredotočen je na predstavljanje uzroka ekonomske krize 2014. dok se mjere MMF-ove kondicionalnosti ponovno opravdavaju kejnzijanističkom ekonomskom teorijom i modularnim jednadžbama. Nakon prikazivanja ukrajinske provedbe programa, prikazuje se pozitivan utjecaj MMF-a, objašnjen ekonometrijskim modelima prosperiteta za potrošnju i marginalne efektivnosti kapitala. Kao i u prvom dijelu, sveukupni pregled krize 2014. zaključuje da su MMF-ove mjere bile pozitivne za ukrajinski oporavak, da je kondicionalnost programa bila zasnovana na kejnzijanističkoj teoriji, a da su teze Chletsos i Sinots (2023) netočne.

Ključne riječi: kejnzijanska teorija, ukrajinska ekonomska kriza 2008., ukrajinska ekonomska kriza 2014., stand-by aranžman, MMF

JEL klasifikacija: E65, F33, E12

1. Uvod

Međunarodni monetarni fond (MMF) često je izložen kritikama znanstvene zajednice koja tvrdi da su predstavljeni programi suradnje štetni za razvoj države. Tako Offe (1996) kritizira ulogu MMF-a u tranzicijskim zemljama srednje i istočne Europe te tvrdi da je rezultat oslabio makroekonomske faktore i državne institucije. Gowan (1995) pripisuje ekonomsku nestabilnost postsovjetskim zemljama MMF-ovoj politici privatizacije dok Ban (2016) vidi navedene uzroke kao *sui generis* rastućeg dispariteta između marginalnog bogatstva stanovništva. Primjer recentne kritike upućene MMF-u je u radu autora Chletsos i Sinots (2023), koji navode kako suradnja s MMF-om dovodi do jačanja nezaposlenosti usred uvjetovanosti za privatizaciju, liberalizaciju i smanjivanje fiskalne potrošnje. Navode da provedba privatizacije odmah smanjuje ukupnu zaposlenost, a da se agregatno ta vrijednost povećava usred prodiranja stranog kapitala koji oduzima radna mjesta radi kompetitivnosti strane robe. Istovremeno tvrde da manja državna potrošnja smanjuje ukupne investicije i tako dugoročno smanjuje zaposlenost. Posredno bi takve mjere trebale dovoditi do slabijeg rasta i opće razine blagostanja.

Hipoteza ovoga rada je da je pretpostavka Chletsosa i Sinotsa (2023), ali i ostalih kritičara MMF-a, netočna. U prilog toj tvrdnji prilaže se primjer Ukrajine, u kojoj je MMF imao pozitivnu ulogu u oporavku nakon ekonomskih kriza iz 2008. i 2014. godine. Rad nastoji empirijski prikazati, na primjeru navedenih ekonomskih kriza, kako djelovanja MMF-a pospješuju dugoročni i kratkoročni ekonomski razvoj. Ekonometrijska metoda primijenjena za dokazivanje pozitivnih rezultata je kejnzijanska teorija prosperiteta za potrošnju i marginalne učinkovitosti kapitala. Za dokazivanje hipoteze upotrebljavaju se i razne druge kejnzijanske modularne jednadžbe poput multiplikatora investicija, elastičnosti cijena, agregatnih investicija, kapitalnog poleta i troškova korisnika. U istraživanju se pokazuje i zašto bi reforme, da su usmjerene dijametralno suprotno od predloženih, dovele do negativnih rezultata za ukrajinsku ekonomiju.

2. Metodologija – kejnzijanska teorija, modularne jednadžbe i ekonometrija

Kako bi se razumjela hipoteza rada i njegova ekonometrija, najprije treba prikazati teorijsku osnovu koju Keynes predstavlja u „Generalnoj teoriji zaposlenosti, kamate i novca“ koja se tretira kao *sui generis* moderne ekonomske misli. Primarni faktori koje Keynes nastoji definirati da bi objasnio svoju teoriju su prihodi, potrošnja i štednja. Interakcija i postojanje tih triju faktora zajedno s nezavisnim varijablama sklonosti potrošnji, marginalne efikasnosti kapitala i kamate, određuju makroekonomske trendove države (Keynes, 2017). Keynes navodi i dvije promjenjive varijable – volumen zaposlenosti i nacionalni dohodak, ali ih kontekstualno objašnjava uz nezavisne varijable.

Prihodi (Y) su preostala sredstva nakon podmirivanja troškova proizvodnje podijeljene na faktorski trošak (troškovi faktora proizvodnje) i korisnički trošak (troškovi za plaće subjektima koji se koriste postrojenjem). Oba troška mogu rasti do razine koja je manja ili jednaka količini outputa. Ukupna zaposlenost u odnosu na profit, raste do marginalne točke koja vlasniku donosi navedeni profit nakon podmirenih troškova. Bilo koji porast razine zaposlenosti (N) dovodi do jačanja agregatne potražnje (D) s obzirom na to da raste agregatna razina plaća (Keynes, 2017). U tom kontekstu Keynes nastoji definirati zaradu domaćeg privrednog sektora te je objašnjava putem troška korisnika u proizvodnji.

Ako A_1 označava vrijednost kupnje od drugih grana poduzeća, G vrijednost kapitala na kraju perioda i $(G' - B')$ troškove tijekom perioda održavanja poduzeća¹, dobiva se da je modularna jednadžba korisničkog troška:

$$A_1 + (G' - B') - G \quad (1)$$

Iz toga proizlazi da su domaće investicije:

$$I = G - (G' - B') \quad (2)$$

Iz navedenog proizlazi da je trošak korisnika jednak $A_1 - I$. S obzirom na to da trošak korisnika zajedno s faktorskim troškom, barem na prvi pogled, daje cijenu outputa, veća razina investicija ojačava trgovinsku bilancu kroz kompetitivnije cijene izvoza (Keynes, 2017). Stoga je bitno da agregatne investicije (strane + domaće) budu na statičnoj razini.

Doda li se na predložene modularne jednadžbe varijablu „ A “, koja označava ukupni dohodak, dobiva se da je:

$$A = (G' - B') - (G - A_1) \quad (3)$$

Nadalje, s obzirom na to da cjelokupno društvo živi od faktorskog troška poduzetničkog sektora, dobiva se da je sveukupni dohodak društva jednak $A - U$, gdje je U trošak korisnika (Keynes, 2017). Iz toga proizlazi da je agregatna potrošnja:

$$(C): c = \Sigma(A - A_1) \quad (4)$$

Dok su agregatne investicije:

$$(I): I = \Sigma(A_{1-U}) \quad (5)$$

Predvidi li se da će agregatna potrošnja padati, padat će i agregatna razina outputa zajedno s ukupnom razinom zaposlenosti i obrnuto. Zapravo, svaka trenutačna zaposlenost ovisi o prošloj procjeni za trenutačnu potrošnju. To proizlazi iz činjenice da investitori gledaju dugoročni profit, a proizvođači kratkoročni. Istodobno, agregatna potrošnja određuje ukupni ekonomski rast, to jest kontinuiranu otplatu vanjskog duga. Stoga je važno da je $A - A_1 > x$, pri čemu je x apstraktna vrijednost potrebna za održavanje ravnoteže. U opisanom slučaju, povjerenje u napredak potrošnje dolazi ekonomskom stabilizacijom postignutom suradnjom s MMF-om. Pokazalo se da već najavom programa dolazi do jačanja povjerenja investitora i jačanja potražnje pa premija rizika obveznica pada (Stiglitz, 2016).

Zadnja elementarna definicija koju Keynes definira je štednja, koju vidi kao razliku dohotka i potrošnje:

$$A_1 - U - V \quad (6)$$

pri čemu je U trošak korisnika, a V faktor neizvjesnosti, to jest volatilnost. S obzirom na to da je štednja jednaka investicijama, samo u drugom razdoblju, manji faktorski trošak i oslabljena volatilnost omogućuju daljnji rast domaćega kreditiranja. Rastom agregatnog kreditiranja dolazi do jačanja outputa, jačanja zapošljavanja i rasta ukupne razine platnih jedinica jer veći output proizvodnje jača zaradu po jedinici proizvoda. Kao rezultat, ukupna zaposlenost u društvu ovisi o ponudi poduzetnika temeljenoj na strani potražnje drugih korisnika (Keynes, 2017). Navedeni korisnici spremni su povećati razinu investicija iznad trenutačne štednje ako predvide zaradu usred stabilne razine rasta.

Sljedeći faktor bitan za našu analizu je *sklonost potrošnji* kojim se opovrgava teza Chletsos i Sinots (2023) da strani kapital ne pridonosi razvoju domaće industrije. Identičnu tezu Keynes opovrgava u analizi merkantilističke teorije. Sklonost potrošnje empirijski je prikazana kao:

$$I = \frac{I}{k} \quad (7)$$

Javnost potrošnjom dohotka stimulira output do razine najveće margine nakon koje se on šteti, odnosno investira kasnije. Multiplikator k govori koliko zaposlenost treba porasti da bi dovela do većeg dohotka koji se kasnije investira. Ako je marginalna sklonost potrošnji blizu 1, stope investicije jako utječu na rast zaposlenosti (Keynes, 2017). Za trenutačnu analizu ključna je Keynesova teza da će siromašna društva imati veću potrošnju prema ukupnoj razini outputa te će tako niska razina investicija dovesti do jačanja prema punoj zaposlenosti (Keynes, 2017: 47). Pretpostavimo za nadolazeću analizu da je Ukrajina siromašnije društvo i koristi se takozvanim specijalnim pravima vučenjaⁱⁱ (engl. *Special Drawing Rights* – SDR) MMF-a za državnu potrošnju te da devizna sredstva MMF-a omogućuju opstanak 100 000 radnih mjesta na četiri mjeseca ($k = 4$). Iz toga proizlazi, nominalno, do 400 000 novih agregatnih radnih mjesta. Pretpostavimo zatim da ukrajinsko društvo ima 9 milijuna zaposlenih, vrlo blizu pune razine zaposlenosti od 10 milijuna. Ako je vrijednost investicija 9 % te njihova vrijednost odjednom padne za 75 % (to jest ne može se održati na adekvatnoj razini deviznih priljeva jer nema pomoći MMF-a), broj zaposlenih bi pao na 6,9 milijuna. Kada bi ukupne investicije pale na 0 %, agregatna zaposlenost pala bi na 44 %. Taj se rezultat dobije ako je:

$$k = \frac{1}{1 - \text{marginalna sklonost potrošnji}}$$

Zaključno, svaki porast sklonosti potrošnji gotovo jednako povećava zaposlenost, a time i output (jer je multiplikator nešto veći). Utjecaj SDR-a na zaposlenost u ovom radu je prikazan ekonometrijom marginalne sklonosti potrošnji.

Ukupna realnost provedbe teorije nije jednaka nominalnoj jer je parcijalno primjenjiva na analize sustava s obzirom na to da u uvjetima globalnog i slobodnog tržišta dio investicija jača zaposlenost u ostalim zemljama. Međutim, razlika između nominalne i realne vrijednosti nije mogla imati veliki koeficijent devijacije u analiziranim slučajevima. Jačanje koeficijenta radi raspršivanja kapitala prema stranim tržištima ne bi mogla ni nastati s obzirom na to da je suradnja s MMF-om moguća do marginalnog razdoblja, kada se dostiže potrebna razina stabilizacije ili se program prekida zbog loše provedbe. Isto tako, SDR se primjenjuje kao nadomjestak manje fiskalne potrošnje, usmjeren prema ciljevima programa. Dodatna potencijalna ugroza za trend devijacije koeficijenta, u slučaju Ukrajine, bio je velik udio vanjskog duga. U tom slučaju, državne investicije (u ovom slučaju recikliranje MMF-ova SDR-a) imaju slabiji učinak (Keynes, 2017). Vanjski dug bio je na stabilnoj razini u oba slučaja, a MMF je upravo zbog poznavanja kejnzijanske teorije i postavio uvjetovanost ograničenja vanjskog duga.

Idući značajan faktor kejnzijanske teorije primjenjiv za ovu analizu je *marginalna efikasnost kapitala* (očekivani profit). U skladu s definicijom, to je vrijednost (postotak) koji bi kapitalu, kojim se investitor ne koristi dulje vrijeme, dao da se vrati na originalnu cijenu ponude koja je inicijalno plaćena. Takav se koncept onda primjenjuje na buduća ulaganja prema modularnoj jednadžbi:

$$\Sigma Q_r \cdot d_r \quad (8)$$

pri čemu je „ Q_r “ kamata (zarada) na vrijednosnici, „ r “ je vrijeme, a „ d_r “ vrijednost zarade prema trenutačnoj kamati.

U skladu s navedenim, cijena vrijednosnice i investicije rastu dokle god cijena ne bude ista kao početna (Keynes, 2017). U tom trenutku ne bi imalo smisla ulagati jer je profit jednak nuli pa agregatne investicije padaju na niske razine. U takvim slučajevima, bijeg kapitala od tržišta vrijednosnica doveo bi do kratkoročnog pada njihovih vrijednosti i sloma agregatne razine investicija. Država kontrira dugoročno održavanje toga trenda porastom zaposlenosti, odnosno rastom cijena po jedinici rada što

ukupno dovodi do jače kamate vrijednosnica (Keynes, 2017). Konkretno, MMF svojim deviznim sredstvima održava razinu investicija, jer se ona recikliraju kao sredstva fiskalnog proračuna za održavanja ukupne razine zaposlenosti. Time se ispunjavaju uvjeti dostupnosti kapitala i očekivane naplate kamate. Kada MMF ne bi igrao takvu ulogu, došlo bi do naglog pada marginalne efikasnosti kapitala (usred pada „ Qr ” i „ d_r ”) što Keynes naziva krizom. Bez sredstava MMF-a došlo bi do stupnja na kojem, prema Keynesu, nije lako vratiti marginalnu efikasnost kapitala (Keynes, 2017: 274). Takav trend u radu je prikazan empirijski za oba proučavana slučaja.

Kada poduzetnici očekuju porast marginalne efikasnosti kapitala, njihova razina investicija može prijeći razinu agregatne štednje. Kao rezultat, spremni su se zaduživati radi potencijalne zarade u budućnosti pa agregatno kreditiranje i strane investicije rastu. Takva razlika između štednje (S) i investicija (I) naziva se *prosperitet za potrošnju* (D_1) koji zajedno sa štednjom (D_2) daje da je:

$$D_1 + D_2 = D = \rho(N) \quad (9)$$

Veći prosperitet za potrošnju dovodi do veće razine opće zaposlenosti i jedinice plaće jer veći output proizvodnje jača zaradu po jedinici proizvoda (Keynes, 2017). Pojednostavljeno, ukupna zaposlenost u društvu ovisi o ponudi poduzetnika temeljenoj na pretpostavljenoj potražnji potrošača. Taj trend dugoročne potražnje podlozan je intenzitetu i trajanju šokova, a oba faktora ublažuju se djelovanjem MMF-a u kriznom razdoblju.

3. Uzroci i uvjetovanost *stand-by* aranžmana 2008.

Uspješna suradnja MMF-a i Ukrajine provedena je nizom programa od 1992. godine, a nakon Narančaste revolucije 2004. godine postignuti su pozitivni ekonomski trendovi približavanja tržišnoj ekonomiji (Havrylyshyn, 2017). Strani investitori vidjeli su ekonomsku i političku liberalizaciju kao pozitivna kretanja koja će dovesti do jačanja marginalne efikasnosti kapitala te su odgovorili jačanjem investicija. Objašnjeno međudjelovanje investicija prema makroekonomskim kretanjima, dovelo je do prosječnog godišnjeg rasta od 7 %, dok je realna potražnja rasla prosječno 15 % (IMF, 2008d). Nagli polet deviznog kapitala poticao je domaći bankarski sustav na velike kvote kreditiranja niskom kamatom dok su se kratkoročna zaduženja reciklirala kao dugoročna potraživanja, pogotovo u industriji čelika i građevine. Problem je nastao 2008. kada je svjetska potražnja pala i dovela do pada cijene čelika za 65 % do studenog te godine (IMF, 2008d). Rezultat je bio privremeno obustavljanje poslovanja za 40 od 63 tvornice čelika, a sve investicije prema industriji čelika su zamrznute. Profit i output naglo su pali što je dovelo do ukupnog makroekonomskog pada (IMF, 2008d). Sveukupna situacija ostavila je bilance bankarskog sustava ugroženim, a nakon što je šesta najveća banka „Proinvest“ stavljena pod državni nadzor zbog problema s bilancom u listopadu 2008., povjerenje u bankarski sustav naglo je palo pa je tako u prva tri tjedna listopada 2008. povučeno 3 milijarde USD, to jest 4 % ukupnih depozita (IMF, 2008c). Bila je to marginalna točka od koje počinje strano povlačenje kapitala. Bijeg stranih investicija stavio je golem pritisak na devizne rezerve središnje banke koje su pale za 6 milijardi \$ u istom mjesecu (IMF, 2008c). Odljev likvidnosti natjerao je središnju banku da od kolovoza do studenog daje likvidne injekcije u vrijednosti 2,5 % BDP-a. Istovremeno troši velika devizna sredstva da održi paritet tečaja kojeg pušta s 5,35 \$ na 5,90 \$ u prosincu 2008. (IMF, 2008a). Davanje likvidnosti bankarskom sektoru zajedno s trošenjem deviznih rezervi dovelo je od inflacije od 30 % pa su agencije Fitch i SnP500 smanjili kreditni rejting države dok je Moody's smanjio rejting konglomeratskih poduzeća (IMF, 2008b).

Pomoć MMF-a došla je u obliku *stand-by* aranžmana vrijednog 11 milijuna SDR-a, to jest 802 % Ukrajinske kvote (IMF, 2008b). Navodi se „cilj programa je ojačati ukrajinsku sposobnost suočavanja

s padom cijena roba i trenutačnim svjetskim ekonomskim pritiscima, ojačati devizne rezerve i olakšati proces implementacije predloženog programa“ (IMF, 2008c). Program navodi iduće uvjetovanosti: ograničenje deficita državnog proračuna, ograničenje rasta monetarne mase, zabranjivanje uvođenja merkantilističkih mjera u trgovinsku i deviznu politiku, zabranjivanje korištenja dvojnih pariteta tečaja, zabrana ograničavanja uvoza i minimalne propisane razine deviznih rezervi (IMF, 2008d). Navode se i uvjeti koji moraju biti razriješeni prije potpisivanja sporazuma: uvođenje fleksibilnog tečaja, jačanje središnje banke u vidu nadgledanja komercijalnog bankarskog sektora i rješavanje problema bilance Prominvest banke (IMF, 2008d).

Svaka od navedenih uvjetovanosti ima svoju empirijsku logičku potporu u kejnzijanskoj teoriji kako bi se postigli predviđeni ciljevi povrata na međunarodno tržište kapitala, povratka na održiv vanjski dug i popravak trgovinske bilance. Prvi zahtjev ograničavanja fiskalne potrošnje na razinu ne višu od 1 % BDP-a, na prvi pogled djeluje kao antikeynzijska mjera. Upravo taj argument navode Chletsos i Sinots (2023). U trenutku kada pada razina zaposlenosti države, ljudi se koriste štednjom da održe standard, odnosno da održe trenutačnu razinu sklonosti potrošnji. Kada štednja dosegne marginalnu točku, agregatna potrošnja pada što smanjuje nacionalni dohodak, a time i output i zaposlenost. Država je tada primorana dati socijalnu pomoć, odnosno ući u deficit (državnog proračuna) kako bi osigurala kontinuitet potražnje. Ne primijeni li se takva aktivnost države, dolazi do trajnog rasta razine nezaposlenosti. To kretanje prikazano je modularnom jednadžbom:

$$\Delta y_w = \Delta C_w + \Delta I_w \quad (10)$$

pri čemu su:

$\Delta y_w \rightarrow$ promjena dohotka u jedinici nadnice

$\Delta C_w \rightarrow$ promjena potrošnje u jedinici nadnice

$\Delta I_w \rightarrow$ promjena investicija u jedinici nadnice

U oba prikazana slučaja, 2008. i 2014., Ukrajina nije imala manevarski fiskalni prostor jer bi jačanjem fiskalne potrošnje dovela do prevelikog deficita koji bi jačao dug do trenutka marginalne točke dugovnog viška. Ukrajina je, na prvi pogled, bila natjerana na prihvatanje rasta nezaposlenosti. U realnosti su devize MMF-a (to jest SDR) preuzele ulogu državnih investicija te svojim djelovanjem održale zaposlenost i time agregatnu potražnjuⁱⁱⁱ. Sredstva MMF-a korištena su za održavanje konstantne razine zaposlenosti koja je održavala razinu stranih ulaganja. Takav trend prikazan je modularnom jednadžbom:

$$\Delta Y_w = k \Delta I_w \quad (11)$$

pri čemu je „ k “ multiplikator investicija. Multiplikator investicija mjeri koliko puta je investicija povećala dohodak, a mjeri se u jedinici nadnice. Povećanje investicija ΔI_w povećava i primarnu zaposlenost ΔN_2 tako da je $N = k' \Delta N_2$. Za utjecaj na sveukupni output uvode se vrijednosti e_e i e'_e kao elastičnosti zaposlenja. Uvrštavanjem u formulu za investicije i dohodak (za sveukupni output) dobiva se da je:

$$k = \frac{I_w}{e'_e N_2} \cdot \frac{e_e N}{y_w} \cdot k \quad (12)$$

Primjerice, ako državne investicije, to jest MMF-ove devize u trajanju od deset mjeseci ($k = 10$) održavaju ukupni dohodak, ukupna zaposlenost bit će 10 puta primarne zaposlenosti koje daju

poslovanja održana kroz program utemeljena na „ k “ i na „ I_w “. To je prikazano empirijski ekonometrijom marginalne sklonosti potrošnje prema zaposlenosti.

Na polju monetarne politike, MMF je podupirao kretanje prema fleksibilnom tečaju kako bi zemlja bila otpornija na trgovinske šokove (IMF, 2008b). Ukrajina se bojala da će fleksibilni tečaj oslabiti paritet i tako ojačati teret duga, ali u realnosti administrativne mjere takav potencijalni problem samo odgađaju terećenjem deviznih rezervi. MMF se vodio idejom da stabilna razina deviza i jača eskontna stopa stabilizira tečaj. Međutim, tečaj je trebalo stabilizirati i u domaćem tržištu pa uvjetovanost programa predviđa ograničenja ukupne monetarne mase (IMF, 2008b). Budući da zakonodavni okvir monetarne politike *de facto* tada još nije postojao, MMF je stoga morao postaviti uvjetovanost na opisani način (IMF, 2008b). Stabilni tečaj stavio bi investitorska očekivanja zarade dovoljno visoko da je razina investicija veća od štednje (to jest $I > S$) što bi dovelo do rasta prosperiteta za potrošnju i tako ojačalo zaposlenost. Zapravo bi $\rho(N)$ rastao jer je:

$$D_1 + D_2 = D = \rho(N) \quad (13)$$

Kako bi se takav cilj proveo u djelo, MMF je nadgledao komercijalni bankarski sektor i određivao koje banke imaju mogućnosti nastavka solventnog poslovanja. U suprotnom bi došlo do masovne rekapitalizacije koja bi održavanjem nesolventnosti slabila tečaj i tako potkopavala prijašnji cilj programa (IMF, 2008b). Kada bi neprofitabilne banke (i posredno neprofitabilni poduzetni sektor) nastavile poslovanje uz pomoć države, došlo bi do stadija u kojem bi monetarna masa odgovarala kamati poduzetnog sektora i marginalnoj efikasnosti kapitala. Tada bi razina investicije ostala dovoljno visoko te bi zaposlenost bila apsolutno statična. Istodobno bi se razine nadnica i cijena mijenjale velikom brzinom. Taj trend imao bi katastrofalne posljedice jer, empirijski, ukupne investicije su zbroj elastičnosti cijena (e_p) i elastičnosti outputa (e_o), to jest:

$$I = e_p + e_o \quad (14)$$

U terminima kretanja plaća dobiva se da je:

$$e_p = I - e_o(I - e_w)^I \quad (15)$$

Opisano kretanje dovelo bi do slabijeg makroekonomskog trenda jer je volatilnost regresivni faktor u kejnzijanskoj teoriji. Time je dokazano da je teza Chletsos i Sinots (2023) netočna. Kako bankarski sustav ne bi ugrozio cjelokupni program, MMF je zahtijevao: završavanje dijagnostičke analize bankarskog sektora i razrješavanje svih bilančnih problema bankarskog sektora, na temelju tržišnih ideja, do 2009. godine (IMF, 2008a).

Zadnja važna uvjetovanost MMF-a odnosila se na antimerkantističke mjere, to jest na zabrane restrikcije uvoza. Liberalizirani uvoz nudio je jeftinije inozemne inpute (A_1), ali i smanjivao agregatnu cijenu domaćih. Empirijski je takav trend omogućen jer je potrošnja definirana kao:

$$c = \Sigma(A - A_1) \quad (16)$$

Istodobno bi rasla razina agregatnih investicija definiranih kao (I):

$$I = \Sigma(A_{1-U}) \quad (17)$$

S obzirom na to da trenutačna zaposlenost ovisi o prošloj procjeni za trenutačnu potrošnju, ovom mjerom jamčio se stabilni pristup razvoju makroekonomskih kretanja. Ustvari je postignuta situacija u kojoj je $A - A_1 > x$, pri čemu je „x“ apstraktna vrijednost potrebna za održavanje ekvilibrija. Time je dokazano da je pretpostavka Chletsos i Sinots (2023) netočna. Liberalizacijski procesi koje autori kritiziraju ne dovode do jačanja cijena i tako ne tereti kućanstva, već dovodi do potpuno suprotnog rezultata.

4. Ukrajinska usklađenost s programom i njegovi rezultati

Ukrajina je odlučila popratiti prijedlog MMF-a u svim područjima te su provedene reforme donijele značajne rezultate. Do 2008. godine jaki izvoz omogućio je jačanje plaća u javnom sektoru, ali budući da se taj trend preokrenuo, vlada ga je popratila i smanjivanjem rasta plaća kako ne bi jačao fiskalni deficit i vanjski dug. Istovremeno je prekinuta subvencija uvoza plina iz Rusije (IMF, 2008a). Proces dokapitalizacije i rekonstrukcije bankarskog sektora provodio se samo za one banke koje imaju problem s likvidnosti te uz državnu injekciju likvidnosti mogu rekonstruirati kredite i nastaviti s poslovanjem (IMF, 2008a). Takav proces odvijao se na temelju analize inozemnih stručnjaka, a banke koje nisu odgovarale analizama bile su podvrgnute likvidacijskom postupku. Cijeli proces nadzora podvrgnut je pod središnju banku koja podnosi izvješća o stanju vlastite bilance i deviznih rezervi. Ministarstvo financija od tada je nadziralo dugovanja privrednog sektora, ali i državnog duga te se brinulo da je on održiv prema trenutačnim fiskalnim primanjima (IMF, 2008a).

Na polju monetarne politike stopa rasta monetarne mase spuštena je ispod razine rasta BDP-a, a kako bi se ostvarila fleksibilna valuta, maknuti su pojasevi tečajnih varijacija te se tečaj bazirao na tržišnoj vrijednosti. Također su ukinute sve državne restrikcije deviznog tržišta kao i porez na devizne transakcije (IMF, 2008a). Kako bi se potaknule strane investicije, garancije za depozite podignute su s 50 tisuća hryvnija na 150 tisuća hryvnija. Takva mjera pokrivala je 99 % osobnih računa (IMF, 2008a).

5. Rezultati 2008. stand-by provedbe

MMF-ov program i ukrajinska suradnja dovele su do rasta realnog BDP-a čija vrijednost prelazi iz -15,1 % u 2008. na 3,7 % u 2010. godini. Razlog tom kretanju je rast izvoza čelika, ali i zbog „rasta domaće potražnje koja je dobila na momentumu potrošačkog i poduzetnog povjerenja kao i rasta plaća“ (IMF, 2010). Ustvari je time potvrđena teza kejnzijanskog aspekta programa oporavka. Negativni spektar jače domaće potražnje, u vidu jačanja uvoza, nadoknadio je „povećani dotok kapitala... popunio je vakuum financiranja od inozemnih kreditora... pa je ukrajinski kapacitet za vraćanje duga prema Fondu adekvatan...“ (IMF, 2010).

Takav skok investicija omogućen je zbog provođenja cjelokupne uvjetovanosti programa na vrijeme što je omogućilo potpunu dostupnost SDR-a korištenog za ciljeve programa. Njime je održavana percepcija buduće zaposlenosti. Državna potrošnja smanjena je samo nominalno, dok je realna potrošnja bila nadoknađena recikliranjem SDR-a prema potrošnji provedbe programa. Empirijski se taj trend može prikazati kejnzijanskim ekonometrijskim modelom prosperiteta za potrošnju, koji određuje broj zaposlenih u državi.

Uzmimo informaciju da je broj zaposlenih u godini programa iznosio 20,6 milijuna, a da su 25 % BDP-a činile investicije^{iv}. Pretpostavimo empirijsku vrijednost za marginalnu sklonost potrošnje na 60 %.^v Tada dobivamo da je:

$$k = \frac{1}{1 - 0,6} = \frac{1}{0,4} = 2,5$$

Pojednostavljeno, pad investicija od 75 % na početnih 25 % daje nove investicije od 6,25 %. To je smanjenje od 18,75 %^{vi}. Promjena u agregatnoj potrošnji iznosi 46,87 %^{vii}. Tada je:

$$\Delta N = 46,75\% + 20,6 = 9,65 \text{ milijuna}$$

Zapravo bi bez uvjeta stranog financiranja, nova zaposlenost trebala iznositi 10,9 milijuna. Ta je vrijednost iznosila 20 milijuna u 2010. godini (WB, 2023). Dostupnost SDR-a i povrat povjerenja u strane investicije održao je dostupnost kapitala dovoljno visoko da se trend zaobiđe.

To je kretanje omogućilo da se budžetni izdaci usmjere na proces rekapitalizacije banaka i generalno usmjeravanje sredstava prema ciljevima programa. Empirijskom provedbom, bankarski sektor dobio je do 2010. 60 % potrebnog kapitala za rekapitalizaciju. Osamnaest komercijalnih banaka je likvidirano, a četiri su nacionalizirane. Za preostale je najavljeno da će u kratkom roku biti podvrgnute procesu privatizacije ili likvidacije (IMF, 2010). Istovremeno je proveden stisak fiskalne politike. Primarno je smanjen deficit Naftogaza na vrijednost od 0,3 % BDP-a (IMF, 2010). Istovremeno su državne investicije bile usmjeravane isključivo prema ciljevima programa te su stoga ograničene državne garancije (odnosno investicije) za „nužne“^{viii} projekte na 15 milijardi hryvnja. Novi pristup fiskalnim izdacima također je pridonio porastu rezervi na 33,2 milijarde USD do kraja studenog 2010. godine (IMF, 2010).

Strani investitori procijenili su da proces oporavka ide u dobrom smjeru pa su visoke stope stranih ulaganja ojačale bankovne depozite te omogućile središnjoj banci da smanji eskontnu stopu s 225 poena na 8,75 u 2010. godini (IMF, 2010). Rezultat provedbe programa doveo je do povratka Ukrajine na međunarodno tržište kapitala, a državne obveznice postale su meta stranih investitora (IMF, 2010). Isti trend primjenjiv je na marginalnu efikasnost kapitala koja se empirijski može izračunati kod vrijednosnice $ast.wa^{ix}$. Pri izbijanju krize u 2008. godini, Q_r je iznosio 33,4 \$ dok je dr iznosio^x 8,20 \$. Razlika u vrijednosti od -25,2 \$ davala je marginalnu efikasnost kapitala od -8,4 %. Nakon provedbe programa, u 2010. godini, Q_r je iznosio 43,8 \$ dok je dr iznosio 93 \$. Razlika od 49 \$ daje marginalnu efikasnost kapitala od 21,46 %. To znači da je programom agregatna marginalna efikasnost kapitala povećana za 29,86 %^{xi}.

6. Uzroci i uvjetovanost stand-by programa 2014.

Kontekst ukrajinske krize 2014. veže se uz oružani sukob u Donbasu i popratni pritisak na proračun i bijeg investicija. Izbijanje oružanog sukoba uzrokovao je manji output 4,7 % u prvoj polovici godine s obzirom na to da se 15 % industrije nalazi na istoku zemlje (IMF, 2014a). Takav se trend odrazio i na razinu zaposlenosti. Nesigurnost ratnih zbivanja i očekivani pad BDP-a 15 – 20 % doveli su do skoka premija rizika državnih obveznica te do naglog poleta stranog kapitala od 3,1 milijarde \$ (IMF, 2014b). Posredno je vrijednost tečaja u prvoj polovici godine varirala od 11,4 UAH/\$ do 12,1 UAH/\$ što je 40 – 45 % slabljenje ukupnog tečaja u odnosu na 2013. (IMF, 2014b). Istovremeno, cijena goriva skočila je za 42 % što je ojačalo cost-push inflaciju. Središnja banka odgovorila je jačanjem eskontne stope ograničavanjem primarne emisije i uvođenjem ograničenja za trgovanjem deviza. Fiskalna politika veliki udarac doživjela je u lipnju 2014., kada Gazprom obustavlja izvoz plina u Ukrajinu pa „Naftogaz uvozi više plina nego što je planirano, što je zajedno sa slabijim tečajem dovelo do jačeg deficita Naftogaza“ (IMF, 2014b). Isti deficit krpala je država iz fiskalnog proračuna jer je plin bio nužan za nadolazeću zimu. Ukupni troškovi uvoza Naftogaza povećali su mu vrijednost deficita na 10,1 % BDP-a što je s ojačanom vojnom potrošnjom i otežanim prikupljanjem poreza dovelo do deficita budžeta od 5,8 % BDP (umjesto predviđenih 0,6 % BDP-a) (IMF, 2014a). Rast deficita zajedno s deprecijacijom valute značio je skok duga na 73 % BDP-a dok je bankarski sustav imao 14,6 – 14,7 % nenaplativih

kredita u bilanci. Izgubljeno je i 17 % depozita od siječnja do rujna (IMF, 2014a). Povučena vrijednost iznosila je 9 % BDP-a koji središnja banka nadoknađuje injekcijama likvidnosti, a bilanca središnje banke gubi vrijednost jer su 56 % njezine kvantitete činile državne obveznice (IMF, 2014b).

U takvim uvjetima potpisan je stand-by aranžman s MMF-om u vrijednosti od 914,67 milijuna SDR-a. Kako bi sredstva dovela do ponovnog oporavka, MMF-ova uvjetovanost sastojala se od ograničenja državnog deficita (uključuje deficit fiskalnog budžeta i deficit budžeta Naftogaza), ograničenja na državne garancije duga, minimalnih deviznih rezerva, ograničenja rasta vrijednosnica domaćeg bankarskog sustava kod središnje banke i ograničenja vanjskog duga države (IMF, 2014d).

Kao i kod prošlog programa, svaka od navedenih uvjetovanosti imala je potporu u kejnzijanskoj teoriji i modularnim jednadžbama koje dokazuju njegovu učinkovitost. MMF prihvata ideju minusa fiskalnog proračuna zbog ratnih događanja na istoku države, ali napominje da dugoročno treba smanjiti deficit kako se ne bi ugrozio dug. Ranije prikazana Keynesova teorija tvrdi da investicije jačaju sklonost potrošnji i time jačaju zaposlenost. No takav učinak gubi svoj intenzitet ako je državni dug velik (Keynes, 2017). Velik dug poništio bi pozitivne učinke investicija, a time i SDR-a koji država reciklira u potrošnju za provođenje programa. Zato je MMF zahtijevao i napuštanje garantiranja duga Naftogaza, za koji je dosad država morala kupovati devize da bi bio održiv. Ciljano stabilno fiskalno kretanje omogućuje prevenciju kapitalnog poleta zbog straha od fiskalne održivosti. Takvo kretanje dovodi do rasta agregatnog dohotka jer je, volatilnost kao ne-empirijski faktor, smanjen u Keynesovoj modularnoj jednadžbi:

$$A_1 - U - V$$

Već takvim kretanjima je pretpostavka Chletsos i Sinots (2023) da fiskalna restrikcija ima negativnu ulogu, opovrgnuta. Nadalje, MMF je zahtijevao micanje deviznih restrikcija za povlačenje devizne likvidnosti i vraćanje na fleksibilni tečaj. Fleksibilni tečaj doveo bi do jačanja deviznih rezervi što bi sa slobodnim tržištem deviza dovelo do jačanja povjerenja u sustav i tako privuklo strane investicije. Čak iako bi restriktivna monetarna politika dovela do jačeg tečaja (kao inhibitornog faktora izvoza), jače investicije radi stabilnije valute smanjile bi cijenu outputa. Razlog tome je što je trošak korisnika (cijena outputa) $A_1 - I$ (Keynes, 2017). Time se postiže jačanje trgovinske bilance kroz kompetitivnije cijene izvoza.

Kod rekonstrukcije bankarskog sustava, MMF je zahtijevao da se injekcije likvidnosti (to jest uvjetovanost rasta bilance središnje banke) daju samo bankama koje mogu nastaviti svoje poslovanje. Banke koje bi ispunile tržišne uvjete bile bi privlačnije stranim investitorima i tako poticale njihov agregatni rast. Kao i kod prošlog programa, time je dokazano da liberalizacija jača dugoročnu zaposlenost na temelju privlačenja investicija.

7. Ukrajinska usklađenost s programom i njegova provedba

Kao i u prijašnjem slučaju, Ukrajina je odlučila poslušati savjete MMF-a te na temelju njih provesti program rekonstrukcije (IMF, 2014d). Ukrajina je nastojala održati fiskalnu bilancu neprovođenjem povećanja plaća i smanjivanjem agregatne državne potrošnje. U to kretanje bili su uračunati i novi izdaci za obranu, a za održivost cijelog kretanja uvedeni su novi porezi na depozite (IMF, 2014c). Bilanca Naftogaza održana je povećanjem cijena plina, a kako bi se potaknula tržišna kompetitivnost, Naftogaz je razbijen na više poduzeća (IMF, 2014c). Vraćene su licence za trgovanje devizama i maknute sve devizne restrikcije. Središnja banka kupila je 200 \$ milijuna deviznih rezervi te je istovremeno ograničila vlastitu deviznu prodaju (IMF, 2014c). Tečaj je ponovno proglašen fleksibilnim pa je pritisak na devizne rezerve pao. Država je preuzela i ulogu posrednika kod refinanciranja stambenih kredita. Komercijalne banke koje su pristupile rekonstrukciji prema predviđenom kodeksu dobile su porezne olakšice kako bi

se ojačala njihova inicijativa za kreditiranje. Kapital države koji je dan rekapitaliziranim bankama (prema prijedlogu programa) dobio je svojeg zasebnog menadžera koji se brinuo o daljnjoj profitabilnosti državnog udjela (IMF, 2014d).

8. Rezultati stand-by aranžmana 2014.

Ukrajinska provedba programa eliminirala je glavni destabilizacijski faktor prevelikog vanjskog duga za koji su marginalna potencijalna davanja u 2016. iznosila 15 % BDP-a (IMF, 2016b). Takvo kretanje omogućilo je pune benefite korištenja SDR-a (u vidu recikliranja sredstava za provođenje programa) i stranih investicija. Ekonometrija kojom se dokazuje pozitivan utjecaj SDR-a je kejnzijanistička modularna jednadžba prosperiteta za potrošnju. Uzmimo podatak da je 2014. bilo 18 milijuna zaposlenih te da su 14 % BDP-a činile investicije. Kao i kod situacije za 2008., pretpostavit ćemo da je marginalni prosperitet potrošnje 60 %. Padom investicija od 75 % na početnih 25 % (usred devalvacije valute i bankrota zbog prevelikog duga) dobivamo da su nove investicije 3,5 %. Empirijski: nove investicije su jednake $0,25 \cdot 14 \% = 3,5 \%$ dok je:

$$\Delta I = 14 \% - 3,5 \% = 10,5 \%$$

Utjecaj na dohodak kroz multiplikator je:

$$\Delta Y = k \cdot \Delta I$$

To jest:

$$2,5 \cdot 10,5 \% = 26,25 \%$$

Promjena zaposlenosti je tada:

$$\Delta N = 26,25 \% \cdot 18 \text{ milijuna} = 4,725 \text{ novonezaposlenih}$$

Nova zaposlenost trebala je u 2015. godini biti 13,725 milijuna, ali su SDR i strane investicije u sklopu programa omogućili da realan broj iznosi 16,4 milijuna. Ustvari je nedostatak fiskalne potrošnje države nadoknađen recikliranjem SDR-a i dohodak stranih investicija. Time je državna potrošnja smanjena nominalno, dok je realan učinak bio isti, ali usmjeren na faktore za buduće benefite.

Uz smanjeni dug i uspješno održavanje razine zaposlenosti, velik uspjeh ostvaren je na području fiskalne politike. Fiskalni deficit pao je s 4,5 % BDP-a u 2014. na 1,2 % BDP-a u 2016. (IMF, 2016b). Prvi čimbenik koji je pridonio tom trendu je rekapitalizacija bankarskog sektora dovršena 2016. Time je ugašeno 25 % ukupnog sektora u usporedbi s 2014. dok je za ostatak banaka najavljen proces pregleda te likvidacije u slučaju nemogućnosti poslovanja. Cijeli sustav izložen je većem nadzoru radi preventivnih mjera protiv novih šokova te je uspostavljen sustav ranog upozorenja. Tim su mjerama u poslovanju ostale samo banke koje pozitivno posluju i donose profit dioničarima (IMF, 2016a). Strani investitori reagirali su u skladu s takvim kretanjem i svojim investicijama u vrijednosnice bankarskog sustava smanjili troškove procesa rekapitalizacije na samo 2,3 % BDP-a (umjesto previđenih 8 % BDP-a) (IMF, 2016a). Time je ponovno dokazano da proces liberalizacije donosi benefite za ekonomsku stabilnost i rast te je opovrgnuta teza Chletsos i Sinots (2023) da proces liberalizacije donosi negativne aspekte.

Idući negativni fiskalni faktor bio je uklonjen reformom privilegiranih mirovina i pomaknutim dobnim granicama za mirovinu. Smanjen je broj radnika u javnoj upravi dok je onim preostalim ojačana plaća kako bi cijeli sektor bio djelotvorniji i tako omogućio lakše strane investicije (IMF, 2016b). Deficit

Naftogaza je od 2014. do 2016. pao s 5,5 % na > 1 % BDP-a (IMF, 2016d). Svjetske cijene plina su u opisanom razdoblju bile u padu, ali je Ukrajina podignula domaće cijene plina kako bi preventivno prikupila sredstva za smanjivanje deficita Naftogaza (IMF, 2016c).

Svaki navedeni aspekt imao je velik utjecaj, no glavni faktor koji je smanjio negativne pritiske bila je rekonstrukcija obveznica iz 2015. (IMF, 2016c). Postignuti dogovor o rekonstrukciji produljio je vrijeme naplate na razdoblje između 2019. i 2027. i smanjio nominalnu vrijednost potraživanja za 20 %. Grad Kijev postignuo je sličan dogovor koji je smanjio nominalnu vrijednost za 25 % dok je skupina državnih poduzeća smanjila njihova kolektivna dugovanja za 3,3 milijarde USD (IMF, 2016c). Ukupna vrijednost nominalne rekonstrukcije duga iznosila je 22,3 \$ milijarde (uključuje rekonstrukciju državnih obveznica, obveznica grada Kijeva, vrijednosnica državnih poduzeća i određenu količinu vrijednosnica garantiranih od države) (IMF, 2016c). Ukupna predviđena zarada investitora u državne obveznice iznosila je 28 % dok je ista vrijednost za obveznica grada Kijeva bila 35 %. Vrijednosnice poduzeća državnog sektora koje su imale državne garancije zadržale su identičnu cijenu potraživanja, ali je rok dospijeća naplate pomaknut. Za njih je pokrenut proces privatizacije, a ukupna vrijednost državnih garancija smanjena je na 0,6 % BDP-a (IMF, 2016d).

Prisutnost stranih vjerovnika na dogovoru o rekonstrukciji obveznica, zajedno s fiskalnom odgovornošću, dala je povjerenje stranim investitorima i potaknula kapitalne tokove prema tržištu vrijednosnica. Ekonometrija kojom se može dokazati takav tren je jednadžba marginalne efikasnosti kapitala za vrijednosnice $ast.wa^{xii}$. „ Q_r ” je za 2014. iznosio 66,2 \$ dok je „ dr ” iznosio 25 \$. Marginalna efikasnost kapitala za istu godinu stoga je iznosila -27 %. Dvije godine poslije provedbe programa, u 2016. „ Q_r ” je iznosio 29,8 \$ dok je „ dr ” iznosio 62,5 \$. To znači da je marginalna efektivnost kapitala iznosila 9,7 % što je agregatno povećanje marginalne efikasnosti kapitala 36,7 % od početka provedbe programa^{xiii}. Prikazanim empirijskim vrijednostima dokazano je da je strani kapital imao benefičijske učinke za ekonomska kretanja te je time dokazano da je teza koju postavljaju Chletsos i Sinots (2023) netočna.

Na polju monetarne politike središnja banka je ispunila uvjetovanost ograničene kvantitete domaćih vrijednosnica kao i količinu rasta monetarne mase. Devizne rezerve porasle su gotovo dvostruko te su 2016. iznosile 14 milijardi USD (IMF, 2016c). Stabilizirao se i tečaj zbog smanjivanja godišnje inflacije na 7,9 % u 2016. (2015. marginalna vrijednost bila je 61 %) (IMF, 2016c). Kao što je opisano, to je omogućilo privlačenje jačih investicija, bez obzira na koćeći aspekt koji jaki tečaj ima na izvoz.

Provedene mjere zajedno s deeskalacijom sukoba na istoku zemlje, doveli su do jačanja ekonomskog rasta u prvom kvartalu 2016. te tako vratile Ukrajinu na put stabilnog ekonomskog kretanja.

9. Zaključak

Prikazanim kejnzijskim modularnim jednadžbama multiplikatora investicija, elastičnosti cijena, agregatnih investicija, kapitalnog poleta i troška korisnika, s ostatkom teorije, u radu je pokazano kako su mjere MMF-a imale znanstvenu potporu pri provedbi stand-by aranžmana u Ukrajini. Svaka kritika koju Chletsos i Sinots (2023) pripisuju MMF-ovoj uvjetovanosti, osporena je navedenim modularnim jednadžbama. Nadalje, pozitivni rezultati provedbe dani su prikazom podataka, a kejnzijski ekonometrijski modeli prosperiteta za potrošnju i marginalne efikasnosti kapitala potvrđuju hipotezu empirijski. Navedenim modelima prikazane su brojke koje bi zahvatile obje krize kada MMF-ova programa ne bi bilo ili se pak ne bi pratio prema zadanoj uvjetovanosti. Rezultati mogu služiti špekulantima i investitorima koji namjeravaju potražiti povrat investicija na tržištima ratom zahvaćenih zemalja. Kejnzijska teorija, njezini modeli i ekonometrija mogu poslužiti za procjenu rezultata stand-by aranžmana u državi zahvaćenoj krizom. Za daljnje istraživanje preporučuju se neokejnzijski

modeli ekonometrije koji se bave financijskim krizama, osobito teorije autora Paula Krugmana (Krugman, 1988) i Jeffreyja Sachsa.

učinke za ekonomska kretanja te je istim dokazano da je teza koju postavljaju Chletsos i Sinots (2023) netočna.

ⁱ Ili maksimalna zarada tijekom razdoblja održavanja pri čemu je G količina kapitala na kraju razdoblja dok je B razdoblje u kojem poduzeće ne troši kapital na održavanje.

ⁱⁱ Prijevod je preuzet iz Hrvatske enciklopedije. Izvor: <https://www.enciklopedija.hr/clanak/specijalno-pravo-vucenja>

ⁱⁱⁱ Ukrajina se koristila SDR-om umjesto izostalih stranih investicija i na taj način održavala makroekonomsku ravnotežu.

^{iv} Podaci su preuzeti s World Bank, 2023.

^v Ovaj broj koristi se za zemlje u razvoju, prema World Bank, 2023.

^{vi} $\Delta I = 25 \% - 6,25 \% = 18,75 \%$

^{vii} $\Delta Y = 2,5 * 18,75 \% = 46,87 \%$

^{viii} Ukrajinski narativ prije krize navodi da su neki projekti krucijalni za ekonomiju države te se zato ne mogu izbaciti iz fiskalnog proračuna.

^{ix} Burzovni simbol ukrajinskog poljoprivrednog poduzeća Astarta Holding.

^x Podaci o cijenama preuzeti su s Yahoo Finance, 2024.

^{xi} Ako je zadana vrijednost $r = 1$, a kretanja navedenog poduzeća vezana uz pretpostavku predstavljanja ukupne industrije

^{xii} Isto kao i kod slučaja 2008./2010.

^{xiii} Ako je dana vrijednost kod oba slučaja $r = 1$ te postoji pretpostavka da jedna dionica reprezentira agregatno kretanje tržišta vrijednosnica u vidu marginalne efektivnosti kapitala.

Popis matematičkih izraza

1. Modularna jednadžba troška korisnika
2. Modularna jednadžba domaćih investicija
3. Modularna jednadžba ukupnog dohotka
4. Modularna jednadžba agregatne potrošnje
5. Modularna jednadžba agregatnih investicija
6. Modularna jednadžba štednje
7. Modularna jednadžba sklonosti potrošnji
8. Modularna jednadžba marginalne efikasnosti kapitala
9. Modularna jednadžba prosperiteta za potrošnju
10. Modularna jednadžba agregatnog dohotka, izražen u jedinici plaća
11. Modularna jednadžba promjene agregatnog dohotka na temelju multiplikatora investicija
12. Modularna jednadžba multiplikatora investicija
13. Modularna jednadžba potrošnje
14. Modularna jednadžba agregatnih investicija
15. Prema modularnoj jednadžbi prosperiteta za potrošnju
16. Prema modularnoj jednadžbi za potrošnju
17. Prema modularnoj jednadžbi za marginalnu efikasnosti kapitala
18. Modularna jednadžba ukupnog dohotka/štednje
19. Modularna jednadžba promjene agregatnog dohotka na temelju multiplikatora investicija
20. Prema modularnoj jednadžbi za promjenu zaposlenosti

Literatura:

Ban, C. (2016). *Ruling ideas: How global neoliberalism goes local*, Oxford University Press.

Chletsos, M., & Sintos, A. (2021). Hide and seek: IMF intervention and the shadow economy, *Structural Change and Economic Dynamics*, 59, str. 292–319. <https://doi.org/10.1016/j.strueco.2021.08.005>

Chletsos, M., & Sintos, A. (2023). The effects of IMF conditional programs on the unemployment rate, *European Journal of Political Economy*, 76, 102272. <https://doi.org/10.1016/j.ejpoleco.2022.102272>

Gowan, P. (1995). Neo-liberal theory and practice for Eastern Europe, *New Left Review*, (213), str. 3–60.

Havrylyshyn, O. (2017). *The political economy of independent Ukraine: Slow starts, false starts, and a last chance?*, Palgrave Macmillan.

IMF (2008a) Recent Economic Developments, International Monetary Fund. Press Release No. 08/271, 5 November. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2008b) Ukraine - Assessment of the Risk to the Fund and the Fund's Liquidity Position. International Monetary Fund. Prepared by the Finance and Strategy, Policy, and Review Department. International Monetary Fund Approved by A. Tweedie and A. Mazarei, Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2008c) Ukraine Request for Stand-By Arrangement. International Monetary Fund. Prepared by the European Department in consultation with other departments. Approved by J. Kahkonen and A. Mazarei, November. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2008d) Ukraine request for stand-by arrangement. International Monetary Fund. Statements by Y. Yakusha, November. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2010) Ukraine: First Review Under the Stand-By Arrangement. International Monetary Fund. Prepared by the European Department in consultation with other departments. Approved by P. M. Thomsen and L. Giorgianni, 10 December. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2014a) IMF completes first review under stand-by arrangement for Ukraine and approves \$1.39 billion disbursement, International Monetary Fund. Press Release No. 17/399, 29 August. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2014b) Statement by Oleksandr Petryk, International Monetary Fund. Alternate Executive Director for Ukraine', 29 August. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2014c) Ukraine: First Review Under the Stand-By Arrangement: Attachment I. Memorandum of Economic and Financial Policies. International Monetary Fund. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2014d) Ukraine: First Review Under the Stand-By Arrangement, Request for Waivers of Nonobservance and Applicability of Performance Criteria and a Request for Rephrasing of the Arrangement. Approved by P. Thomsen and M. Flanagan. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2016a) Appendix. Ukraine: Letter of Intent, International Monetary Fund. Kyiv, 1 September. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2016b) Attachment I. Ukraine: Memorandum of Economic and Financial Policies. International Monetary Fund. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2016c) IMF Executive Board Completes the Second Review Under EFF with Ukraine, Approves \$1 Billion Disbursement and Discusses Ex-Post Evaluation of 2014-2015 SBA. International Monetary Fund. Press Release No. 16/407, 14 September. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2016d) Second Review Under the Extended Fund Facility and Requests for Waivers of Nonobservance of Performance Criteria', Annex: Debt Sustainability Analysis, 2 September. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

IMF (2016e) Second Review Under the Extended Fund Facility and Requests for Waivers of Nonobservance of Performance Criteria, Rephrasing of Access, and Financing Assurances Review, 2 September. International Monetary Fund. Raspoloživo na: <https://www.imf.org/en/Countries/UKR>, [Pristupljeno: 8.7.2024].

Keynes, J. M. (2017) The General Theory of Employment, Interest and Money: With The Economic Consequences of the Peace. Wordsworth Editions Ltd.

Offe, C. (1996) Varieties of transition: The East European and East German experience. Cambridge, MA: MIT Press.

Petryk, O. (2016) 'Statement by Oleksandr Petryk, Alternate Executive Director for Ukraine', International Monetary Fund, 14 September 2016.

Stiglitz, J. E. (2016). Euro: Kako zajednička valuta prijeti budućnosti Europe. Profil.

World Bank (2023) Ukraine. World Bank Group. <raspoloživo na: <https://data.worldbank.org/country/Ukraine>>, [Pristupljeno: 8.7.2024].

Yahoo Finance (2024) AST.WA - ASTARTA HOLDING. <raspoloživo na: <https://finance.yahoo.com/quote/AST.WA/>>, [Pristupljeno: 8.7.2024].

The IMF through the lens of Keynesian theory and econometrics: Examples of Ukrainian economic crises in 2008 and 2014

DOMAGOJ ČORIĆ

Institute for Defense and Security Studies
„Dr. Franjo Tuđman“ Defense and Security University
Ilica 256B, Zagreb
Croatia

domagoj.coric@sois-ft.hr

ORCID iD: <https://orcid.org/0000-0002-9230-2211>

Abstract: Many economist and academics attribute very negative connotations to the IMF and its stand-by programs. One example is the paper by the authors Chletsos and Sintos (2023). This paper hypothesizes that the assumptions of the negative impact is incorrect and seeks to illuminate the positive consequences of IMF programs and conditionality using the examples of Ukraine's economic crises in 2008 and 2014. To prove this hypothesis, the paper uses Keynesian theory based on the work „*The General Theory of Employment, Interest, and Money*“, as well as a series of Keynesian modular equations such as: investment multipliers, price elasticity, aggregate investments, user cost, and others. The paper also utilizes Keynesian econometric models for marginal propensity to consume and marginal efficiency of the capital. The first heading presents a series of academic criticisms directed at the IMF, while the next heading presents Keynesian theory in depth, which serves as the support for the before mentioned econometrics and modular equations. The third heading demonstrates the IMF-Ukraine cooperation during the stand-by arrangement in 2008. Using the previously mentioned econometrics and modular equations, the positive connotation of IMF conditionality is proven in: limiting fiscal spending, restricting monetary policy, and anti-mercantilist measures. In the following heading, the paper shows Ukraine's acceptance of the IMF program and its implementation, followed by the results. Using Keynesian theory, econometrics, and modular equations, it is proven that the criticisms of IMF conditionality by Chletsos and Sintos (2023) are not supported by empirical evidence. It also shows how the entire program had positive consequences on the Ukrainian economy. The second part of the paper focuses on presenting the causes of the 2014 economic crisis, while the IMF conditionality measures are again justified through Keynesian economic theory and modular equations. After showing Ukraine's implementation of the program, the positive effects of the IMF are demonstrated through econometric models of marginal propensity to consume and the marginal efficiency of capital. As with the first part of the paper, the overall review of the 2014 crisis concludes that the IMF measures and conditionality played a positive role for Ukraine's recovery. The causality of such movement it to be found in the programs close connectivity to Keynesian theory, thus proving thesis of Chletsos and Sintos (2023) to be incorrect.

Keywords: Keynesian theory, Ukrainian economic crisis 2008, Ukrainian economic crisis 2014, stand-by arrangement, IMF

JEL classification: E65, F33, E12

Key factors for developing sustainable wine tourism in the West Herzegovina Canton

DEŠA KARAMEHMEDOVIĆ

Herzegovina University, Faculty of Social Sciences Dr Milenko Brkić
Department of Tourism, Ecology and Maintenance of the Environment
K. M. Viševića Humskog bb, Mostar 88000, Bosnia and Herzegovina

desa@hercegovina.edu.ba

ORCID iD: <https://orcid.org/0000-0001-8140-9067>

ANTE RASPUDIĆ

Grafotisak d.o.o.

Blage Zadre 26, 88340 Grude, Bosnia and Herzegovina

raspudicgr66@gmail.com

Prethodno priopćenje / *Preliminary communication*

UDK: 338.48:663.2(497.6-3Hercegovina)=111

Primljeno / Received: 28. listopada 2024. / October 28th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 28. studeni 2024. / November 28th, 2024.

DOI: 10.15291/oc.4565

Abstract: This study aims to provide a situational analysis of the current development of wine tourism in the West Herzegovina Canton, especially highlighting key factors for developing sustainable wine tourism as perceived by winery owners and/or managers. Scientific and professional literature, online sources, and empirical research using the e-Delphi technique were utilised to investigate the topic. In addition to quantitative data analysis, the results were analysed and explained using the PEST matrix. Low interest among public policy stakeholders in its development was identified as the most problematic issue, while the quality of wine was recognised as the most important opportunity. Taking into account all the issues and opportunities, and considering the broader context of the West Herzegovina Canton's development, key factors for developing sustainable wine tourism include: increasing the interest of public policy stakeholders and investments in wine tourism development; implementing comprehensive marketing strategies for the promotion of wine tourism and its placement in the tourist market; encouraging cooperation among all stakeholders, improving communication, and fostering synergy; educating winemakers and other stakeholders directly involved in wine tourism; enhancing ecological wine production and wine quality; expanding capacity and modernising existing wineries; promoting wine tourism and improving the region's image; developing other specialised forms of tourism; advocating for supportive public policies and removing administrative obstacles; and managing the sustainable development of wine tourism. The research limitations included the absence of the Vineyard and Wine Register, the lack of operational tourist boards in three out of four municipalities in the West Herzegovina Canton, and issues with participant engagement during the empirical research. Future research recommendations include verifying the factors listed in the study's limitations and examining the structure of wine tourism at the time, identifying weaknesses, strengths, opportunities, and threats. New empirical studies could uncover additional factors crucial for wine tourism development in the West Herzegovina Canton and Bosnia and Herzegovina.

Key words: Development of wine tourism, sustainable development, West Herzegovina Canton

JEL classification: Z32

1. Introduction

According to UNWTO (2023), oenotourism (wine tourism) is a subset of gastronomy tourism. Many authors concur that gastronomic and oenological tourism have significantly expanded in scope and popularity over the past 20 years (Andrade-Suarez & Caamano-Franco, 2020; Nickova, 2021; Ingrassia et al., 2022). As Getz (2000) described, wine tourism involves mutual benefit and interaction, increasing wine sales, visitor education, attracting new market segments, and valorising natural and cultural values. It enhances destination visitation, develops a new destination image, and generates revenue. Research by Martínez-Falcó et al. (2024b) and Petelca et al. (2022) confirms the significant economic impact of wine tourism, contributing to job creation, and local business growth. Moreover, it serves as a crucial tool for both income generation and the preservation and promotion of the cultural heritage of wine regions, playing a pivotal role in their sustainable development globally. Oenotourism thrives when winemakers actively engage in tourism, offering visitors exceptional experiences, as supported by Getz (2000), Howley & Van Westering (2008), and Del Chiappa et al., (2019); or ‘complex and holistic experiences’ (Garcia Revilla & Martinez Moure, 2021).

The inaugural wine tourism research, which originated in the 1990s, explored its impact on rural areas and tourist behaviour (Hall, 1996). In recent decades, wine tourism has gained momentum, leading to increased interest in the academic community to research this phenomenon (Pop & Coros, 2023) especially in highly developed countries with a long tradition of viticulture and wine tourism (Martínez-Falcó et al., 2024a), where wine holds significant importance as an export commodity. Gómez et al. (2019) identify seven fronts of research on wine tourism: territorial development, wine routes, behaviour of wine tourists, tasting and winery experience, theoretical models, wine events and festivals, and wine marketing and promotion. When it comes to territorial development, issues related to the potential of wine tourism for economic and regional development, and sustainability are especially investigated and analysed (Vrontis et al., 2014; Nepal et al., 2019; Nave & Finisterra do Paço, 2021; Fuentes-Fernández et al., 2022; Trigo & Silva, 2022). Kubát et al. (2023) took a step further in their study shifting the focus from mere vine and tourism to the wine destination and winescape concept.

Despite increased interest from researchers, specialists still highlight several knowledge gaps. Longitudinal studies on sustainability aspects and outcomes from involvement in wine tourism are lacking, as are research studies comparing sustainable wine tourism practices and principles across different regions, including between new and old world or emerging and renowned wine regions (Trigo & Silva, 2022). Another critical knowledge gap is the need for conceptual frameworks for understanding various aspects of sustainable wine tourism, such as community involvement, destination articulation, and successful business models (Alonso et al., 2020). There is a significant gap in specialised wine tourism courses and knowledge of the language associated with wine (Zurita, 2023).

Popular destinations for wine tourism include traditional wine regions such as France, Italy, Spain, and the United States, alongside New World wine regions, while developing wine regions are considered to be China, India, and Eastern Europe. There are also lesser-known sites with a long tradition of viticulture and winemaking that have yet to fully leverage their potential to become wine tourism destinations. One such region is West Herzegovina Canton (WHC) in Bosnia and Herzegovina (BH), a country geographically situated in Central Europe. Although tourism in WHC may generally be an essential economic and developmental activity, despite having relatively numerous attractive and diverse resources, good transport connectivity, and proximity to other appealing destinations, the tourism industry in WHC is still in its infancy, as cited in *The Tourism Development Strategy of West Herzegovina Canton for the period 2020-2027* (The Government of the West Herzegovina Canton for European Integration, 2019a, Strategy).

Interest in offbeat tourism destinations, particularly wine-producing rural areas, is on the rise due to their unique features such as vineyard landscapes, rich heritage, and culinary traditions (Andrade-Suarez & Caamano-Franco, 2020). In conducting a situational analysis of the current development of wine tourism in the West Herzegovina Canton, the following questions have been addressed: What are the main issues in developing sustainable wine tourism? What opportunities exist for its development? And what key factors are essential for its successful development? This paper aims to stimulate scientific dialogue on the development of wine tourism throughout BH and has practical applications. These practical implications offer valuable insights for policymakers, destination marketing professionals, and wine producers, assisting in the planning and implementation of activities to enhance wine and tourism experiences at various levels.

2. Literature review

2.1 Key factors for the sustainable development of wine tourism

The cultivation and processing of grapes into wine in large wineries play a significant socio-economic role in certain regions worldwide (Hojman & Hunter-Jones, 2012; Gómez-Carmona et al., 2023). The global wine market is projected to reach a valuation of US\$ 2,971.13 billion by 2033, with wine producers expecting a compound annual growth rate of 5.7% through 2023 and beyond. The current market valuation is US\$ 1,709.27 billion in 2023. According to the latest findings from Future Market Insights, global wine tourism revenue is expected to reach US\$ 85,145.2 million by the end of 2023. In the long term, the wine tourism market is estimated to reach approximately US\$ 292,538.4 million by 2033. These data not only highlight the current economic strength of the wine tourism market but also suggest a trend toward rapid growth, offering entry opportunities for even lesser-known destinations. Several key factors are identified for the development of a wine tourism destination. These include: the potential to increase the number of independent visitors to wineries; the availability of wine festivals and events; and the effectiveness of regional tourism promotion (Getz & Brown, 2006; Tomljenović & Getz, 2009); stronger networking among wineries and other tourism stakeholders to create and promote organised tours (Howley & Van Westering, 2008); and political and institutional factors, regional infrastructure, and wine tourism facilities (Alebaki et al., 2015).

Other important factors include: enhanced cooperation and networking among organisations and stakeholders connected by economic and social relationships and transactions, as well as targeted training for wine producers to improve their understanding of the tourism and hospitality sectors (Del Chiappa et al., 2019); friendly service, staff knowledge, clear signage, educational programmes, building interior and ambience, and translation services (Woldarsky & Geny-Denis, 2019); the protection of traditional vine varieties (Kourkouridis, 2020); and innovation in services, marketing, and partnerships (László, 2023).

The establishment of a successful wine tourism industry can be achieved through targeted marketing campaigns, investments in infrastructure and facilities, and the implementation of sustainable practices that preserve and enhance natural and cultural resources (Lubawa & Osabuohien, 2024). While wine tourism development is primarily led by wine producers, it is often small and medium enterprises that are most involved (Petelca et al., 2022). However, Chiappa et al. (2019) suggest that winemakers primarily view tourism as an opportunity to promote and sell their wines, raising questions about the extent of their role as drivers of tourism development. Meler and Horvat (2018) propose centralising sales and marketing activities at the wine producer level, which would enable a practical and comprehensive division of marketing activities, encompassing both strategic and operational marketing.

Nepal et al. (2019) stress the importance of reassessing tourism's impacts and promoting policies to align it with the UN's Sustainable Development Goals (SDG 13), which focuses on managing tourism sustainably to mitigate its impact on climate change. Sustainable wine tourism encompasses the principles of environmental, economic, and social sustainability, as well as education, awareness, and responsible consumption (UNWTO, 2022). László (2023) concludes, based on nearly two decades of global research, that it is increasingly important to examine sectoral and local specificities of sustainable development challenges. Tourism sustainability depends on community leaders and experts maximising benefits while minimizing costs. Local residents prioritise sustainable landscapes and regenerative agricultural practices due to their profound connection to the land (Pearson et al., 2024).

Wine production and wineries are embracing sustainability (Flores, 2018), utilising organic methods and implementing eco-friendly techniques in both viticulture and production. Sustainability has arrived in the wine industry and wine tourism, and will undoubtedly play a significant role in the future. To plan for the sustainable development of a wine destination, it is necessary to understand local tourism issues and identify key sustainability needs based on the destination's potential (Szolnoki & Ridoff, 2021).

Consumers increasingly prioritise sustainability in the wine industry, providing wineries with opportunities to adopt eco-friendly practices and attract a niche market. Additionally, rising interest in wine leads to more participants in wine tourism, seeking unique and authentic experiences. These experiences include wine tours, guided visits to vineyards, and wine-tasting sessions. Participants also engage in wine festivals and events, wine education workshops, and exploring wine trails and routes. These activities often offer opportunities to purchase wine directly from the source or nearby (UNWTO, 2023). Additionally, active leisure activities such as grape harvesting and wine production are becoming increasingly popular. This trend not only generates revenue for regional economies, but it also promotes a deeper recognition of wine (Malfeito-Ferreira, 2023).

2.2 Research setting: wine tourism in West Herzegovina Canton

Bosnia and Herzegovina is administratively divided into two entities: The Federation of Bosnia and Herzegovina (FBH) and the Republika Srpska, and also includes the Brčko District. The FBH consists of ten cantons, one of which is WHC, located in the southwest of BH, representing 2.66% of the country's territory (HERAG, 2018). This relatively small area has an extremely favourable climate for viticulture. Its southernmost parts have a Mediterranean climate with dry and hot summers, while the northernmost regions have a warm and humid climate, with snow cover persisting longer at higher altitudes. Geographically, it comprises two distinct morphological regions: the northern portion, part of the Bosnian-Herzegovinian Dinaric karst, and the southern expanse, which forms part of Herzegovina's lowland region. The terrain is characterised by rich relief and geomorphological forms, as well as hydrographic elements.

Tourism activity in this area remains relatively low, despite a rich and diversified resource and attraction base, good transportation connectivity, and proximity to other attractive destinations (Strategy, 2019a). The total number of accommodation units is comparatively small, totalling 171 in four hotels, five motels, two guesthouses, and one rural tourism facility. These facilities are primarily tailored to meet the needs of business and transit demand, rather than leisure tourism (Strategy, 2019a). In the WHC, in addition to summer and winter tourism, agrotourism (vineyards, orchards, vegetable farming, honey production), rural, adventure, fishing, cycling, cultural, religious, and speleological tourism can be developed. The proximity to tourist markets such as Međugorje, Mostar, Split, Zadar, and Dubrovnik enables the development of both transit and excursion tourism (HERAG, 2018).

The record year for tourist arrivals and nights stayed was 2019, with a total of 9,740 domestic and foreign tourists and 14,513 overnight stays. In 2020, due to the COVID-19 pandemic, arrivals decreased by approximately 75%, and nights stayed dropped by 80%. However, by 2022, tourist arrivals had reached 84%, and nights stayed had reached 89% of the values recorded in 2019. The majority of guests, almost 50%, are typically visitors from Croatia (Bulletin No. 4.13 of the Federal Institute of Statistics, 2023). When evaluating WHC's tourism competitiveness, the highest ratings were given for food quality, use of local ingredients, traditional food preparation methods, diversity in food and beverage options, and the authenticity and accessibility of dining establishments. These findings are unsurprising, considering that WHC, like Bosnia and Herzegovina as a whole, is located in an exceptionally favourable climate with clean air, water, and soil, providing the essential conditions for the advancement of ecological production.

The total agricultural area in WHC amounts to 53,165 hectares, of which less than 1,000 hectares (1.73%) are dedicated to vineyards. Projections for 2030 anticipate an increase in the use of agricultural land for viticulture to 4.32%, as cited in *Strategy for Rural Development of West Herzegovina Canton for the Period 2020-2030* (The Government of the West Herzegovina Canton for European Integration, 2019b). The grapevine is the most important and one of the most widely cultivated crops in Herzegovina (Rotim & Crnjac, 2023). The vineyards in the Grude and Ljubuški regions, where the indigenous Herzegovinian varieties Blatina and Žilavka are cultivated, have the highest tourism appeal.

There are no archaeological findings pinpointing the exact origins of grape cultivation in the broader Herzegovina region. However, regarding winemaking and viticulture, WHC boasts a rich tradition spanning over 2,200 years, placing it among the regions with a profound historical heritage in grape cultivation and winemaking. Despite the devastation wrought by World War II, viticulture in Herzegovina underwent a remarkable revival in the post-war period. This resurgence was driven by the adoption of innovative grapevine cultivation techniques, the implementation of modern viticulture practices, and the establishment of state-of-the-art Hepok wineries across Herzegovinian cities, as outlined by Sivrić (2009).

Regarding the legislative regulation of the winemaking sector in Bosnia and Herzegovina, the organisation of the wine market, including regulations on grape and wine production, labelling, and market supervision, is governed by the Law on the Organisation of the Wine Market (Official Gazette of BH, No. 63/23). The law also mandates the establishment of a vineyard registry for all grape producers selling their produce, and authorised laboratories conducting wine analyses must meet ISO/IEC 17025 standards. This new regulation is expected to significantly boost the competitiveness of domestic grape and wine producers, facilitating their entry into European and global markets.

Notable wineries in the region include Hepok Vinarija Ljubuški, established in 1882, and the Wine Cellar Buntić, established in 1921. In Herzegovina's diverse vineyards, standout local cultivars include Žilavka and Blatina. Additionally, complementary varieties such as Bena, Krkošija, and Dobrogostina with Žilavka, and Trnjak with Blatina, as well as internationally renowned types like Vranac, Merlot, and Alicante Bouschet, are grown. Post-war vineyards in Herzegovina also feature respected cultivars like Syrah, Chardonnay, Cabernet Sauvignon, Sauvignon Blanc, Muscat Ottonel, Graševina, and many more (Rotim, Gašpar, Perić, 2017).

Today, for many small family wineries, selling wine to visitors constitutes the largest part of their income. These wineries play a pivotal role in shaping wine tourism in WHC, particularly those involved in the prominent wine tourism initiative across Bosnia and Herzegovina – the Wine Roads of Herzegovina. Launched in 2007 (Jahić, 2016) under the theme 'With Wine Through Time', this initiative initially connected 22 vineyards and wine cellars from the municipalities of Ljubuški in WHC, Čitluk, Mostar, Čapljina, and Stolac in Herzegovina-Neretva Canton, as well as Trebinje in Republika Srpska. As the project progressed, it expanded to include nine additional vineyards and wine cellars, totalling

31 participating establishments. Wine routes are among the most attractive offerings in wine tourism, drawing tourists seeking tranquillity, social connection, and immersion in nature. They align well with green, sustainable, and religious tourism (Bellia et al., 2021). Wine routes play a significant role in enhancing the competitiveness of a region and contribute to the image of a high-quality tourist destination (Martínez-Falcó et al., 2024a).

Wine tourism in the WHC extends beyond vineyard tours and wine education, encompassing wine cellars and onsite restaurants nestled within the vineyards themselves. Alongside wineries, the region hosts a variety of wine-related events, including festivals such as the Taste of Ljubuški Wines, Wine Workshop – Vineyards Nuić, and Blaž Enology. Gastronomic gatherings like Raštikijada in Grude and Street Food in Široki Brijeg also celebrate local wines and cuisine. These events typically serve as enogastronomic gatherings, showcasing indigenous products from local producers. Additionally, it is important to highlight the establishment of the 'Herzegovina Tourism Cluster', which brings together stakeholders from three Herzegovinian counties to build strategic alliances, with the goal of creating a unique brand for Herzegovina as a tourist destination. This initiative focuses primarily on gastronomy, viticulture, and the renowned Herzegovinian wines.

3. Methodology

This study aims to provide a situational analysis of the current development of wine tourism in WHC focusing on key factors for developing sustainable wine tourism as perceived by winery owners and/or managers. To meet the paper's objective, empirical research was conducted based on official statistics, policy documents, professional and scientific literature, as well as other secondary data sources. The research was carried out using the e-Delphi survey method, employing a Google Form distributed to panellists via email. E-Delphi research typically consists of two rounds of inquiry (Visković, 2016). The challenges and opportunities were investigated, and based on all the research, the key factors for development of sustainable wine tourism in WHC were identified.

The panellists included in the sample are business owners registered for tourist activities, primarily in wine tourism, presidents of organisations whose activities are related to tourism, as well as authorities involved in decision-making regarding tourism development in the WHC. In the first round of the study, 20 participants took part, and in the second round 14 participants were involved. The literature does not provide a consensus on the required number of panellists in Delphi studies (Visković, 2016). According to Okoli and Pawlowski (2004), the literature recommends 10–18 experts on a Delphi panel, and for single surveys, attrition (participant drop-out) is not considered a significant issue.

The research findings are expressed as percentages and weighted arithmetic means to demonstrate more accurate values of certain variables. The output results were analysed and explained using the PEST matrix (political, economic, social, technological factors) which closely focuses on the issues and development opportunities of wine tourism in WHC. A PEST analysis is usually part of a larger approach to business analysis and is used alongside a Strengths, Weaknesses, Opportunities, and Threats (SWOT) analysis to diagnose the current situation and project the future. It is a tool for effective planning and making strategic business decisions, with the purpose of maximising opportunities for profit and competitive advantage.

4. Findings

Sociodemographic profile of respondents: Gender: M=60%, F=40%; Age: 31-40 years (40%), 41-50 years (35%), 21-30 years (20%); Education level: 50% with a Master's degree. The respondents primarily include 37% hospitality professionals employed as directors/owners of hospitality

establishments and wineries. Two-thirds of the respondents have been involved in promotional activities in tourism, tourist events, or hospitality at some point in their lives. According to the Delphi method, the sociodemographic profile of the panellists is not the focus of analysis.

4.1 The current state of wine tourism development in WHC

The current state of tourism development in WHC was rated as mediocre by 55% of respondents, while opinions on wine tourism development were slightly more positive. Forty-five percent considered it mediocre, while 30% rated it as very good. Almost 80% of respondents believe that wine cellars in WHC are equipped with modern equipment for processing, refining, and aging wine. The most significant sources of funding for wine tourism are identified as private individuals' funds and resources from European funds, while funds from tourism clusters are considered the least important.

Fifty percent of those surveyed believe that the development of winemaking is not adequately encouraged and managed for the needs of wine tourism development at the national level. Respondents were asked to express their views on the role of the state in the development of wine tourism in WHC. The majority believe that the state could play a greater and more influential role in the development of wine tourism. In the continuation of the survey, respondents were asked to indicate their level of agreement with statements following the sentence, 'Development of wine tourism in the WHC...'. The statements, with weighted arithmetic mean values from the first round of surveying, are presented in Table 1.

Table 1. General opinions of the respondents about the development of wine tourism in WHC

Statement: Development of wine tourism in the West Herzegovina Canton...	W.M.
... would enable the creation of an image of WHC as a wine tourism destination, attracting new target groups.	4.17
... would be beneficial for elevating WHC as a tourist destination.	4.17
... would foster a business climate and development of other specialised forms of tourism.	4.11
... is feasible because conditions for its development exist.	4.00
... is problematic because it requires significant financial investment.	3.45
... is slow and complicated for interested entrepreneurs due to excessive administrative hurdles.	3.28
... is not profitable because tourist demand does not show potential for its development.	2.67

Source: Author's calculation, 2024.

According to responses in the second round, 43% of participants agreed that 'Development of wine tourism in WHC would enable the creation of an image of WHC as a wine tourism destination, attracting new target groups.' Following closely, 21% of respondents indicated that 'It is feasible because conditions for its development exist.' Additionally, respondents were asked a general question about the contribution of wine routes to the tourist and economic development of WHC. The results show that the significant contribution of wine routes to the tourism and economic development of WHC is primarily evident in the development of new content and products (cultural, tourism, crafts, small businesses), accounting for 50% of responses. Following closely, the statement 'The development of year-round special interest tourism, leading to economic growth and development', constituted 36% of the findings.

4.2 Issues and Opportunities for the development of wine tourism in the West Herzegovina Canton

Several statements regarding the positive and negative impacts of wine tourism on social changes were also provided in the survey. The following are statements with values of weighted arithmetic mean from the first round of surveying (Table 2). According to responses in the second round, the development of wine tourism would primarily influence 'The creation of a shared cultural space and cultural cooperation', at 43%. 'Increase employment opportunities' is in the second place with 29% of responses.

Table 2. Opinions of respondents on the positive and negative impacts of wine tourism on social changes

Statements	W.M.
Encourages education and human resource development.	4.00
Increase employment opportunities.	3.89
Reducing emigration and facilitating demographic recovery.	3.89
Creation of a shared cultural space and cultural cooperation.	3.89
Establishment of personal friendships.	3.89
Development is aligned with cultural and traditional values.	3.74
Everyone equally participates in shaping their future.	3.53

Source: Author's calculation, 2024.

Based on all responses and individual opinions presented, the most significant problems and opportunities for the development of wine tourism in WHC have been highlighted. In the second round, respondents were required to select one statement they considered accurate, and the results of their responses are shown in Table 3.

Table 3. Wine Tourism in WHC: Issues and Opportunities

Issues	(%)	Opportunities	(%)
Low interest among public policy stakeholders for its development.	50	The quality of the wine	43
Insufficient investment in the development of wine tourism.	21	Wine routes represent an opportunity for popularizing WHC as a wine tourism destination	29
Lack of marketing for the development of wine tourism and its placement in the tourist market	14	Viniculture is developed	21
Poor communication among potential stakeholders.	8	There is a sufficient number of wineries/wine cellars	7
Inadequate trained personnel for organising and developing wine tourism	7		

Source: Author's calculation, 2024.

While the most significant issue hindering the full development of wine tourism in the first round was insufficient investment in wine tourism development (90%), in the second round, it is the low interest of public policy stakeholders in its development (50%). A minority of respondents (7%) consider the lack of educated personnel for organising and implementing wine tourism as the most important problem for future wine tourism development.

5. Discussion

5.1 Analysis of output results

According to responses, the statement 'Development of wine tourism in WHC would enable the creation of an image of WHC as a wine tourism destination, attracting new target groups' received the highest score of 43% (Table 1). Highlighting the differences between two similar destinations is an important factor in creating an image, as tourists develop perceptions of a destination based on the image, which must be distinct and, of course, more attractive than the other destination, when choosing where to visit. Sekhniashvili and Bujdosó (2023) argue that the main factor influencing decision-making is the image of the destination, and wine tourism contributes to creating an image of a quality tourist destination (Martínez-Falcó et. al., 2024a). Additionally, besides attracting new target groups through the creation of a wine destination image, a positive image in tourism marketing is one of the crucial factors influencing consumer loyalty, enabling the long-term sustainability of wine tourism.

Respondents were also asked to identify the impacts of wine tourism on social changes. The ongoing debate over tourism's social and cultural impacts is a recurring concern for tourism development and sustainability. According to 43% of responses, the development of wine tourism would primarily influence 'The creation of a shared cultural space and cultural cooperation' (Table 2). The area of cultural sharing plays an important role in people's economic and cultural exchange and interpersonal interaction (Liu, 2021), and 'cooperation is at the heart of the human condition and socialization' (Sempere, 2018: 167)

Establishing shared cultural-tourism spaces stands as a pivotal objective in crafting cultural routes, notably wine routes, particularly fostering cross-border collaboration (Karamehmedović, 2017). This endeavour proves especially beneficial for the advancement of lesser-known destinations such as WHC. Respondents were asked a general question about the contribution of wine routes to the tourist and economic development of WHC. Wine routes are a global trend today (Terziyska, 2018), with examples such as the 34 wine routes in the Iberian country (Martínez-Falcó et al., 2024a), and numerous wine routes in Mexico (Fernandez, 2023). Developing wine routes fosters alliances among wineries, hotels, restaurants, tourism promoters, and local government to promote the region. This sustainable approach drives economic growth, enhances wine production, and improves living conditions.

5.2 Analysis explanation of qualitative and quantitative data using the PEST matrix

Being part of both the wine industry and the tourism sector, wine tourism is affected by various problems and challenges, including political, economic, and socio-cultural factors (Fountain et al., 2021). Considering the general opportunities and challenges for tourism development, as well as economic growth in WHC (HERAG, 2018), some political and legal factors hindering the development of wine tourism include:

- The political climate, along with instability at local, federal, and state government levels.
- At the national level, there is no legislative framework for the development of wine tourism (even though tourism is in the process of ratification).
- The Vineyard and Wine Register is not yet operational.
- There is a lack of encouragement or management of viticulture and viniculture development at all levels of governance.
- Absence of tourist boards or destination management organisations dedicated to spearheading the development and management of wine tourism.

However, Strategy (2019a) provides a solid legislative framework for the development of wine tourism. The current state of tourism development in WHC was rated as mediocre by 55% of respondents, while opinions on wine tourism development were slightly more positive, with 45% considering it mediocre and 30% rating it very good. Aside from general economic instability and uncertainty, the most significant economic challenges hindering the development of wine tourism include:

- Insufficient investment in wine tourism development.
- High investment costs in modern equipment for processing, refining, and wine care, which have further increased amid inflationary pressure.
- The absence of financial assistance from the state/federation/canton for wine tourism development.
- Fiscal reliefs are needed to facilitate easier investment and operation in wine tourism.

The wine industry and wine tourism are not synonymous, and there are experienced winemakers who do not always have a defined position on investment in wine tourism (Robinson & McGregor, 2019). The success of wine tourism is driven by both entrepreneurial and political actions (Del Chiappa et al., 2019; Martínez-Falcó et al., 2024b). Additionally, enhancing collaboration among relevant local stakeholders is of paramount importance (Alonso et al., 2015), as their cooperation is crucial for achieving sustainable development of wine tourism in a specific region. Therefore, in addition to the aforementioned political, legal, and economic factors, it is necessary to consider the social factors that hinder the development of wine tourism:

- Low interest of public policy stakeholders in its development.
- The local community and wineries have not fully realised the potential of wine tourism as an activity that leads to overall prosperity.
- Insufficient action from associations involved in wine tourism, as well as in tourism in general.
- Lack of marketing for the development of wine tourism and its placement in the tourist market.
- Poor communication among potential stakeholders.
- Inadequate education and training for organising and developing wine tourism.
- Collaboration between stakeholders and the local community is neither stable nor continuous.
- The state addresses problems *ad hoc* rather than systematically.
- The worsening demographic picture of WHC demands urgent action.

Pop and Coros (2023) highlighted the lack of adequate communication between various levels of public authorities, leading to underdeveloped tourism in rural areas despite initiatives dating back two decades. Del Chiappa et al. (2019) emphasized the importance of effective promotion, stakeholder networking, and targeted training for wine producers in wine tourism development. Additionally, wine tourism is recognised as a mechanism for territorial development. Therefore, the suggestion for policymakers and marketing professionals is to implement branding strategies that foster collaboration among local stakeholders in the wine industry, tourism, and related sectors (Martínez-Falcó et al., 2024a).

Significant advantages for the development of wine tourism can certainly be found in the climate and natural conditions for viticulture, as well as in the experience and long tradition of grape and wine production in WHC. In addition to the mentioned advantages for development, enhancement, and promotion of wine tourism can also be found in technical and technological factors such as:

- Rapid development of information and communication technologies, facilitating global communication and visibility for lesser-known destinations.
- Improved transportation connectivity, such as the construction of the Dalmatina highway in Croatia.
- Technological advancements in production, storage, and quality control of wine, leading to increased production and enhanced quality.

- Ease of conversion of uncultivated areas into vineyards.
- Improved transportation logistics for wine distribution and supply chain management.

Visitors often explore other attractions and engage in non-wine-related tourist activities during their visits to wineries (Correia et al., 2004; Alebaki et al., 2015). The success of oenotourism hinges on wine producers' approach to tourism, their provision of services, and the overall visitor experience they offer (Getz, 2000; Howley & Van Westering, 2008; Del Chiappa et al., 2019). However, effective oenotourism development requires more than just the efforts of wine producers alone, as highlighted by researchers and practitioners (Brás et al., 2010).

In conducting a situational analysis of the current development of wine tourism in the WHC, the following questions have been addressed: What are the main issues in developing sustainable wine tourism? What opportunities exist for its development? And what key factors are essential for its successful development? Considering these factors, the key elements for fostering sustainable development in wine tourism within WHC are:

- Increasing interest of public policy stakeholders and investments in wine tourism development.
- Implementing comprehensive marketing strategies for the development of wine tourism and its placement in the tourist market.
- Encouraging cooperation among all stakeholders, improving communication, and fostering synergy.
- Educating winemakers on wine production and other stakeholders involved in wine tourism.
- Enhancing ecological wine production and wine quality.
- Expanding capacity and modernizing existing wineries.
- Promoting wine tourism and improving the region's image.
- Developing other specialised forms of tourism.
- Advocating for supportive public policies and removing administrative obstacles.
- Managing the sustainable development of wine tourism.

The main issues are: low interest among public policy stakeholders and insufficient investment in the development of wine tourism; lack of marketing for the development of wine tourism and its placement in the tourist market. The main opportunities are the quality of the wine and the well-developed viticulture and wine routes, which present an opportunity to popularise WHC as a wine tourism destination.

6. Contributions, research limitations, and recommendations for future research

The contribution of this work is reflected in two elements. Firstly, in the theoretical section, this paper provides the first comprehensive explanation of the development of wine tourism in the WHC. This aspect also served as a focal point for the empirical research, given the evident scarcity of scientific and professional literature on the subject of wine tourism in BH. The second contribution of this work lies in the results of the empirical research. This research not only enhances scientific theory but also holds practical implications valuable not only to winemakers and investors, but also to public policymakers, particularly in destination marketing management within WHC.

In Bosnia and Herzegovina, as in many other countries, there should be a so-called 'wine registry'. According to the Wine Law (Official Gazette of the FBH, No. 55/12) and the Regulation on the Content and Method of Maintaining the Vineyard and Wine Register (Official Gazette of the FBH, Nos. 102/13 and 102/15), registration in the Register is carried out based on information provided by competent municipal authorities in the counties. The designated register falls under the jurisdiction of the Federal

Ministry of Agriculture, Water Management, and Forestry, responsible for maintaining records of wine producers with protected geographical origin.

The first research limitation was the absence of this Registry because the competent municipal authorities of WHC never provided the necessary data. As a result, crucial details such as the exact number of hectares of vineyards, cultivated grape varieties, types of produced wine, and the specific wineries involved remain unknown in WHC. It is noteworthy that, in response to inquiries regarding data from the Register, the relevant Ministry has stated that, as of 2024, the software for managing the Register has not been implemented, despite regulatory provisions. Nevertheless, activities towards its establishment are currently in progress. The authors requested the necessary data from each municipality. Unfortunately, responses were never received. This information should be considered in future research endeavours. The second significant issue is the absence of operational tourist boards in three out of four municipalities in WHC, resulting in a lack of representation from these municipalities in the e-Delphi survey. Their participation would be important as tourist boards play a pivotal role in the planning, decision-making, and effective management of tourism development in the destination.

The third challenge arose during the empirical research because potential participants refused to participate in the survey. The relatively low response rate to the census questionnaire is another limitation of this work, despite repeated attempts to achieve a higher response rate. Certain respondents participated in the first round but opted not to engage in the second round, despite agreeing to participate in both rounds at the outset of the study. Nevertheless, ultimately, with the theoretical foundation and the conducted research, the set objective was successfully achieved, and the work stands as a relevant source for further investigations.

Future research recommendations include verifying factors listed in the study's limitations and examining the structure of wine tourism at the time, identifying weaknesses, strengths, opportunities, and threats. New empirical studies can uncover additional factors crucial for wine tourism development in the WHC and BH. Variables from tables, PEST analysis, and key determinants for sustainable wine tourism could be explored further. The development of wine tourism in this county will, over time, open up many topics for researchers, which may or may not build upon this study.

7. Conclusion

According to scientific and professional literature, numerous factors are important for the sustainable development of wine tourism. Some authors emphasize marketing activities, while others highlight the significance of collaboration among organisations and stakeholders. Additionally, institutional and political factors are regarded as pivotal by certain authors, while others underline the importance of a comprehensive destination offering as essential for sustainable wine tourism development. Perspectives on wine tourism development vary depending on the destination discussed. Challenges and opportunities differ significantly between destinations in the early stages of tourism development compared to well-established tourist destinations or those already renowned for wine tourism. Wine producers in developing regions can derive substantial benefits from wine tourism and gain valuable insights from the experiences of other wine regions worldwide.

The West Herzegovina Canton is not yet established as a tourist destination, lacking sufficient accommodation and tourist offerings. However, its accessibility, natural and cultural attractions, hospitable population, and long-standing tradition of viticulture and quality wine production present significant assets for developing a successful tourist destination. The area features wineries and cellars, some of which are renowned both locally and internationally, alongside popular wines such as Blatina and Žilavka, making it particularly appealing to wine enthusiasts.

The aim of this study was to analyse the current state of wine tourism development in WHC, identify issues and opportunities, and focus on key factors for sustainable wine tourism development. Low interest from public policymakers emerged as a major obstacle, while the enhancement of wine quality was identified as a key opportunity. Drawing on available literature, empirical research, and utilising the PEST matrix, key factors for sustainable wine tourism development in WHC were identified. These include ecological viticulture, the modernisation of wineries, improvement of wine quality, stakeholder education, holistic marketing approaches, fostering investment, influencing policy, effective development management, and enhancing communication and synergy among stakeholders.

To leverage its strengths for the future growth of wine tourism, including the favourable climate for viticulture and WHC's long-standing tradition in the sector, those responsible for tourism and economic development in WHC should prioritise implementing and advancing activities aligned with these key factors for sustainable wine tourism development. Bosnia and Herzegovina, including WHC, face numerous challenges in tourism development but have the potential to turn these challenges into opportunities. By learning from others and balancing sustainable development with the needs of the local population on the one hand, and economic benefits and carrying capacity on the other, WHC can achieve meaningful progress. Every decision regarding tourism development, as well as other forms of regional development, should align with this approach. Sustainability lies at the heart of wine tourism development, with its principles inherently aligned with those of the circular economy.

References:

- Alebaki, M., Menexes, G., Koutsouris, A. (2015) Developing a multidimensional framework for wine tourist behavior: Evidence from Greece, *Wine Economics and Policy*, 4(2), pp. 98-109.
- Alonso, A. D., Kok, S. K., O'Brien, S. (2020) Sustainable wine tourism development through the lens of dynamic capabilities and entrepreneurial action: An exploratory four-region perspective, *Tourism Recreation Research*, 45(3), pp. 1-19.
- Alonso, A. D., Bressan, A., O'Shea, M., Krajsic, V. (2015) Perceived Benefits and Challenges to Wine Tourism Involvement: An International Perspective, *International Journal of Tourism Research*, 17(1), pp. 66-81.
- Andrade-Suárez, M., Caamaño-Franco, I. (2020) The Relationship Between Industrial Heritage, Wine Tourism and Sustainability: A Case of Local Community Perspective, *Sustainability*, 12(18), Article 7453, pp. 1-21.
- Bellia, C., Scavone, V., Ingrassia, M. (2021) Food and Religion in Sicily—A New Green Tourist Destination by an Ancient Route from the Past, *Sustainability*, 13(12), Article 6686, pp. 1-22.
- Brás, J. M., Costa, C., Buhalis, D. (2010) Network analysis and wine routes: the case of the Bairrada Wine Route, *The Service Industries Journal*, 30(10), pp. 1621-1641.
- Correia, L., Passos Ascensão, M. J., Charters, S. M. W. (2004) Wine routes in Portugal: A case study of the Bairrada Wine Route, *Journal of Wine Research*, 15(1), pp. 15-25.

- Del Chiappa, G., Alebaki, M., Menexes, G. (2019) Winery operators' perceptions of factors affecting wine tourism development, Kozak, M. & Kozak, N. eds., *Tourist destinations Management. Tourism, Hospitality & Event Management* (pp. 177-191). Springer.
- Fernandez, M. J. (2023) Wine tourism in México and the New Architecture of Wineries, *Tourisma & Heritage Journal*, 5, pp. 16-36.
- Flores, S. S. (2018) What is sustainability in the wine world? A cross-country analysis of wine sustainability frameworks, *Journal of Cleaner Production*, 172, pp. 2301–2312.
- Fountain, J., Charters, S., Cogan-Marie, L. (2021) The real Burgundy: negotiating wine tourism, relational place and the global countryside, *Tourism Geographies*, 23(5/6), pp. 1116-1136.
- Fuentes-Fernández, R., Martínez-Falcó, J., Sánchez-García, E., Marco-Lajara, B. (2022) Does Ecological Agriculture Moderate the Relationship between Wine Tourism and Economic Performance? A Structural Equation Analysis Applied to the Ribera del Duero Wine Context, *Agriculture*, 12(12), Article 2143, pp. 1-17.
- Future Market Insights, *Market Research Reports* <https://www.futuremarketinsights.com/reports>
- Garcia Revilla, M. R., Martinez Moure, O. (2021) Wine as a Tourist Resource: New Manifestations and Consequences of a Quality Product from the Perspective of Sustainability. Case Analysis of the Province of Málaga, *Sustainability*, 13(23), Article 13003, pp. 1-13.
- Getz, D. (2000) *Explore Wine Tourism: Management, Development, Destinations*, Cognizant Communication Corporation.
- Getz, D., Brown, G. (2006) Benchmarking wine tourism development: The case of the Okanagan Valley, British Columbia, Canada, *International Journal of Wine Marketing*, 18(2), pp. 78-97.
- Gómez, M., Pratt, M., Collado, A. M. (2019) Wine tourism research: a systematic review of 20 vintages from 1995 to 2014, *Current Issues in Tourism*, 22(18), pp. 2211-2249.
- Gómez-Carmona, D., Paramio, A., Cruces-Montes, S., Duenas, P. P. M., Montero, A. A., Romero-Moreno, A. (2023) The effect of the wine tourism experience, *Journal of Destination Marketing & Management*, 29(2), 100793, pp. 1-10.
- Hall, C. (1996) Wine tourism in New Zealand, Kearsley, G. ed., *Tourism Down Under*, Tourism Research Conference (pp. 109-119). Otago: Universidad de Otago.
- HERAG, Razvojna agencija Zapadnohercegovačkog kantona (2018) *Investicijska brošura* (Investment brochure) http://herag.ba/images/brosure/pdf/zupanijska_HRV.pdf
- Hojman, D. E., Hunter-Jones, P. (2012) Wine tourism: Chilean wine regions and routes, *Journal of Business Research*, 65(1), pp. 13-21.

Howley, M., Van Westering, J. (2008) Developing wine tourism: A case study of the attitude of English wine producers to wine tourism, *Journal of Vacation Marketing*, 14(1), pp. 87-95.

Ingrassia, M., Altamore, L., Bellia, C., Lo Grasso, G., Silva, P., Bacarella, S., Columba, P., Chironi, S. (2022) Visitor's Motivational Framework and Wine Routes' Contribution to Sustainable Agriculture and Tourism, *Sustainability*, 14(19), Article 12082, pp. 1-38.

Jahić, H. (2016) *Vinski turizam i vinske ceste u Hercegovačko-neretvanskom kantonu – stanje i perspektive* (Wine tourism and wine roads in Herzegovina-Neretva Canton: situation and prospects). Sarajevo: Univerzitet u Sarajevu.

Karamehmedović, D. (2017) Uloga europske inicijative Interreg III. u valorizaciji kulturne baštine u Republici Hrvatskoj (The role of the European initiative Interreg III in the valorisation of the cultural heritage in the Republic of Croatia), *Putokazi*, 5(1), pp. 125-142.

Kourkouridis, D. (2020) Possibilities and Opportunities of Wine tourism development in the Cross-Border region of Greece-Bulgaria Through the Protection of Traditional Vine Varieties, *Journal of Tourism and Hospitality Management*, 8(4), pp. 140-149.

Kubát, P., Králiková, A., Ryglová, K. (2023) Shifting the Focus from Mere Wine (and) Tourism to the Wine Destination and Winescape Concept, *DETUROPE – The Central European Journal of Regional Development and Tourism*, 15(3), pp 78-92.

László, D. (2023) Sustainable wine tourism in a non-sustainable world. *Ecocycles*, 9(2), pp. 78-87.

Liu, L. (2021) Research and Development of Cultural Sharing Space in Economically Underdeveloped Areas, *Advances in Social Science, Education and Humanities Research*, 615, pp. 918-922.

Lubawa, G. G., Osabuohien, E. S. (2024) Developing Sustainable Tourism in Tanzania: Perspective from Wine Stakeholders, Martinez-Falcó, J., Marco-Lajara, B., Sánchez-Garcia, E. & Millán-Tudela, L. A. eds., *Wine Tourism and Sustainability*, (pp. 49-71). Springer.

Malfeito-Ferreira, M. (2023) Fine wine recognition and appreciation: It is time to change the paradigm of wine tasting, *Food Research International*, 174(2), Article 113668.

Martínez-Falcó, J., Marco-Lajara, B., Zaragoza-Sáez, P., Sánchez-García, E. (2024a) Wine tourism in Spain: The economic impact derived from visits to wineries and museums on wine routes, *Revista Investigaciones Turísticas*, 25, pp. 168-195.

Martínez-Falcó, J., Marco-Lajara, B., Sánchez-García, E., Millán-Tudela, L.A. (2024b). Spain's Wine Tourism: Evaluating the Economic Contributions of Wineries and Museums, Martinez-Falcó, J., Marco-Lajara, B., Sánchez-Garcia, E. & Millán-Tudela, L. A. eds., *Wine Tourism and Sustainability* (pp. 73-92). Springer.

Meler, M., Horvat, Đ. (2018) *Marketing vina u teoriji i primjeni* (Wine marketing in theory and practice), Zagreb: Edukator d.o.o.

- Nave, A., Finisterra do Paço, A. M. (2021) Sustainability in the wine-tourism sector – an analysis of perceived understanding and practices implemented by firms, *Journal of Wine Research*, 32(1), pp. 1-14.
- Nepal, R., Al Irsyad, M. I., Nepal, S. K. (2019) Tourist arrivals, energy consumption and pollutant emissions in a developing economy–implications for sustainable tourism, *Tourism Management*, 72, pp. 145-154.
- Nickova, M. (2021) Viticultural regions in function of the development of wine tourism, *UTMS Journal of Economics*, 12(2), pp. 204-210.
- Okoli, C., Pawlowski, S. D. (2004) The Delphi method as a research tool: An example, design considerations and applications, *Information & Management*, 42(1), pp. 15-29.
- Pearson, R. E., Bardsley, D. K., Pütz, M. (2024) Regenerative tourism in Australian wine regions, *Tourism Geographies*, pp. 1-23.
- Petelca, O., Pătrăuceanu, C. C., Besliu, J., Garbuz, V. (2022) Influence of the wine on tourism development, *Annals of the University of Oradea Economic Sciences*, 31(1), pp. 89-98.
- Pop, C., Coros, M. M. (2023) Rural areas and wine tourism: The case of Romania, *Journal Studia UBB Negotia*, 68(1), pp. 5-29.
- Robinson, R., McGregor, A. (2019) Wine Industry and Wine Tourism Industry Collaboration: A Typology and Analysis, Sigala, M., & Robinson, R. N. S. eds., *Wine Tourism Destination Management and Marketing: Theory and Cases* (pp. 381-397). Palgrave Macmillan.
- Rotim, N., Crnjac, K. (2023) Žilavka – autohtoni vinski kultivar Hercegovine (Žilavka-autochthonous wine cultivar of Herzegovina), *Glasnik zaštite bilja*, 6, pp. 86-94.
- Rotim, N., Gašpar, M., Perić, I. (2017) Vinski kultivari vinove loze u Hercegovini (Wine cultivars of grape vine in Herzegovina). *Glasnik zaštite bilja*, 5, pp. 78-85.
- Sekhniashvili, G., Bujdosó, Z. (2023) Developing a Wine Tourism Destination Image Measurement Scale, *Sustainability*, 15, Article 8549, pp. 1-13.
- Sempere, A. M. (2018) Cultural cooperation, *Periferica*, pp. 167-177.
- Sivrić, M. (2009) *Povijest i razvoj vinogradarstva i vinarstva u Bosni i Hercegovini* (History and development of viticulture and winemaking in Bosnia and Herzegovina). <https://narodni.net/povijest-razvoj-vinogradarstva-vinarstva-bosni-hercegovini/>
- Szolnoki, G., Ridoff, N. (2021) *Sustainable wine tourism. A global survey*, https://www.wineturism.com/files/2022/01/Sustainable_wine_tourism_Report_GeisenheimUni_WineTourismcom.pdf

Terziyska, I. (2018) Wine tour design – global trends and local expressions, *Tourism and Hospitality Management*, 24(2), pp. 387-400.

The Federal Institute of Statistics, Bosnia and Herzegovina, (2023) *Bulletin No. 4.13*. <http://fzs.ba/index.php/publikacije/saopcenjapriopcenja/turizam/>

The Federation of Bosnia and Herzegovina. *Regulation on the Content and Method of Maintaining the Vineyard and Wine Register*, Official Gazette of the FBH, No. 102/13 & No.102/15.

The Federation of Bosnia and Herzegovina. *The Law on the Organisation of the Wine Market*, Official Gazette of BH, No. 63/23.

The Federation of Bosnia and Herzegovina. *Wine Law*, Official Gazette of the FBH, No. 55/12.

The Government of the West Herzegovina Canton for European Integration (2019a). *Strategy for Rural Development of the West Herzegovina Canton for the Period 2020-2030*.

The Government of the West Herzegovina Canton for European Integration (2019b). *The Tourism Development Strategy of the West Herzegovina Canton for the period 2020-2027*.

Tomljenović, R., Getz, D. (2009) Life-cycle stages in wine tourism development: A comparison of wine regions in Croatia and Canada, *Tourism review international*, 13(1), pp. 31-49.

Trigo, A., Silva, P. (2022) Sustainable Development Directions for Wine Tourism in Douro Wine Region, Portugal, *Sustainability*, 14, Article 3949, pp. 1-24.

United Nations World Tourism Organization. (2022) *What's next? Wine tourism pairs with Innovation, Sustainability and Creativity*, UNWTO 6-th Global Conference on Wine Tourism, 19-21 September 2022, Alba – Italy. <https://www.unwto.org/6-UNWTO-Global-Conference-Wine-Tourism>

United Nations World Tourism Organization, (2023) *Gastronomy and Wine Tourism*. <https://www.unwto.org/gastronomy-wine-tourism>

Visković, I. (2016) Mogućnosti primjene Delfi metode u pedagozijskim istraživanjima (The possibilities of application of Delphi Method in pedagogical researches), *Napredak*, 157(1-2), pp. 187-204.

Vrontis, D., Thrassou, A., Contò, F., Fione, M. (2014) Strengthening regional identities and culture through wine industry cross border collaboration, *British Food Journal*, 116(11), pp. 1788-1807.

Woldarsky, V., Geny-Denis, L. (2019) Development of a best practice in wine tourism in Portugal, *BIO Web of Conferences*, 12, Article 03001, pp. 1-8.

Zurita, P. L. (2023) Wine Tourism Development in Spain and its Influence on LSP Teaching, *Revista Nebrija de Lingüística Aplicada a la Enseñanza de Lenguas*, 17(35), pp. 197-218.

Ključni faktori za razvoj održivog vinskog turizma u Zapadnohercegovačkom kantonu

DEŠA KARAMEHMEDOVIĆ

Sveučilište Hercegovina, Fakultet društvenih znanosti Dr Milenka Brkića

Odsjek za turizam, ekologiju i održavanje okoliša

K. M. Viševića Humskog bb, Mostar 88000, Bosnia and Herzegovina

desa@hercegovina.edu.ba

ORCID iD: <https://orcid.org/0000-0001-8140-9067>

ANTE RASPUDIĆ

Grafotisak d.o.o.

Blage Zadre 26, 88340 Grude, Bosnia and Herzegovina

raspudicgr66@gmail.com

Sažetak: Istraživanje ima za cilj pružiti situacijsku analizu trenutnog razvoja vinskog turizma u Zapadnohercegovačkom kantonu, posebno ističući ključne faktore za razvoj održivog vinskog turizma prema mišljenju vlasnika i/ili menadžera vinara. Za istraživanje teme korišteni su znanstveni i stručni članci, online izvori te empirijsko istraživanje primjenom e-Delphi tehnike. Osim kvantitativne analize podataka, rezultati su analizirani i objašnjeni pomoću PEST matrice. Nizak interes dionika javnih politika za razvoj vinskog turizma prepoznat je kao najproblematičnije pitanje, dok je kvaliteta vina prepoznata kao najvažnija prilika. Uzimajući u obzir sva pitanja i prilike, te s obzirom na širi kontekst razvoja Zapadnohercegovačkog kantona, ključni faktori za razvoj održivog vinskog turizma uključuju: povećanje interesa dionika javnih politika i ulaganja u razvoj vinskog turizma, implementaciju sveobuhvatnih marketinških strategija za promociju vinskog turizma i njegov plasman na turističko tržište, poticanje suradnje među svim dionicima, poboljšanje komunikacije i stvaranje sinergije, obrazovanje vinara i drugih dionika koji su izravno uključeni u vinski turizam, poboljšanje ekološke proizvodnje vina i kvalitete vina, proširenje kapaciteta i modernizacija postojećih vinarija, promocija vinskog turizma i poboljšanje imidža regije, razvoj drugih specijaliziranih oblika turizma, zalaganje za potporne javne politike i uklanjanje administrativnih prepreka, te upravljanje održivim razvojem vinskog turizma. Ograničenja istraživanja uključivala su nepostojanje registra vinograda i vina, nedostatak operativnih turističkih zajednica u tri od četiri općine u Zapadnohercegovačkom kantonu te problemi s angažmanom sudionika tijekom empirijskog istraživanja. Preporuke za buduća istraživanja uključuju provjeru faktora navedenih u ograničenjima studije i ispitivanje strukture vinskog turizma u to vrijeme, identificiranje slabosti, snaga, prilika i prijetnji. Nova empirijska istraživanja mogla bi otkriti dodatne faktore ključne za razvoj vinskog turizma u Zapadnohercegovačkom kantonu i Bosni i Hercegovini.

Ključne riječi: razvoj vinskog turizma, održivi razvoj, Zapadnohercegovački kanton

JEL klasifikacija: Z32

**Green Organization - Arrived in companies or still a vision?
An exploratory study based on an expert survey
on the significance of sustainability and
the implementation of sustainability management in companies**

DANIELA LUDIN

Faculty of Economics, Heilbronn University
Max-Planck-Str. 39, 74081 Heilbronn
Germany

daniela.ludin@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-3854-5060>

CHRISTINA ARNGOLD

Faculty of Management and Sales, Heilbronn University
Max-Planck-Str. 39, 74081 Heilbronn
Germany
c.arngold@googlemail.com

MELTEM BALLI

Faculty of Management and Sales, Heilbronn University
Max-Planck-Str. 39, 74081 Heilbronn
Germany
bameltem@gmail.com

ERIKA MUELLER

Sustainability Department, Heilbronn University
Max-Planck-Str. 39, 74081 Heilbronn
Germany

erika.mueller@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-6485-7754>

WANJA WELLBROCK

Faculty of Economics, Heilbronn University
Max-Planck-Str. 39, 74081 Heilbronn
Germany

wanja.wellbrock@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-4882-029X>

Prethodno priopćenje / *Preliminary communication*

UDK: 330.34:504=111

Primljeno / Received: 28. studeni 2024. / November 28th, 2024.

Prihvaćeno za objavu / Accepted for publishing: 10. prosinca 2024. / December 10th, 2024.

DOI: 10.15291/oec.4605

Abstract: Scientists and activists have been taking part in the sustainability debate for decades and calling for a rethink in politics and society. A change is becoming noticeable that is also having an impact on companies. They cannot avoid dealing with the issue of sustainability, as internal and external

stakeholders exert pressure on them due to their interests. Based on an online survey, this explorative empirical study identifies and analyses what companies understand by the term "sustainability" and what importance is currently attached to sustainability management in companies. In addition, the main advantages of sustainable management for companies and obstacles to the implementation of sustainability in companies are also identified. The results of the study show that sustainability is of great importance to the companies surveyed. For the most part, companies have an understanding of sustainability. Reasons for "sustainable entrepreneurship" are based in particular on economic and "green" motives; the main reason is therefore to improve the image of the companies. The main obstacles to implementing "sustainable entrepreneurship" are the time required, the high costs and uncertainty about the economic benefits. The sustainability requirements are hardly or only partially perceived as a burden. Corporate goals and guidelines together form an important factor in establishing sustainability in the organizational culture. Companies voluntarily align themselves partially or completely with standardized environmental management norms.

Keywords: green organization, sustainability, sustainability management

JEL Classification: M14, Q56

1. Introduction

For decades, scientists and activists have been engaged in the sustainability debate, calling for a shift in politics and society. A noticeable change is taking place, which is also impacting companies. They can no longer avoid addressing the issue of sustainability, as internal and external stakeholders are exerting pressure based on their interests. Using an online survey, this exploratory empirical study aims to identify and analyze what companies understand by the term "sustainability" and the current significance of sustainability management within companies. Additionally, it seeks to highlight the key benefits of sustainable business practices for companies, as well as the obstacles to implementing sustainability in businesses.

2. Literature Review

2.1. Focus and Method of the Literature Review

A literature analysis is conducted on sustainability management. This allows the positioning of the current study within the existing state of research (Schnell, Hill, Esser 2023; Atteslander, Ulrich, Hadjar 2023). The literature review examines the current role and importance of sustainability management in businesses. It includes the identification and preparation of the findings documented in the literature on the field of science. The focus is on the development of explanatory approaches, on the operationalization of relevant variables for the empirical investigation and on the identification of unanswered questions (Snyder 2019). The literature review primarily examined publications from the past last ten years (2014-2023) that contain the key words "understanding of sustainability" and "sustainability management" (Eco 2015). In addition to relevance, the citability of the sources is considered. Therefore, only publications from journals using a double-blind review process were included.

2.2. Sustainability

The state of the environment concerns politicians, economists, and consumers today more than ever (Blumberg, Lin-Hi 2015, Herbrink, Kanter 2019; Kurz, Wild 2015). Since the mid-1980s, consumers and companies have been defined as socially responsible market participants. Environmental issues have gained greater significance, giving sustainability a high priority in consumer policy. Consumers' ecological and social awareness has been steadily increasing, along with their expectations of companies (Stumpf 2016). In recent years, international political bodies have globally engaged in the sustainability discussion, as reflected in the Brundtland Report 1987, the Rio Conference 1992, the National Sustainability Strategy 2002, and the Consumer Protection Action Plan 2003 (Nessel 2017; Feiel, Moser, Tost & Meyer 2019; Blühdorn 2018). Based on this, the Triple-Bottom-Line approach was also developed, which divides sustainability into the three pillars of economy, ecology, and social responsibility (Kruppe, Kühl 2020).

A reorientation regarding ecological and social values is also taking place in the public sphere (Stumpf 2016). The goal of sustainability is to secure the livelihoods of present and future generations in the long term, taking into account social, economic, and ecological dimensions (Schreiber 2013; Stadler 2017; Herbrink, Kanter 2019). Together, they form the sustainability triangle. From an ecological perspective, the primary focus is on maintaining resources. Additionally, no goods should be produced that cannot be recycled. Economically, the current generation should consider future generations and act in a way that allows for sustainable economic activity. Social sustainability, in relation to companies, involves responsible actions toward employees, customers, suppliers, and the social environment. A company is only considered sustainable when all three dimensions are equally considered in corporate decisions (Wiedenhöft 2010). Another goal is to reduce the ecological footprint, minimize long-term risks, and drive societal change toward a sustainable lifestyle. A company's sustainability performance has far-reaching effects, not only on the company itself but also on nature and society. It leads to increased energy efficiency and long-term competitiveness. Economic factors are significant, as disproportionate demand can negatively affect sustainability efforts (Baumgartner, Rauter 2017; Baumgartner 2013; Küberling 2015).

However, many companies long underestimated the importance of this issue and focused solely on maximizing profits. Sustainable business practices are still not seen as a challenge by numerous companies. Instead, society is encouraged to consume more, giving little attention to a sustainable lifestyle. The pursuit of growth leads companies to avoid sustainable production at the expense of human rights and the exploitation of scarce natural resources. Due to the risk of reduced short-term profits, sustainable business strategies may struggle to gain traction in profit-driven companies (Kurz, Wild 2015). Nevertheless, it should be noted that there are companies and consumers who are environmentally conscious and act sustainably out of moral conviction. Influencing factors include, for example, education, social environment, and scientific findings.

2.3. Sustainability Management

Sustainable business management analyzes how companies can integrate sustainability into their corporate governance. Consumer policy actors strive to motivate consumers and companies to act responsibly and sustainably through public relations, product evaluations, and cultural and institutional frameworks (Nessel 2017). The focus is shifting from purely economic growth to ecological and social obligations (Blühdorn 2018; Mengen, Mertes 2020). To bring about and implement a shift towards sustainability, communication between companies and stakeholders (customers, suppliers, employees, investors, authorities, shareholders, etc.) is of great importance (Wiedenhöft 2010). Studies also show

that the convictions, values, and norms of managers play a significant role in decision-making regarding corporate responsibility and sustainability (Michaels, Grüning 2016).

Political and societal debates on sustainability require acceptance from both consumers and companies (Radtke 2020). Legal regulations and changing consumer behavior are leading to a growing emphasis on ecological products and sustainable production processes (Maisch 2014; Statista 2023). As a result of this wave of sustainability, the importance of a sustainability management system in companies has significantly increased, becoming a crucial element in investment decisions. Management systems generally employ elements of planning, execution, control, and improvement with the aim of systematically optimizing processes. These systems can deal with disciplines such as quality, energy, occupational health, risk, safety, or the environment (Hoppe, Krause 2017; Mengen, Mertes 2020). Environmental management systems (EMS) capture and manage environmental tasks within companies (Knoche 2014; Schwager 2015). The EMS was recognized as an independent research field and has significantly developed into sustainability management, focusing on the ecological, economic, and social impacts of corporate activities, the development of sustainable business strategies, and the relationship between organizational cultures and sustainability strategies (Baumgartner, Rauter 2017; Baumgartner 2013).

The core task of sustainability management is to reduce environmental damage caused by business activities or to minimize the negative impacts on both the environment and people (Juretzek 2016; Hoppe, Krause 2017). The establishment of an environmental management system depends on the efforts made within a company regarding its design and application (Knoche 2014). Furthermore, the structural limits of sustainability management must be considered, as not all global environmental problems can be translated into clear goals at the corporate level (Ekardt 2017). In summary, the strategic and long-term task of integrating economic, ecological, and social goals into corporate value creation can be understood under the term Corporate Sustainability (CR) (Juretzek 2016). Corporate Social Responsibility (CSR) includes the voluntary commitment of companies to social, ecological, and institutional concerns that go beyond the core business of the company (Homann, Lütge, Pies, Kummert 2018; Kummert 2018; Loew 2016). This involves global responsibility towards the public, such as the sustainable global preservation of non-renewable resources, ensuring humane and safe working conditions, or protecting human rights at locations in developing countries (Wagner 2019).

In addition, the so-called environmental management standard plays a central role in sustainability management. International non-governmental organizations (NGOs), such as the International Organization for Standardization (ISO), design environmental management standards and develop international product and process standards that can be voluntarily and independently used by companies, regardless of their size (Knoche 2014, p. 29; Schwager 2015). NGOs, representing civil society, now also play an important role in corporate sustainability management (Heger, Bürgel 2013). Today, there are numerous environmental and social standards that have become prominent in sustainability management and are listed in many environmental, CSR, and sustainability reports (Mengen, Mertes 2020), as the application of such standards offers a significant advantage in terms of legitimacy towards stakeholders (Knoche 2014; Müller, Gomes Dos Santos 2014).

At present, a large number of legal regulations concerning sustainability already exist. These include both ecological and social dimensions, such as emission regulations for machinery or working hours legislation in labor law (Hoppe, Krause 2017). The development of a sustainability strategy, along with the establishment of necessary organizational structures and decision-making processes, is crucial for managing a sustainability management system. Additionally, organizational culture shapes sustainable entrepreneurship in terms of its development and approach. The resulting corporate character reveals how problems are addressed and reflects behavior patterns. Significant influences on organizational culture come from leadership, workgroups, information and communication systems, guidelines,

structures, budgets, and processes, as well as training, orientation, control systems, and results orientation. In summary, organizational culture is one of the key prerequisites for sustainable business practices (Knoche 2014).

Corporate communication plays a crucial role, with CSR communications being among the most important in the company. Reporting can also be understood as a communication tool (Hetze, Bögel, Glock, Bekmeier-Feuerhahn 2016; Neßler, Lis 2015). Various stakeholders increasingly demand transparent information on environmentally and socially conscious corporate activities. To meet this demand, companies publish a voluntary, separate CSR report in addition to their financial reports (Axjonow, Ernstberger, Pott 2016; Kruppe, Kühl 2020), and since 2017, large publicly traded companies in Germany have been legally required to engage in CSR reporting.

The purpose of this legal requirement is to raise awareness of economic sustainability, aiming to increase transparency regarding ecological and social activities within companies (Endrikat, Graßmann, Eschke 2019). However, there are no legal requirements concerning the disclosure of specific information, resulting in variations in the structure of CSR reports from company to company. Companies may also follow generally recognized standards, such as the guidelines of the Global Reporting Initiative (GRI), the German Sustainability Code, or the UN Global Compact, which are among the best-known in CSR reporting. These guidelines are developed and continuously improved by external institutions (Brall, Fettig 2015; Botta 2014). Additionally, frameworks such as ISO26000 or EMAS, which focus on sustainability management, can be utilized. However, it is important to recognize that a one-size-fits-all report may not resonate with all stakeholders if the goal is persuasion (Mengen, Mertes 2020).

Empirical studies also confirm a positive correlation between sustainability performance and company success (Hoppe, Krause 2017, p. 130). From an investment perspective, there are three categories of investment measures. The first category includes short- and medium-term profitability, such as energy savings.

The second category encompasses investments with long-term profitability, such as investments in employee health, reducing transport volumes, or conserving raw materials. The last category includes all investments that do not promise an immediate return, such as climate neutrality, fair trade, or equal opportunities. The latter is often excluded from sustainability management in companies, as the investments do not pay off in the short term (Mengens, Mertens 2020).

There is also consensus that CSR engagement has a positive impact on image and reputation (Michaels, Grüning 2016; Mengen, Mertes 2020). Thus, the refinancing of a sustainability management system is a key motivation for companies (Hoppe, Krause 2017). However, it is essential to note that the inconsistency between CSR reporting and reality can lead to a loss of credibility among stakeholders. The false portrayal of CSR orientation and promotional communication can have negative effects on reputation, especially when issues of morality and ethics are at play. An example of this is the Volkswagen emissions scandal, where software manipulated emissions data (Lies 2015; Michaels, Grüning 2016).

Given the reputational risk, CSR's perception among business partners and the public has become a strategic and economically relevant indicator (Neßler, Lis 2015; Wagner 2019). Moreover, CSR takes many forms, one of which is known as cause-related marketing (CrM). CrM refers to the cooperation between a company and a nonprofit organization and is regarded by American experts as a routine strategy. CrM involves the analysis, planning, and implementation of a project resulting from collaboration with a nonprofit organization, with the goal of achieving mutual benefit (Stumpf 2016).

2.4. Research Gap and Research Questions

Based on the literature review and its result that there is little research on companies' understanding of "sustainability", the following three research questions (RQ1, RQ2, and RQ3) were derived to identify the existing research gap:

RQ1: How developed is the understanding of sustainability within companies?

RQ2: What significance does sustainability has for a company?

RQ3: What advantages and obstacles do companies encounter when practicing sustainable business?

3. Methods

The literature review helps on the operationalization of relevant variables for the empirical investigation as well as on the development of explanatory approaches. To answer the three research questions (RQ1, RQ2 and RQ3) an explorative online survey of German customers was conducted in 2023 (Wagner-Schelewski and Hering 2019). Through the exploratory collection (Mayring 2007) of empirical data, new practical and theoretical insights can be derived. A total of 50 companies from various industries and of different sizes in the Schwäbisch Hall region were contacted. Out of the 50 companies contacted, 22 responded, resulting in a response rate of approximately 44%. The companies were contacted by email, requesting participation in the study via an online link. This link was created using the online tool *survio.de*. The online questionnaire was sent out at the end of May 2020, with a response deadline at the beginning of June 2020. The online survey method was advantageous here because it allowed for many respondents to be surveyed simultaneously (Döring 2023; Atteslander, Ulrich, Hadjar 2023; Balzert, Schröder, Schäfer 2022). In addition, respondents could provide more open and anonymous responses to sensitive topics (Döring 2023; Reinecke 2019). Throughout the entire survey process, the anonymity of the participating companies was ensured, making it impossible to trace or identify the companies that participated. Specific details such as industry, number of employees, revenue, etc., were not requested. Overall, the semi-standardized questionnaire included eight key questions. The predominantly closed-ended questions offered respondents various predefined answer options, allowing the data collected to be well-suited for statistical-descriptive analysis and comparison. To complement the quantitative results with qualitative insights, two open-ended questions were also included. Descriptive statistical methods are employed for data analysis and interpretation.

4. Results

4.1. Companies' Understanding of Sustainability

The online survey began with the question of which aspects the term "sustainability" encompasses for the company. The answer options included "Ecological Aspects," "Economic Aspects," "Social Aspects," as well as "None of the Options." From the state of research, it is known that all three factors hold significant importance for the concept of sustainability. The evaluation showed that 21 out of 22 companies associate the term sustainability with the three dimensions. The results are shown in figure 1.

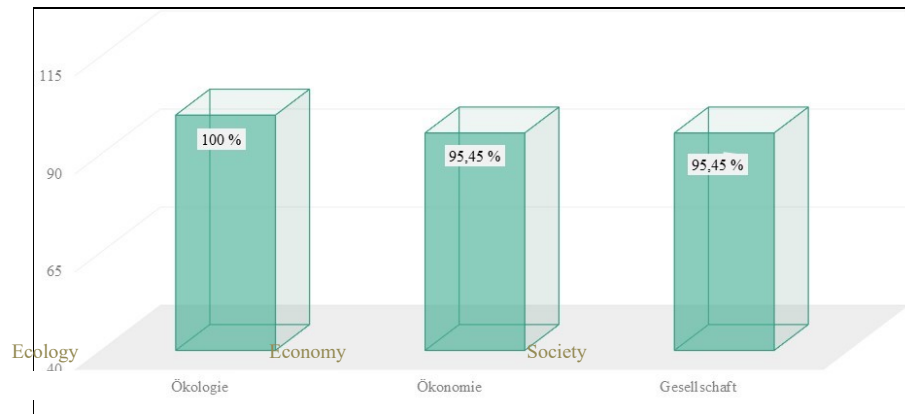


Figure 1. Understanding of Sustainability
Own source (2024)

According to the literature review conducted in advance, these are to be regarded as equal parts of a whole. From this, it can be concluded that nearly the absolute majority—95.45% of the surveyed companies—possess a comprehensive basic understanding and sense of responsibility for sustainability. One company selected only the ecological aspects, leaving out the economic and social aspects. None of the companies selected "None of the Options."

4.2. Reasons for the Importance of Sustainability in Companies

The online survey continued with the question of why companies act sustainably. Multiple predefined answers could be selected. "Own Values" (with 100%) is regarded as the most important reason for considering sustainability in companies. Additionally, the surveyed companies rated the "Company's Image" (with 100%) as equally important as their own values. In contrast, companies identified "Environmental Protection" (with around 80%), followed by "Cost-saving Potential" (with around 73%), and "Legal Requirements" (with around 73%) as the third most important reason. Less importance was attributed to "Competitive Pressure" (with about 23%), "Initiative by Own Employees" (with about 18%), and "Revenue Increase" (with about 14%). Results are shown in figure 2.

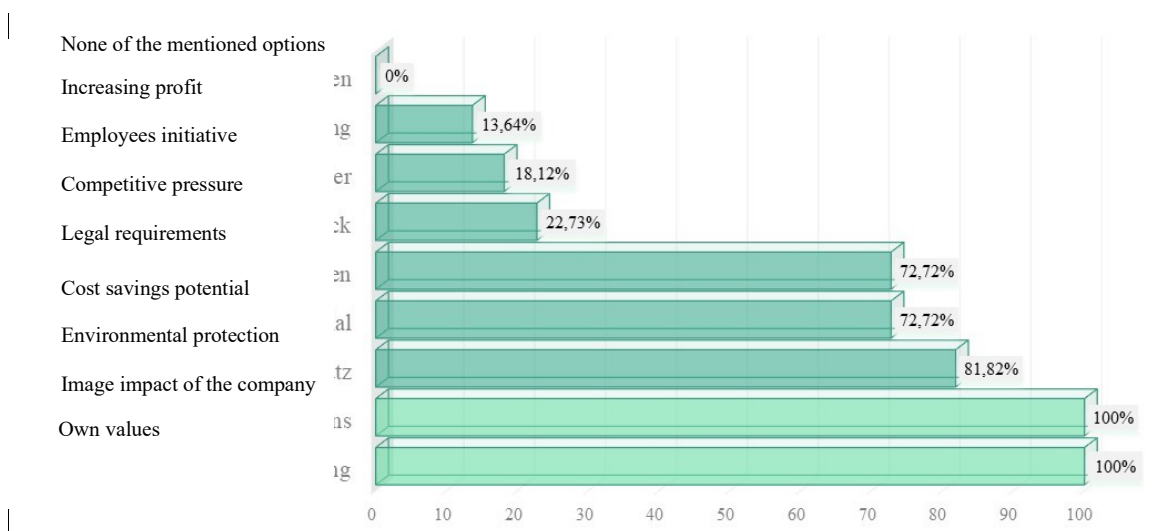


Figure 2. Reasons for the Importance of Sustainability
Own source (2024)

Regarding the significance of the initiative by employees, it is worth noting that employee satisfaction can be significantly improved by a sustainable strategic alignment of the company. In summary, a trend among companies is apparent, indicating that the consideration of sustainability is primarily based on the benefits for the company's external image and on their own values, while economic advantages such as cost-saving potential or competitive pressure are ranked as less important.

4.3. Companies' Perception of Sustainability as a Burden

The companies were further asked to indicate on a scale of 1 to 5 to what extent they perceive sustainability requirements as a burden.

The number "1" indicates that sustainability requirements are seen as a burden, while the number "5" corresponds to the opposite. None of the respondents selected the numbers "1," "2," or "5." Just over half of the surveyed companies (54.50%) chose the number "4," indicating that they do not consider sustainability requirements to be much of a burden for their company. The remaining 45.50% chose the number "3," positioning their opinion in the middle, stating that they partially perceive sustainability requirements as a burden. The results are presented in figure 3.

In conclusion, the results of the online survey show that almost half of the surveyed companies partially view sustainability requirements as a burden, while the rest do not agree and rather do not see them as a burden.

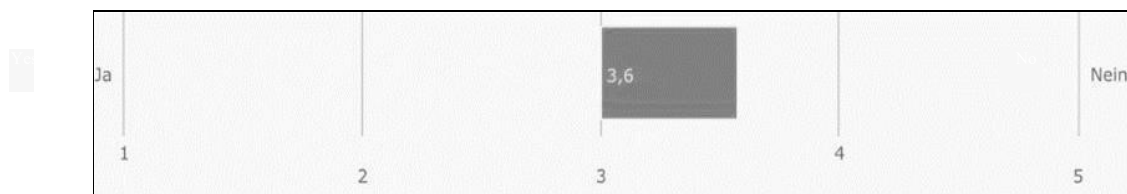


Figure 3. Burden Assessment of Sustainability
Own source (2024)

4.4. Benefits of Sustainable Business Practices for Companies

In the online survey, companies were also asked to provide open-ended responses to the question of what advantages they see in sustainable business practices. One-third of the companies indicated that "competitive advantages in tenders" are among the key benefits. This reflects an increasing number of sustainability-conscious consumers. Other frequently mentioned advantages include "attractiveness to applicants," "higher rankings," and "external attention."

The surveyed companies also addressed operational benefits, such as "cost savings," which can be achieved through efficient processes and allow for greater "transparency about their own processes," as aspects of sustainable procurement are deepened.

Additionally, points like "clear conscience" and "better team spirit" were mentioned, further emphasizing that personal values also motivate sustainable business practices. Significant advantages also include "innovation capacity" and "future security." Moreover, companies state that timely rethinking is necessary to achieve and secure long-term benefits, as this positively impacts implementation for both their employees and customers.

4.5. Barriers to Implementing Sustainable Business Practices

Furthermore, the survey examined the obstacles that companies face in implementing sustainability. The participating companies could select one or more response options. In particular, "high time commitment" and "high costs," each cited by 16 out of 22 respondents (approximately 73%), are seen as particularly critical challenges regarding sustainability engagement. "Uncertainty about economic benefits," mentioned by 9 respondents (about 41%), is regarded as a significant obstacle to sustainable entrepreneurship.

In contrast, the generally "low interest in sustainability" (around 32%) and "insufficient knowledge" (approximately 14%) are not classified as major obstacles. The response option "none of the above" was selected by 1 out of 22 companies.

The results are presented in figure 4.

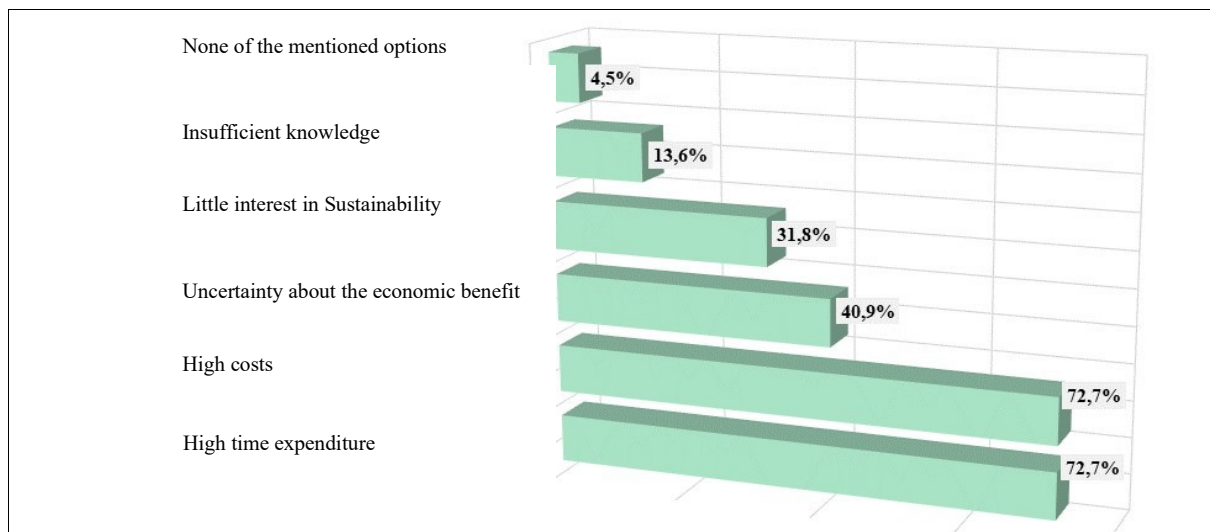


Figure 4. Barriers
Own source (2024)

4.6. Influence on Organizational Culture Regarding Sustainability

In the field of sustainability management, the primary focus was on the factors that have a significant impact on the organizational culture concerning sustainability. The participating companies could select one or more response options. As shown in figure 5., it is noteworthy that "corporate goals" were identified by 22 out of 22 respondents (100%), followed by "communication," which was chosen by 19 out of 22 respondents (approximately 87%), as the most important factors for integrating sustainability into the organizational culture.

Furthermore, the factor "guidelines" was ranked as the third most important point, with 16 out of 22 respondents (about 73%) acknowledging its significance. In contrast, the factor "environmental standards" was regarded as the least significant among these response options, with 12 out of 22 respondents (approximately 55%). The option "none of the above" was not selected by any of the participating companies (0%).

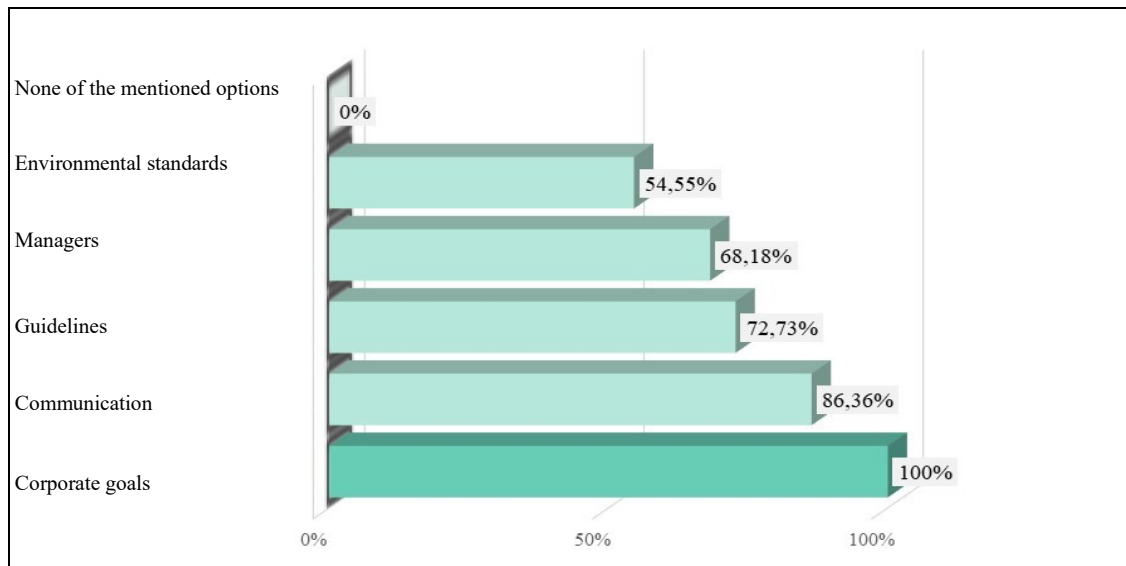


Figure 5. Organizational Culture
Own source (2024)

4.7. Alignment of Companies with Environmental Management Standards

Ultimately, the alignment of companies with standardized environmental management standards was examined. The companies could choose from the responses "Yes," "No," "Partially," or "None of the above." As shown in figure 6., approximately 86% (19 out of 22 respondents) of the surveyed companies answered "Yes" to the question of whether they align with standardized environmental management standards, while about 14% (3 out of 22 respondents) answered "Partially." Companies view the establishment of standardized environmental management standards as an appropriate guideline. Responses such as "No" and "None of the above" were not selected by any of the participating companies. In summary, the alignment of companies in the Schwäbisch Hall area with standardized environmental management standards is nearly widespread and serves as a suitable guideline for sustainable entrepreneurship.

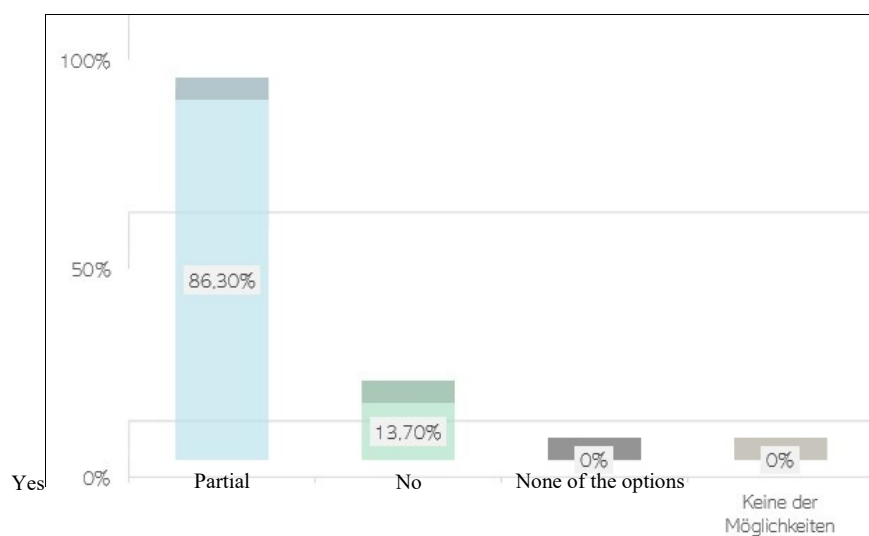


Figure 6. Alignment with Environmental Management Standards
Own source (2024)

5. Conclusion

5.1. Discussion

The results of the study demonstrate that sustainability holds significant importance for the surveyed companies (RQ2). A clear understanding of sustainability is largely present within these organizations (RQ1). The reasons for "sustainable entrepreneurship" primarily align with economic and "green" motives; thus, the main reason identified is the improvement of the companies' image. Barriers to implementing "sustainable entrepreneurship" mainly include high time requirements, high costs, and uncertainty about the economic benefits. Sustainability requirements are rarely or only partially perceived as a burden. Corporate goals and guidelines together form an important factor in establishing sustainability within the organizational culture. Companies voluntarily align themselves, either partially or fully, with standardized environmental management norms (RQ3).

5.2. Limitations, Future Research, Theoretical Implications and Practical Implications

Overall, the study effectively captures the framework of sustainability orientation and its importance for the companies investigated in the Schwäbisch Hall region. The closed question format proved beneficial in collecting responses, as options like "None of the options" were rarely selected by the companies. The findings of the study indicate that sustainability is of high importance to companies. However, when evaluating and generalizing the results, the *limitations* of this study must be considered: The online survey achieved a response rate of 44%; this corresponds to 22 companies participating out of 50 contacted. The sample size may therefore be considered too small even for an exploratory study. It should also be taken into account that the evaluation might reflect differently with a higher response rate. Since this exploratory study did not address the different industries and sizes of the companies, this could provide a basis for *future research*.

This study examined the significance of sustainability for companies. However, it should be noted that the online survey mainly included closed questions and focused exclusively on the overall corporate context in the scientific field of sustainability management. A more open design of the questions might reveal different responses and priorities. Additionally, examining the various departments within companies regarding sustainability management could be incorporated into the literature review to broaden the theoretical scope and could be analyzed empirically, leading to *theoretical implications*.

Practical implications arise from the need to increase the willingness and establishment of a sustainability management system within companies. In the future, the economic benefits should be made clearer, and a clear estimation of the expected costs and the associated time requirements should be communicated to provide companies with benchmarks and reference values. A forward-looking development of sustainability strategies is necessary.

References:

Axjonow, A.; Ernstberger, J. & Pott, C.: Auswirkungen der CSR-Berichterstattung auf die Unternehmensreputation. In: *uwf UmweltWirtschaftsForum*, 2016, 24, S. 215-221, <https://doi.org/10.1007/s00550-016-0416-5>.

Atteslander, P., Ulrich, G.-S., Hadjar, A.: Methoden der empirischen Sozialforschung, 2023, Berlin.

Balzert, H.; Schröder, M.; Schäfer, Ch.: Wissenschaftliches Arbeiten - Ethik, Inhalt & Form wiss. Arbeiten, Handwerkszeug, Quellen, Projektmanagement, Präsentation, 2022, Dortmund, <https://doi.org/10.18420/LB-WissArbeiten>.

Baumgartner, R. J.: Nachhaltigkeitsmanagement: Forschung zum Thema ökologisch verträgliche, sozial verantwortliche und wirtschaftlich erfolgreiche Unternehmensführung. In: *BHM Berg- und Hüttenmännische Monatshefte*, 2013, 158, S. 301-304, <https://doi.org/10.1007/s00501-013-0168-2>.

Baumgartner, R. J. & Rauter, R.: Strategic perspectives of corporate sustainability management to develop a sustainable organization. In: *Journal of Cleaner Production*, 2017, 140 (1), p. 81-92, <https://doi.org/10.1016/j.jclepro.2016.04.146>.

Blühdorn, I.: Nicht-Nachhaltigkeit auf der Suche nach einer politischen Form. Konturen der demokratischen Postwachstumsgesellschaft. In: *Berlin Journal für Soziologie*, 2018, 28, S. 151-180, <https://doi.org/10.1007/s11609-018-0372-8>.

Blumberg, I. & Lin-Hi, N.: Business Case-Driven Management of CSR: Does Managers' "Cherry Picking" Behavior Foster Irresponsible Business Practices? In: *Business & Professional Ethics Journal*, 2015, 33 (4), S. 321-350, <https://doi.org/10.5840/bpej201512620>.

Botta J.: Wie Controller Nachhaltigkeit in Unternehmen integrieren. In: *Controlling & Management Review/Zeitschrift für Controlling und Management*, 2014, 58, S. 75, <https://doi.org/10.1365/s12176-014-0946-z>.

Brall, F. & Fettig P.: Wie vollständig berichten Unternehmen in ihren Nachhaltigkeitsberichten? Eine beispielhafte Überprüfung der Nachhaltigkeitsberichte von BASF SE, BMW Group, Fraport AG und Linde AG. In: *uwf UmweltWirtschaftsForum*, 2015, 23, S. 259-264, <https://doi.org/10.1007/s00550-015-0371-6>.

Döring, N.: Forschungsmethoden und Evaluation in den Sozial- und Humanwissenschaften, 2023, Heidelberg, <https://doi.org/10.1007/978-3-662-64762-2>.

Eco, U.: How to write a thesis, The MIT Press, 2015, <https://doi.org/10.7551/mitpress/10029.001.0001>

Ekardt, F.: Grenzen des Nachhaltigkeitsmanagements in interdisziplinärer Perspektive. In: *uwf UmweltWirtschaftsForum*, 2017, 25, S. 33-41, <https://doi.org/10.1007/s00550-017-0456-5>.

Endrikat J.; Graßmann, M. & Eschke, F.: Gremien des Verwaltungsrats und ihre Rolle für die CSR-Berichterstattung. In: *Controlling & Management Review/Zeitschrift für Controlling und Management*, 2019, 63, S. 40-45. . <https://doi.org/10.1007/s12176-019-0050-5>.

Feiel, S.; Moser, P.; Tost, M. & Meyer, A.: Mineralische Rohstoffe und Nachhaltigkeit. In: *BHM Berg- und Hüttenmännische Monatshefte*, 2019, 164 (4), S. 164-168, <https://doi.org/10.1007/s00501-019-0839-8>

Friedrichs, J.: *Methoden empirischer Sozialforschung*, 1990, Wiesbaden, <https://doi.org/10.1007/978-3-531-90173-2>

Heger, W. & Bürgel, M.: Stakeholder-Dialog im Nachhaltigkeitsmanagement der Daimler AG. In: *uwf UmweltWirtschaftsForum*, 2013, 21, S. 127-134, <https://doi.org/10.1007/s00550-013-0279-y>.

- Herbrik, R. & Kanter, H.: Gespräche über Nachhaltigkeit – nachhaltige Gespräche? Die kommunikative Konstruktion der sozialen Fiktion Nachhaltigkeit. In: *Forum Qualitative Sozialforschung/Forum: Qualitative Social Research*, 2019, 20 (1), e1.2825, <http://dx.doi.org/10.17169/fqs-20.1.2825>.
- Hetze, K.; Bögel, P.M.; Glock, Y. & Bekmeier-Feuerhahn, S.: Online-CSR-Kommunikation: Gemeinsamkeiten und Unterschiede börsennotierter Unternehmen in der DACH-Region. In: *uwf UmweltWirtschaftsForum*, 2016, 24, S. 223-236, <https://doi.org/10.1007/s00550-016-0418-3>.
- Homann, K.; Lütge, Ch.; Pies, I.; Kummert, I.: Ethik in der Wirtschaft: Sollten Unternehmen neben einer ökonomischen auch eine soziale Verantwortung haben? In: *ifo Schnelldienst*, 2018, 71 (24), S. 3-14, <https://www.ifo.de/publikationen/2018/aufsatz-zeitschrift/ethik-der-wirtschaft-sollten-unternehmen-neben-einer>.
- Hoppe H. & Krause M. (2017): Erfahrungen aus dem Implementierungsprozess des Nachhaltigkeitsmanagementsystems der Linde Material Handling GmbH. In: *uwf UmweltWirtschaftsForum*, 25, S. 129-138, <https://doi.org/10.1007/s00550-017-0448-5>.
- Juretzek, S.: Die Bewältigung von Dilemmata im Rahmen der Umsetzung von Corporate Sustainability-Strategien: eine Delphi Studie zu Kompetenzen und Rahmenbedingungen. In: *uwf UmweltWirtschaftsForum*, 2016, 24, S. 277-288, <https://doi.org/10.1007/s00550-016-0417-4>.
- Knoche, L.: Nachhaltigkeit in Unternehmen und Organisationen. In: *ifo Schnelldienst*, 67 (17), S. 29-37, <https://www.ifo.de/publikationen/2014/aufsatz-zeitschrift/nachhaltigkeit-unternehmen-und-organisationen>.
- Kruppe, C. & Kühl, R.: Nachhaltigkeit systematisch steuern. In: *Controlling & Management Review/Zeitschrift für Controlling und Management*, 2020, 64, S. 56-62, <https://doi.org/10.1007/s12176-020-0093-7>.
- Küberling J. & Beermann, M.): Nachhaltiger Konsum - Wie Unternehmen Verantwortung für die Nutzung und Anwendung ihrer Produkte übernehmen können. In: *uwf UmweltWirtschaftsForum*, 2015, H4/4, S. 307-314, <https://doi.org/10.1007/s00550-015-0368-1>.
- Kummert I.: Ökonomische und soziale Verantwortung: Zwei Seiten einer Medaille, in: *ifo Schnelldienst*, 2018, 71 (24), S. 12-14, <https://www.cesifo.org/DocDL/sd-2018-24-12-20.pdf>.
- Kurz, R. & Wild, W.: Nachhaltigkeit und Unternehmen. In: *uwf UmweltWirtschaftsForum*, 2015, 23, S. 323-328, <https://doi.org/10.1007/s00550-015-0379-y>.
- Lies, J.: CSR als Beispiel performativen PR-Managements? In: *uwf UmweltWirtschaftsForum*, 2015, 23, S. 279-287, <https://doi.org/10.1007/s00550-015-0374-3>.
- Neßler, C. & Lis, B.: Das Ökonomische Prinzip und Unternehmensverantwortung: Corporate Social Responsibility als Marktkraft. In: *uwf UmweltWirtschaftsForum*, 2015, 23, S. 145-151, <https://doi.org/10.1007/s00550-015-0376-1>.
- Loew, T. 2016: CSR und der Streit um Freiwilligkeit und Rahmenbedingungen: nicht nur bei der Nachhaltigkeitsberichterstattung: Korreferat zum Beitrag von Felix C. Schwen und Alexander Brink. In: *Zeitschrift für Wirtschafts- und Unternehmensethik: zfwu*, 2016, 17 (1), S. 192-197, <https://doi.org/10.5771/1439-880X-2016-1-192>.
- Maisch, C.: Ressourceneffizienz: eine Herausforderung auch für mittelständische Unternehmen. In: *uwf UmweltWirtschaftsForum*, 2014, 22, S. 201-205, <https://doi.org/10.1007/s00550-014-0330-7>.

- Mayring, P.: Designs in qualitativ orientierter Forschung. In: *Journal für Psychologie*, 2007, 15 (2), S. 1-10, <https://journal-fuer-psychologie.de/article/view/127>.
- Mengen, Mertes: Nachhaltigkeits-Reporting passgenau gestalten. In: *Controlling & Management Review/Zeitschrift für Controlling und Management*, 2020, 60, S. 40-45, <https://doi.org/10.1007/s12176-019-0081-y>.
- Michaels, A. & Grüning, M.: Glaubwürdigkeit von CSR-Konzepten: Die Einflüsse von CSR-Publizität und Corporate Identity auf CSR Reputation. In: *uwf UmweltWirtschaftsForum*, 2016, 24, S. 179-193, <https://doi.org/10.1007/s00550-016-0414-7>.
- Müller, M. & Gomes dos Santos V.: Realität oder Schein - eine qualitative Untersuchung zur Entkopplungsthese bei der Umsetzung von Umwelt- und Sozialstandards in Unternehmen, in: *Zeitschrift für Wirtschafts- und Unternehmensethik: zfwu*, 2014, 15 (1), S. 8-26, <https://doi.org/10.5771/1439-880X-2014-1-8>.
- Nessel, S.: Verbraucherorganisationen und Verbraucherpolitik als Intermediäre der Nachhaltigkeit. Eine Analyse der institutionellen und organisationalen Einbettung nachhaltigen Konsums. In: *Berliner Journal für Soziologie*, 2017, 26, S. 227-248, <https://doi.org/10.1007/s11609-016-0316-0>.
- Radtke, J.: Das Jahrhundertprojekt der Nachhaltigkeit am Scheideweg. Wie kann die Energiewende in Deutschland breite gesellschaftliche Unterstützung finden? In: *Zeitschrift für Politikwissenschaft*, 2020, 30, S. 97-111, <https://doi.org/10.1007/s41358-020-00215-6>.
- Reinecke, J.: Grundlagen der standardisierten Befragung. In: Baur, N. & Blasius, J. (Hrsg.): *Handbuch Methoden der empirischen Sozialforschung*, 2019, Wiesbaden, S. 717-734, https://doi.org/10.1007/978-3-658-21308-4_49.
- Schnell, R.; Hill, B.; Esser, E.: *Methoden der empirischen Sozialforschung*, 2023, München.
- Schreiber D.: Chancen für eine nachhaltige Unternehmensentwicklung: Dialog im Internet auf der Drehscheibe Nachhaltigkeit. In: *uwf UmweltWirtschaftsForum*, 2013, 21, S. 83-88, <https://doi.org/10.1007/s00550-013-0275-2>.
- Schwager, B.: Revision der Norm ISO 14001 - Neue Anforderungen zu Umweltmanagementsystemen. In: *uwf UmweltWirtschaftsForum*, 2015, 23, S. 153-159, <https://doi.org/10.1007/s00550-015-0365-4>.
- Snyder, H.: Literature review as a research methodology: An overview and guidelines. In: *Journal of Business Research*, 2019, 104, S. 333-339, <https://doi.org/10.1016/j.jbusres.2019.07.039>.
- Stadler, C.: Nachhaltigkeit als psychologische Herausforderung. in: *Zeitschrift für Psychodrama und Soziometrie*, 2017, 16, S. 93-109, <https://doi.org/10.1007/s11620-017-0415-8>.
- Statista: Hat Ihr Unternehmen in den letzten 6 Monaten in den Bereich Nachhaltigkeit investiert?, 2023, <https://de.statista.com/statistik/daten/studie/1380786/umfrage/umfrage-investitionen-nachhaltigkeit-b2b-deutschland/> zuletzt zugegriffen am 25.06.2023.
- Stumpf, M: Erfolgsfaktoren des Cause related Marketing (CrM) mit Beispielen aus dem Umweltschutz, in: *uwf UmweltWirtschaftsForum*, 2016, 24, S. 237-244, <https://doi.org/10.1007/s00550-016-0411-x>.
- Wagner, F.-W.: Steuervermeidung und Corporate Social Responsibility. In: *Perspektiven der Wirtschaftspolitik*, 2018, (19) 1, S. 2-21, <https://doi.org/10.1515/pwp-2018-0003>.

Wagner-Schelewski, P. & Hering, L.: Online-Befragung, in: Baur, N. & Blasius, J. (Eds.): *Handbuch Methoden der empirischen Sozialforschung*, Springer VS, 2019, 787-800, https://doi.org/10.1007/978-3-658-21308-4_54

Wiedenhöft, S.: Anerkannt nachhaltig - nachhaltig anerkannt? Zum Verhältnis von Anerkennung und Nachhaltigkeit in Unternehmen. In: *Journal für Psychologie*, 2010, 18 (2), S. 1-18, <https://journal-fuer-psychologie.de/article/view/77/201>.

Zelena organizacija - stigla u tvrtke ili je još uvijek vizija? Eksplorativno anketno istraživanje provedeno među stručnjacima o značaju održivosti i implementaciji upravljanja održivošću u tvrtkama

DANIELA LUDIN

Ekonomski fakultet, Sveučilište u Heilbronn
Max-Planck-Str. 39, 74081 Heilbronn
Njemačka

daniela.ludin@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-3854-5060>

CHRISTINA ARNGOLD

Fakultet menadžmenta i trgovine, Sveučilište u Heilbronn
Max-Planck-Str. 39, 74081 Heilbronn
Njemačka
c.arngold@googlemail.com

MELTEM BALLI

Fakultet menadžmenta i trgovine, Sveučilište u Heilbronn
Max-Planck-Str. 39, 74081 Heilbronn
Njemačka
bameltem@gmail.com

ERIKA MUELLER

Odjel za održivost, Sveučilište u Heilbronn
Max-Planck-Str. 39, 74081 Heilbronn
Njemačka

erika.mueller@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-6485-7754>

WANJA WELLBROCK

Ekonomski fakultet, Sveučilište u Heilbronn
Max-Planck-Str. 39, 74081 Heilbronn
Njemačka

wanja.wellbrock@hs-heilbronn.de

ORCID iD: <https://orcid.org/0000-0002-4882-029X>

Sažetak: Znanstvenici i aktivisti već desetljećima sudjeluju u debatama o održivosti i pozivaju na promjene u politici i društvu. Promjene koje postaju uočljive imaju utjecaj i na tvrtke. One ne mogu izbjeći suočavanje s pitanjem održivosti, jer unutarnji i vanjski dionici vrše pritisak na njih zbog svojih interesa. Na temelju online ankete, ovo eksplorativno empirijsko istraživanje identificira i analizira što tvrtke podrazumijevaju pod pojmom "održivost" i kakva se važnost u ovom trenutku pridaje upravljanju održivošću u tvrtkama. Istraživanje također identificira glavne prednosti održivog upravljanja, kao i prepreke u implementaciji održivosti u tvrtkama. Rezultati istraživanja pokazuju da je održivost od velike važnosti za tvrtke uključene u

istraživanje. Tvrtke su u većini pokazale razumijevanje pojma održivosti. Razlozi za "održivo poslovanje" temelje se posebno na ekonomskim i "zelenim" motivima; glavni razlog je poboljšanje imidža tvrtke. Glavne prepreke za implementaciju "održivog poslovanja" je potrebno vrijeme, visoki troškovi i nesigurnost u pogledu ekonomskih koristi. Zahtjevi održivosti rijetko se ili samo djelomično percipiraju kao opterećenje. Korporativni ciljevi i smjernice zajedno čine važan faktor u uspostavi održivosti u organizacijskoj kulturi. Tvrtke se dobrovoljno usklađuju sa standardiziranim normama upravljanja okolišem djelomično ili u potpunosti.

Ključne riječi: zelene organizacije, održivost, upravljanje održivošću

JEL klasifikacija: M14, Q56

Naslov Rada (14pt Times New Roman, Bold, centrirano)

IME I PREZIME (12pt Times New Roman, centrirano)

Fakultet/Odjel (12pt Times New Roman, centrirano)

Sveučilište (12pt Times New Roman, centrirano)

Adresa (12pt Times New Roman, centrirano)

Država (12pt Times New Roman, centrirano)

mail@xxxxx.xx (12pt Times New Roman, centrirano)

ORCID autora (ako je primijenjivo)

Sažetak: Ovo je primjerak formata vašeg rada. Gornja i donja margina, kao i lijeva i desna su 2.5 cm. Koristite jednostruki prored u cijelom radu (bez razmaka prije i poslije). Koristite Times New Roman font u tekstu rada veličine 11pt. Sažetak bi trebao sadržavati svrhu istraživanja, metodologiju, obrazloženje rezultata, ograničenja u istraživanju te preporuke za daljnja istraživanja. Riječi *Sažetak*, *Gljučne riječi* i *Reference* su u kurzivu i masno otisnute. Sažetak treba imati minimalno 200, a maksimalno 300 riječi. **Sažetak je potrebno prevesti na engleski jezik.**

Gljučne riječi: Ostavite dvije prazne linije ispod Sažetka i navedite 5 do 7 ključnih riječi međusobno odvojenih zarezom, navodeći od općeg prema pojedinačnom. Gljučne riječi je potrebno prevesti na engleski jezik.

JEL klasifikacija: potrebno je navesti minimalno 1 JEL klasifikaciju

Važno: Molimo vas izbjegavajte korištenje fusnota. Ako je potrebno, unesite ih na kraju teksta kao bilješke, prije referenci.

1 Uvod (12pt, Times New Roman)

Rad bi trebao imati najmanje 5.000, a najviše 8.000 riječi. Rad treba biti u formatu A4, 21x29 cm, obostrano poravnat. Predloženi naslovi se ne trebaju slijediti doslovno, što znači da primjerice možete koristiti klasični okvir s Uvodom, Pregledom literature, Materijalima i Metodama, Rezultatima, Raspravom, Zaključkom i Referencama. Naslovi svake cjeline rada trebaju biti lijevo poravnati i masno otisnuti. Obavezno je numeriranje naslova i podnaslova cjelina rada kao i u ovom predlošku. Navedeno numeriranje ne bi se smjelo vršiti primjenom rimskih brojeva. Odlomci se odvajaju razmakom, a svaki odlomak trebao bi imati bar tri retka.

Potrebno je koristiti *Harvardski stil citiranja i referenciranja* u cijelom tekstu.

2 Formulacija problema

Molimo Vas da ostavite dvije prazne linije između susjednih naslova. Podnaslovi se odvajaju jednom praznom linijom. Ispod naslova i podnaslovaslijedi redak razmaka te potom tekst bez uvlake. bez uvlake. Sljedeći odlomak slijedi nakon razmaka, kako je već ranije navedeno.

Ukoliko u Vašem radu ima i matematičkih izraza i formula potrebno ih je numerirati redosljedom kako se pojavljuju – (1), (2), (3), Nikako nemojte koristiti princip vezivanja tih izraza s podnaslovima – (1.1), (1.2), ..., (2.1), ... , dakle nije poželjno. Svi takvi izrazi su centrirani i odvojeni s po jednom

linijom razmaka u odnosu na tekst koji prethodi i koji slijedi. Isto vrijedi i za više takvih izraza u nizu – odvajanje po istom principu.

2.1 Podnaslov (12pt, Times New Roman)

Podnaslovi se lijevo poravnavaju, masno su otisnuti, veličine 12pt u fontu Times New Roman. Potrebno je voditi računa da vam sam podnaslov ne bude izoliran na dnu stupca.

2.1.1 Pod-podnaslov (11pt, Times New Roman)

Kada trebate koristiti i daljnju podjelu unutar neke cjeline, za pod-podnaslove koristite Times New Roman veličine 11pt, masno otisnut i lijevo poravnat. Daljnja podjela cjelina nije poželjna i neće se prihvaćati.

3 Rješenje Problema

Slike i tablice trebaju se referencirati kako slijedi: Slika 1, Slika 2, Slika 3, ..., Tablica 1, Tablica 2, Tablica 3, Svaka referenca slike sadrži i opis slike (što slika predstavlja) i izvor odakle je preuzeta, u slučaju da je riječ o slikama kojima niste autori/ce. Isto vrijedi i za tablice, što podrazumijeva da se pored oznake tablice nalazi i njezin naziv ili kratko objašnjenje što predstavlja, uz navođenje izvora za slučajeve preuzetih tablica. Ispod slike/tablice obavezno je navesti godinu izrade.

Slike se centriraju, kao i njihove reference koje se nalaze ispod same slike. Tablice su također centrirane sa svojim referencama, s tim što se referenca tablice nalazi iznad same tablice.

U slučajevima da vaš rad značajno odstupa od navedenih specifikacija, tajnik časopisa će vas na to upozoriti i zamoliti da uredite rad prema ovim uputama. U slučaju da ni nakon toga vaš rad nije u skladu s traženim formatom, tada ne može biti uključen u izdanje časopisa.

4 Zaključak

Sve reference u tekstu rada, kao i na kraju u samom popisu istih, navode se po harvardskom sustavu citiranja i referenciranja – u ovoj uputi, pod popisom Literatura, navedeni su samo neki najčešći primjeri. Molimo Vas da ove preporuke slijedite što vjernije kako bismo osigurali uniformnost svih radova koji će se objavljivati u ovom časopisu. Zahvaljujemo na Vašoj suradnji i doprinosu.

Literatura

Boughton, J. M. (2002) The Bretton Woods Proposal: An Indepth Look, *Political Science Quarterly*, 42 (6), str. 564-578.

Carter, F., Neville, T. (2008a) Quantum Reality of Genetics, *Nature*, 454 (7193), str. 234 – 250.

Carter, F., Neville, T. (2008b) Epigenetics in Review, *Nature*, 454 (7199), str. 180 – 202.

Chung-Lung, H., Chi-Chun, L., Chin-Long, T. (2004) Mobile Privacy and Identity Management, Rožić, N. & Begušić, D. eds., *Proceedings of 12th International Conference on Software, Telecommunications and Computer Networks, SoftCOM 2004*, Split – Dubrovnik, Croatia – Venice, Italy, October 10 – 13, 2004., Split: University of Split, str. 17 – 21.

Clinch, P. (2001) *Using a Law Library: A Student's Guide to Legal Research Skills*, 2nd ed., London: Blackstone.

Foster, H. (2008) Perception and Mind, *Science*, 321 (5884), str. 121 – 145.

Hamill, C. (1999) Academic Essay Writing in the First Person: A Guide for Undergraduates, *Nursing Standard*, [Online], 13 (44), str. 38-40., <raspoloživo na: <http://libweb.anglia.ac.uk/ejournals/333>>, [pristupljeno 20.07.2005.].

Kirk, J., Munday, R., J. (1988) *Narrative Analysis*, 3rd ed., Bloomington: Indiana University Press.

Ukoliko je predani rad dio projekta, informaciju možete unijeti ovdje. Također, ako je istraživanje financirala institucija/organizacija, informaciju unesite ovdje.

Title of the Paper (14pt Times New Roman, Bold, Centred)

AUTHOR'S NAME (12pt Times New Roman, CAPITAL LETTERS, centred)

Faculty / Department (12pt Times New Roman, centred)

University (12pt Times New Roman, centred)

Address (12pt Times New Roman, centred)

Country (12pt Times New Roman, centred)

your.mail@xxxxx.xx (12pt Times New Roman, centred)

ORCID iD (if applicable)

Abstract: This is a sample paper template. Please use the following settings. Use single line spacing throughout your paper. Use font Times New Roman 11pt, except in the title. The abstract should include purpose of the research, methodology, explanation of the results, limitations in the research and recommendations for further research. The words *Abstract*, *Key words* and *References* are in italics and bold. The Abstract should have at least 200 up to 300 words. The text should be justified throughout the paper.

Key words: Leave two blank lines after the Abstract and list 5 to 7 key words, separated by commas, stating from general to individual.

JEL classification: minimum 1 JEL classification

Important: Please avoid footnotes. If you have to, please use endnotes instead and place right before references section.

1 Introduction (12pt, Times New Roman)

The paper should have a minimum of 5.000 and a maximum of 8.000 words. The paper should be in A4 format, 21x29 cm, aligned on both sides. Top, bottom, left and right margins are 2.5 cm. It is not necessary to follow the suggested headlines strictly. For instance, you may use the standard framework including Introduction, Materials and methods, Results, Discussion, Conclusion(s) and References. Headings should be aligned left and bold-faced. Headings and subheadings should be in "Sentence case" and numbered using Arabic numerals as in this template. Paragraphs are separated by a blank line, each paragraph containing at least three lines. For in-text citations please use *Harvard style*.

2 Problem formulation

Please leave two blank lines between the neighbouring headings. Subheadings are separated by a blank line. Headings and subheadings are followed by a blank line. The text follows without indentations. As it has been already said, the next paragraph is preceded by a blank line.

Mathematical equations, formulae and other expressions should be numbered sequentially, as they appear, i.e. (1), (2), (3), ... Please avoid the principle of linking these expressions with the subheadings, hence (1.1), (1.2), ..., (2.1), ... should be avoided. These expressions are centred and separated by one blank line from the preceding and following text. The same goes for a series of expressions – they are separated following the same principle.

2.1 Subheading (12pt, Times New Roman)

For subheadings use 12pt Times New Roman, bold. Subheadings should be in "Sentence case", aligned left and numbered using Arabic numerals. Make sure your subheading is not left isolated at the bottom of the page.

2.1.1 Subheading (11pt, Times New Roman)

If it is necessary to further distribute the text, you can introduce subheadings in Times New Roman 11pt, aligned to the left side and bold-faced. Further distribution is not recommended and will not be accepted.

3 Results

Figures and tables should be inserted as close as possible to the position where they are first referenced. Use Arabic numerals: Figure 1, Figure 2, Figure 3, ..., Table 1, Table 2, Table 3, Each figure / table should be accompanied by a reference (caption / legend, year of production) with sufficient description so that the figure / table is understandable without reading the text. Figures are centred and so are their references below them. Tables and their references are also centred but the references are placed under the tables. In case your paper significantly deviates from these guidelines, the secretary of the journal will warn you and ask you to adjust the formatting. If your paper fails to comply with the required format again, it can not be published in the journal.

4 Conclusion

All references, within the main text and within the list of references, are cited according to the Harvard reference system, sorted alphabetically. This sample paper template features only the most common items in the list of References. When authors are quoted in the text (for example, et al.), all authors should be listed in the Reference list. Please follow these guidelines as closely as possible so that we could ensure uniform quality of the published work. Thank you for your cooperation and contribution.

References

- Boughton, J. M. (2002) The Bretton Woods Proposal: An Indepth Look, *Political Science Quarterly*, 42 (6), pp. 564-578.
- Carter, F., Neville, T. (2008a) Quantum Reality of Genetics, *Nature*, 454 (7193), pp. 234 – 250.
- Carter, F., Neville, T. (2008b) Epigenetics in Review, *Nature*, 454 (7199), pp. 180 – 202.
- Chung-Lung, H., Chi-Chun, L., Chin-Long, T. (2004) Mobile Privacy and Identity Management, Rožić, N. & Begušić, D. eds., *Proceedings of 12th International Conference on Software, Telecommunications and Computer Networks, SoftCOM 2004*, Split – Dubrovnik, Croatia – Venice, Italy, October 10 – 13, 2004., Split: University of Split, pp. 17 – 21.
- Clinch, P. (2001) *Using a Law Library: A Student's Guide to Legal Research Skills*, 2nd ed., London: Blackstone.

Foster, H. (2008) Perception and Mind, *Science*, 321 (5884), pp. 121 – 145.

Hamill, C. (1999) Academic Essay Writing in the First Person: A Guide for Undergraduates, *Nursing Standard*, [Online], 13 (44), pp. 38-40., <available at: <http://libweb.anglia.ac.uk/ejournals/333>>, [accessed 20.07.2005.].

Kirk, J., Munday, R., J. (1988) *Narrative Analysis*, 3rd ed., Bloomington: Indiana University Press.

If the submitted work is part of the project, you can enter the information here. Also, if the research was funded by an institution/organization, enter the information here.