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AVERSIVE PERSONALITY TRAITS AND INDIVIDUALISTIC SOCIAL RANK STYLES AS PREDICTORS OF A POSITIVE ATTITUDE TOWARDS CONSPICUOUS CONSUMPTION

Anja Mitić^{1*}, Veljko Đurić¹, Ivana Petrović²

¹Union University, Faculty for Law and Business Studies dr Lazar Vrkiatić,
Novi Sad, Serbia

²University of Belgrade, Faculty of Philosophy, Belgrade, Serbia

Abstract

The prognostic and mediational influences of basic and aversive personality traits, and social rank styles on individuals' attitudes towards conspicuous consumption (ATCC, an indirect measure of the actual behaviour) were examined via path analysis¹. The model (n=400, mean age=22.3) emphasised the direct and indirect effects of Extraversion, and the indirect effects of Neuroticism and Agreeableness which were sequentially mediated by all Dark Triad traits, and by two individualistic social rank styles: Dominant Leadership and Ruthless Self advancement. Dark Triad traits occupied the central position in the model connecting basic personality traits with social rank styles, and ultimately with ATCC. Machiavellianism was the only Dark Triad trait directly linked with ATCC, Dominant Leadership, and Ruthless Self-advancement. Narcissism exerted the main mediating effect on Dominant Leadership, while Machiavellianism and Psychopathy mediated the negative influence of Extraversion and Agreeableness on Ruthless Self-advancement. Both Dominant Leadership and Ruthless Self-advancement were directly predictive of ATCC. As two basic prosocial personality traits (Conscientiousness and Openness) and one prosocial rank strategy (Coalition Building) did not enter the model, we conclude that, from the present perspective, positive ATCC is linked to uncooperative and self-centred mindsets striving for superior positions in the social hierarchy.

Key words: conspicuous consumption, the Dark Triad, the Big Five, social rank style, path analysis

* Corresponding author: Anja Mitić, Faculty for Law and Business Studies dr Lazar Vrkiatić, Bulevar oslobođenja 76, 21000 Novi Sad, Serbia, anjamitch@gmail.com

¹ The path analysis model upholds the dark side of affinity for conspicuous consumption. The model connects the personal traits domain with the personal strategies domain. Social rank styles are differentiated by basic and aversive personality traits. Each social rank style has a specific trajectory predictive of ATCC.

АВЕРЗИВНЕ ОСОБИНЕ ЛИЧНОСТИ И ИНДИВУАЛИСТИЧКИ СТИЛОВИ ДРУШТВЕНОГ ПОЗИЦИОНИРАЊА КАО ПРЕДИКТОРИ ПОЗИТИВНОГ СТАВА ПРЕМА УПАДЉИВОЈ ПОТРОШЊИ

Апстракт

Анализом путање је испитиван директан и посредан утицај основних и аверзивних особина личности и стилова друштвеног позиционирања на став према упадљивој потрошњи (СУП). Модел ($n = 400$, просечна старост = 22,3) указује на директне и индиректне ефекте екстраверзије, као и индиректне ефекте неуротизма и пријатности, који су секвенцијално посредовани свим особинама Мрачне тријаде и следећим индивидуалистичким стиловима друштвеног позиционирања: доминантним вођством и немилосрдним самонапредовањем. Особине Мрачне тријаде заузеле су централну позицију у моделу повезивања основних особина личности са стиловима друштвеног рангирања, а на крају и са СУП-ом. Макијавелизам је био једина црта Мрачне тријаде која је директно повезана са СУП-ом, доминантним вођством и немилосрдним самонапредовањем. Нарцизам је извршио главни посреднички ефекат на доминантно вођство, док су макијавелизам и психопатија посредовали утицајем Екстраверзије и Пријатности (негативно) на немилосрдно самонапредовање. И доминантно вођство и немилосрдно самонапредовање директно су предвиђали СУП. Како две основне просоцијалне особине личности (Савесност и Отвореност) и једна стратегија просоцијалног стила компетиције (изградња коалиције) нису ушле у модел, закључујемо да је из садашње перспективе позитиван став према упадљивој потрошњи повезан са некооперативним и егоцентричним начином размишљања који тежи ка супериорним позицијама у друштвеној хијерархији.

Кључне речи: упадљива потрошња, Мрачна тријада, Великих пет, стил друштвеног позиционирања, анализа пута

INTRODUCTION

The symbolic value of purchase has for ages run parallel to its functional value (Qiu, Wang, Richard & Wang, 2017). People buy things not simply because of their functional value, but often with the primary purpose of advertising their pecuniary advantages over others. We publicise our attitudes and lifestyles through the products we buy, identities are constructed by appropriating brands, and purchasing patterns determine the way individuals see themselves and communicate with others. More than one century ago, Thorstein Veblen (2005/1899) critically approached this symbolic function of purchasing behaviour. Veblen noted that it is not accumulated wealth by itself, but its unrestrained presentation that confers social recognition and elicits the much desired envy. In every generation, the representational value of buying arrogance is readily acknowledged by the *nouveau riche* as an effective device for promoting their distancing from the ordinary. Besides its obvious economic consequences, conspicuous consumption may be viewed as an assured strategy

that reaps profitable social capital returns (Hinz, Spann & Hann, 2015). The demonstration of purchasing power has been related to gains in social recognition (Nelissen & Meijers, 2011), and ultimately to Darwinian sexual selection (De Fraja, 2009; Sundie, Kenrick, Griskevicius, Tybur, Vohs & Beal, 2011). Thus, men have faith in the signalling value of purchased goods and services as a decoy for attracting the opposite sex (Griskevicius, Tybur, Sundie, Cialdini, Miller & Kenrick, 2007; Henrichsen, Hudders, Lange, & Fink, 2016). Women cheerfully parade luxury items provided by their male partners in order to discourage potential romantic competition (Wang & Griskevicius, 2014), and are more sensitive to displays of male conspicuous consumption during the fertile phase of their menstrual cycle (Lens, Driesmans, Pandelaere & Janssens, 2012).

The contemporary evolutionary explanation of conspicuous consumption draws on costly signalling as an innate and widespread communication manoeuvre for manipulating social relations (Bliege Bird & Smith, 2005). According to costly signalling theory, an individual displaying luxury items deviously makes it known that she or he is able to 'waste' money, and is thus wealthy and of a high social status, which is the unobservable yet desirable quality (Berger, 2017). As a manifestation of costly signalling, conspicuous consumption is a self-serving and often deceptive strategy (McAndrew, 2019).

Aversive Personality Traits, Social Rank Styles, and Conspicuous Consumption

While there is a widespread agreement on the ego-inflating and selfish nature of conspicuous consumption (Sedikides, Gregg, Cisek & Hart, 2007), there are actually very few empirical studies connecting eye-catching consumption with other self-centred behavioural tendencies. The superficial – as opposed to substantial – self enhancement of narcissists is focused on appearance (Hart, Tortoriello, Richardson & Breeden, 2020), a feature quite evocative of the apparent nature of conspicuous consumption. Narcissists' conceit and their insatiable urge for self-aggrandisement have been recognised as positive predictors of conspicuous consumption (Rucker & Galinsky, 2008). Thus, it seems plausible that a comprehensive study of the psychological foundations of conspicuous consumption should include narcissism and its correlates.

Narcissistic attitudes and behaviour, and disregard for others are positively related to low empathy (Wai & Tiliopoulos, 2012), physical aggression (Reidy, Zeichner, Foster, & Martinez, 2008), externalising outcomes (Vize, Collison, Crowe, Campbell, Miller, & Lynam, 2019), striving for dominance (Bradlee & Emmons, 1992), pursuit of status (Zeigler-Hill, Vrabell, McCabe, Cosby, Traeder, Hobbs & Southard, 2019), and, above all, interpersonal strategies characterised by Machiavellian manipulation and psychopathic ruthlessness (Paulhus, 2014).

Narcissism, Machiavellianism, and subclinical psychopathy are considered to constitute the Dark Triad of antisocial personality traits (DT; Paulhus & Williams, 2002). These three independent, yet overlapping malevolent traits are marked by self-interest and little or no concern for the well-being of other people, thus predisposing one to underhanded social behaviour (Jones & Paulhus, 2017). As conspicuous consumption is an egocentric, manipulative, and often deceptive prestige-seeking consumer behaviour, it shares many aims with the exploitative interpersonal strategies of the DT traits. Therefore, it seems reasonable to assume that studying the similarities between the propensity for conspicuous consumption and DT traits may broaden our understanding of their shared psychological foundation. Namely, it is reasonable to theorise that conspicuous consumption is also related to DT traits other than narcissism.

From a somewhat different theoretical perspective, conspicuous consumption is a manifestation of the social attention-holding power (Gilbert, 2016) which nurtures an inflated, yet unstable self-esteem. Thus, conspicuous consumption may parallel some evolved competitive strategies in a uniquely human social rank system (Zuroff, Fournier, Patall & Leybman, 2010). Individual differences in the social rank domain distinguish three styles, one cooperative (Coalition Building) and two individualistic: Dominant Leadership (socially desirable) and Ruthless Self-advancement (socially undesirable). Coalition Building is characterised by the tendency to cultivate cooperative coalitions, respect for the opinion of other group members, avoiding confrontation, and seeking compromise. Dominant Leadership is defined by one's tendency to assume a guiding role among their peers, overconfidence in the promotion of her/his ideas, and dominant initiative when making final decisions about a group's actions. Finally, Ruthless Self-advancement is demonstrated by a readiness to secure a higher social rank through manipulative, cheating and self-serving strategies. Previous studies report that Coalition Building correlates negatively with Psychopathy and Machiavellianism, while Dominant Leadership negatively correlates with narcissism, and Ruthless Self-advancement positively correlates with all three DT dimensions (Zuroff et al., 2010). With this in mind, it seems reasonable to investigate how different social rank styles affect the proclivity for conspicuous consumption.

Basic Personality Traits, Aversive Personality Traits, Social Rank Styles, and Conspicuous Consumption

The combination of basic personality traits is responsible for all individual differences in manifest behaviour, as posited by the Five Factor Model (FFM; McCrae & Costa, 2013). Accordingly, the five basic traits have been related to DT dimensions (Paulhus & Williams, 2002) and social rank styles (Zuroff et al., 2010). Both Psychopathy and Machiavellianism are inconsistent with Conscientiousness and Agreeableness.

In addition, Machiavellianism is also negatively correlated with Extraversion and Openness, while Narcissism is positively correlated with Extraversion and Openness (O’Boyle, Forsyth, Banks, Story & White, 2015). On the other hand, Dominant Leadership correlates positively with Extraversion and Conscientiousness, and negatively with Neuroticism and Agreeableness; Coalition Building correlates positively with Agreeableness, while Ruthless Self-advancement negatively correlates with Agreeableness and Conscientiousness. While it is reasonable to assume that some basic personality traits underpin the proclivity for conspicuous consumption, it is also of interest to verify how much additional variance is accounted for by the uncooperative approach to other people typified by DT traits and individualistic social rank styles.

Present Study

Despite its patently manipulative essence and a high propensity for immoral deviations (Vasilyev, Kovalchuk, Korkiya & Mamedov, 2017), conspicuous consumption has not been systematically scrutinised for its commonalities with other selfish and ethically questionable behavioural tendencies, and there is no direct evidence about basic personality traits predisposing conspicuous consumption. As noted above, there is evidence connecting self-centred interpersonal strategies with basic personality traits, and evidence connecting self-centred interpersonal strategies with conspicuous consumption. However, an all-encompassing study charting causal relationships among basic personality traits, social rank styles, and conspicuous consumption is still non-existent. This study was designed to fill this gap and enhance our understanding of the individual differences in proclivity to conspicuous consumption. Since conspicuous consumption has a wide yet reluctantly admitted daily presence, we opted for an indirect approach. In other words, we opted to study the attitude towards conspicuous consumption (hereinafter ATCC) as a proxy of actual consumer behaviour. Relying on path analysis, our aim was to construct a parsimonious predictive model encompassing the collective effect of the aforementioned variables. A tentative hierarchical model of the study variables is depicted in Figure 1.

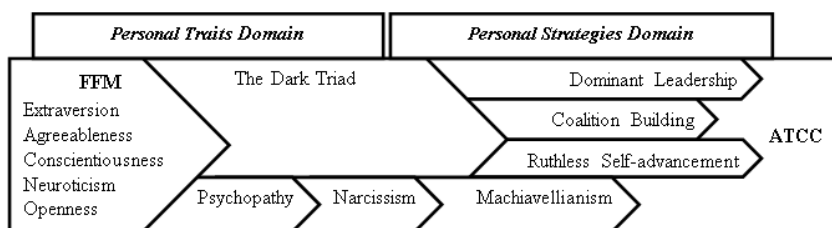


Figure 1. Conditional hierarchical model of inherent personal traits predisposing to social rank styles and proclivity for conspicuous consumption.

Drawing from the existing knowledge, we hypothesise that distinct basic and aversive personality traits predict social rank styles and the affinity for conspicuous consumption. More specifically, we assume the following: H1) the Big Five traits have direct effects on DT traits; H2) the Big Five and DT traits have indirect and direct effects on social rank styles; and H3) the Big Five traits, DT traits and social rank styles have direct and indirect effects on the attitude towards conspicuous consumption.

MATERIAL AND METHODS

Participants and Procedure

The data was collected via the standard paper and pencil procedure, in group testing sessions of up to 30 students per group. There was at least one empty chair between any two participants. Upon completing the study, an experimenter debriefed and thanked the participants. Consequently, our study included 400 (178 male and 222 female) university students from Novi Sad (mean age 22.3).

Measures

Conspicuous consumption. The attitude towards conspicuous consumption was evaluated by the ATCC-60 psychometric scale, a most recent adaptation of our ATCC-55 scale (Velov, Gojković & Đurić, 2014) supplemented with five items directly addressing the behavioural component of the construct. Thus, ATCC-60 contains 60 items rated on a 5-point scale ranging from ‘strongly disagree’ to ‘strongly agree’, with $\alpha = .93$. All 60 items consisted of statements related to the purchase and wearing of brand name clothes, a manifestation of conspicuous consumption that was familiar to our sample. According to exploratory factor analysis (principal components followed by Varimax rotation), this scale has a unique and consistent structure. Its five dimensions account for 65% of the total variance, and describe wearing branded and expensive clothes as a result of various emotional, motivational and cognitive structures (Table 1).

Social Rank Style. The Social Rank Style was evaluated with the Rank Style With Peers Questionnaire (RSPQ, Zuroff et al., 2010), a questionnaire containing 17 items of the 5-point Likert scale type intended to measure three distinctive styles in the social rank domain: Dominant Leadership (5 items, $\alpha = .81$), Coalition Building (7 items, $\alpha = .86$) and Ruthless Self-advancement (5 items, $\alpha = .77$).

The Dark Triad. Short Dark Triad (SD3) estimates of the dark side of personality – Machiavellianism ($\alpha = .78$), Narcissism ($\alpha = .66$), and Psychopathy ($\alpha = .77$) were obtained by the validated Serbian version (Dinić, Petrović & Jonason, 2018) of SD3 (Jones & Paulhus, 2014). The 5-point Likert-type scale was composed of 27 items (9 for each trait).

Table 1. Latent dimensions of ATCC-60 psychometric scale

Dimension	Eigen value	% of explained variance	Content
Attractiveness	14.110	23.516	branded and expensive clothes as a way for obtaining attention and enhancing the physical attractiveness of the person who wears them
Prestige	5.897	9.828	symbolic function - a mean to display economic status, affluence, prestige, luxury and success
Conformity	2.662	4.436	normative function, social and peer pressure, universally more acceptable
Emulation	2.317	3.862	unpleasant comparison, envy, lack of self-esteem, an efficient device for boosting one's value among peers
Behaviour	2.012	3.353	behavioural component, intentions, habits

The Big Five. The Big Five Inventory (BFI) created by John, Donahue, & Kentle (1991) is a 44-item multidimensional personality inventory. The five in question are: Openness to experience (inventive/curious vs. consistent/cautious, $\alpha = .78$), Conscientiousness (efficient/organised vs. easy-going/careless, $\alpha = .74$), Extraversion (outgoing/energetic vs. solitary/reserved, $\alpha = .76$), Agreeableness (friendly/compassionate vs. challenging/detached, $\alpha = .74$), and Neuroticism (sensitive/nervous vs. secure/confident, $\alpha = .71$). The Serbian version of BFI has been successfully utilised in previous research (e.g. Smederevac, Mitrović & Čolović, 2007).

Statistical procedures. The reliability of the psychometric scales was assessed by Cronbach's alpha coefficient. Bivariate linear associations among constructs and their latent structures were analysed by Pearson's coefficient of linear correlation. The fitness of the structural equation model was estimated using MLE, and the fit of the model was assessed with a combination of indices: relative Chi-square (χ^2/df), Bentler's Comparative fit index – CFI, Goodness-of-Fit – GFI, Root-mean-square error of approximation – RMSEA, and Standardised root mean squared residual – SRMR.

RESULTS

Correlations

Table 2 presents the associations between the selected variables. Each social rank style was characterised by its unique personality profile. Coalition Building was primarily defined by its positive association with Agreeableness; Dominant Leadership was primarily defined by its positive association with Extraversion, and its negative association with Agreeableness; and Ruthless Self-advancement was primarily defined by its negative association with Agreeableness. As expected, ATCC and both

individualistic social rank styles – Dominant Leadership (mostly saturated with Narcissism) and Ruthless Self-advancement (mostly saturated with Machiavellianism) were significantly positively correlated with DT traits, and significantly negatively correlated with Agreeableness. Conversely, Coalition Building was negatively associated with DT traits and positively associated with Agreeableness, while there was no evidence of its significant correlation with ATCC. These findings indicated that the diversity of social rank styles with respect to their ATCC was anchored in their distinctive patterns of associations with basic personality traits and aversive personality traits.

Table 2. Bivariate correlations of study variables

	ATCCDL	CB	RS	Mac	Nar	Psy	E	A	C	N		
RSPQ	Dominant Leadership	.271**	_									
	Coalition Building	-.048	.015	_								
	Ruthless Self-advancement	.350**	.240**	-.202**	_							
SD3	Machiavellianism	.398**	.329**	-.211**	.595**	_						
	Narcissism	.273**	.613**	-.201**	.369**	.452**	_					
	Psychopathy	.249**	.354**	-.445**	.444**	.475**	.458**	_				
BFI	Extraversion	-.090	.485**	.111*	.010	.034	.411**	.133**	_			
	Agreeableness	-.233**	-.192**	.547**	-.399**	-.411**	-.267**	-.596**	.109*	_		
	Conscientiousness	-.061	.103*	.261**	-.026	-.054	.026	-.192**	.263**	.293**	_	
	Neuroticism	.107*	-.117*	-.091	.059	.008	-.145**	.066	-.248**	-.249**	-.279**	_
	Openness	-.001	.306**	.249**	-.092	-.048	.192**	-.019	.372**	.231**	.278**	-.196**

Note. ** Correlation is significant at the .01 level (2-tailed). * Correlation is significant at the .05 level (2-tailed). RSPQ = Rank Style with Peers Questionnaire; SD3 = Short Dark Triad; BFI = Big Five Inventory; ATCC = attitude towards conspicuous consumption; DL = Dominant Leadership; CB = Coalition Building; RS = Ruthless Self-advancement; Mac = Machiavellianism; Nar = Narcissism; Psy = Psychopathy; E = Extraversion; A = Agreeableness; C = Conscientiousness; N = Neuroticism.

The Structural Equation Model - Path Analysis

The hypothetical structural model was validated using path analysis (maximum likelihood estimation). The proposed model solution (Figure 2) illustrates regression effects between the Big Five, DT, social rank styles and attitude towards conspicuous consumption.

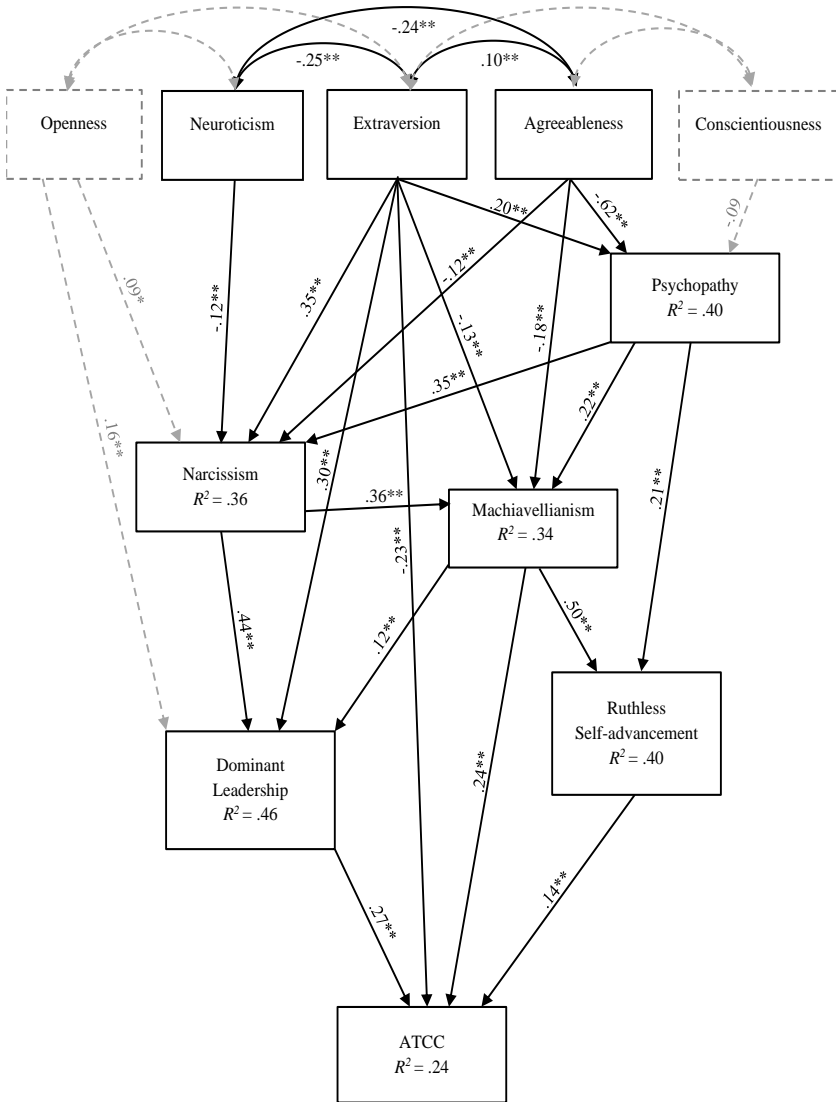


Figure 2. Path analysis solution

Note. Dashed rectangles and lines represent excluded variables and effects. Double arrows represent correlations; Single arrows represent hypothetical causal paths; numbers on causal paths are standardized regression coefficients; * $p < .05$; ** $p < .01$.

The theoretical unrefined model fits well (Table 3), but the contribution of the two variables (Openness and Conscientiousness) is negligible or insignificant.

Table 3. *Unrefined Model Fit Summary*

	χ^2	df	p	χ^2/df	CFI	GFI	RMSEA	SRMR
Model	26.818	21	.177	1.277	.996	.988	0.026	0.023

Note: CFI = comparative fit index, GFI = goodness of fit index, RMSEA = root mean-square error of approximation, SRMR = standardized root mean square

The indices of refined model fitness are listed in Table 4. The Chi-squared value (with a probability higher than .05) points at non-significant discrepancy between the sample and fitted covariance matrices. The Bentler's Comparative Fit Index (CFI) and the Goodness of Fit (GFI) are very close to a perfect fitness of 1. The Root-mean-square error of approximation (RMSEA) and the standardised root mean square (SRMR) were below .05. All these indicators indicate a good fit, suggesting that the proposed model solution corresponds to empirical data.

Table 4. *Refined Model Fit Summary*

	χ^2	df	p	χ^2/df	CFI	GFI	RMSEA	SRMR
Model	21.544	14	.088	1.539	.993	.988	0.037	0.025

Note: CFI = comparative fit index, GFI = goodness of fit index, RMSEA = root mean-square error of approximation, SRMR = standardized root mean square.

All of the standardised indirect effects were statistically significant, according to the bootstrap bias-corrected percentile method. The magnitude of multicollinearity was analysed by considering the size of the Variance inflation factor ($VIF < 2$). VIF was acceptable for all variables in the model.

Two basic personality traits did not meet theoretical expectations. Conscientiousness had no statistically significant effect on Psychopathy and, although statistically significant, Openness had an extremely weak influence on Narcissism and Dominant Leadership. Because of this, Conscientiousness and Openness were considered redundant, and were excluded from the model. In a similar fashion, Coalition Building was absent from the model due to its lack of predictive relationship with ATCC.

In the model, the three basic personality traits were directly associated with respective DT traits, and, through them, with individualistic social rank styles and in sequence with ATCC. Therein, Extraversion was the only basic personality trait directly negatively associated with ATCC, and directly positively associated with a social rank style (Dominant Leadership). Extraversion was positively associated primarily with Narcissism and, to a lesser degree, with Psychopathy, and negatively associated with Machiavellianism. The negative pole of Agreeableness was associated with DT traits, and especially with Psychopathy. Neuroticism (through its negative pole: emotional instability) was directly related only to Narcissism. The combined direct effects of Machiavellianism and Psy-

chopathy led to Ruthless Self-advancement, while the combined direct effects of Narcissism and Machiavellianism led to Dominant Leadership.

DISCUSSION

The model supported our initial assumption that, at least among the young, positive ATCC is associated with an egotistic penchant for reaching and maintaining dominant positions in the social hierarchy. This was evidenced through the validation of a structural model testing the theoretical hierarchy and the joint effect of all selected variables. In the model, ATCC was positively and substantially related to DT traits, Dominant Leadership, and Ruthless Self-advancement. We take this as further evidence of CC being an instrument for the enhancement of one's social status by the use of insincere and pretentious demonstrations. The key implication of our findings is the fact that the proclivity for eye-catching displays of purchasing power is not isolated from the individual differences in the constellation of personality traits contributing to the choice of individualistic social rank styles.

Drawing on an evolutionary framework, we present a path analysis model encompassing personality structure, antagonistic personality traits, and strategies regulating social interactions, and specific consumer attitudes and behaviour. The model separates 'the dark' from 'the bright side' of personality, and posits their relation to interpersonal strategies and, eventually, the ATCC. Our data suggests that approximately a quarter of the ATCC variance is covered by a dark shadow of greed, arrogance, immorality, vanity, and envy. Therefore, our study is in agreement with previous reports indicating that conspicuous consumption is typical of, but by no means limited to, socially toxic personalities (Saad, 2007).

The Big Five traits had direct effects on DT traits (H1), the Big Five and DT traits had indirect and direct effects on social rank styles (H2); and social rank styles had indirect and direct effects on the attitude towards conspicuous consumption (H3). In addition, our model is in compliance with all of the recommended criteria for structural equations modelling (H4).

Path analysis revealed that ATCC was directly affected by Introversion, Machiavellianism, Dominant Leadership, and Ruthless Self-Advancement. DT occupy the central position in the model as they connect the personal traits domain with the personal strategies domain. Additionally, they connect basic personality traits with social rank styles and, eventually, with ATCC. Moreover, Machiavellianism was the only DT trait exerting both a direct and an indirect influence on ATCC, and the only DT trait directly associated with each individualistic social rank style. The Bivariate analysis of our data found no evidence of significant correlation between Extraversion and ATCC, and, quite in line with pre-

vious reports (Lee & Ashton, 2005), no evidence of a significant correlation between Extraversion and Machiavellianism. However, path analysis provided a more complex insight into the data. Extraversion was the only basic personality trait affecting (though in opposite directions) all study variables. Most importantly, Introversion was directly associated with ATCC and Machiavellianism, while Extraversion was linked to Dominant Leadership. Although Narcissism and Psychopathy were merely indirect predictors of ATCC, they (conjoined with Machiavellianism) defined two distinct trajectories leading to ATCC: a) extravert, emotionally unstable, and uncooperative Narcissism steering towards Dominant Leadership; and b) extravert, heartless, and callous Psychopathy steering towards Ruthless Self-advancement. Concurrently, self-absorbed Introversion, fitting quite well into the premediated Machiavellian manner, exerts both a direct and an indirect influence on ATCC (through Machiavellianism's involvement in both individualistic rank styles). Since two basic prosocial personality traits (Conscientiousness and Openness) and one prosocial rank style (Coalition Building) were conspicuously absent from the model, we conclude that our present perspective stresses the self-centred, uncooperative side of ATCC. However, it is worth noting that the predictive power of Psychopathy, the central DT trait (Dinić, Wertag, Tomašević & Sokolovska, 2020), was overshadowed by Machiavellianism and Narcissism. As an agentic dimension is present in both Machiavellianism and Narcissism, but not in Psychopathy (Vize, Lynam, Collison, & Miller, 2018), this finding favours the agentic over the antagonistic side of conspicuous consumption.

A structural model connecting the personal traits domain, the personal strategies domain, and ATCC has not been reported so far. However, our data is in line with previous reports indicating that conspicuous consumption is habitually a visible ingredient of an exploitative and opportunistic interpersonal strategy marked by materialism (Velov, Gojković & Đurić, 2014), a high esteem of power, Machiavellianism, Leadership, and Ruthless Self-advancement (Mitić, Petrović & Đurić, 2018). Thus, the present study partially replicates and extends our findings on the psychological antecedents of ATCC.

The predictive relationship between Narcissism and ATCC reported here deserves additional commentary, since narcissistic apprehension about the importance of public appearances makes narcissists highly susceptible to the purchase of luxury goods (Fastoso, Bartikowski, & Wang, 2018). However, in an earlier study (Velov, Gojković & Đurić, 2014), there was no evidence of a statistically significant correlation between ATCC and Narcissism, as evaluated through the Narcissistic Personality Inventory (NPI-40; Raskin & Terry, 1988). Recently, a study (Neave, Tzemou, & Fastoso, 2020) using an abbreviated version of NPI-40 (NPI-16; Ames, Rose, & Anderson, 2006) and a different measure for the pro-

clivity for conspicuous consumption (Roy Chaudhuri, Mazumdar & Ghoshal, 2011) reported a positive association between the two constructs. Thus, it seems that the confirmation of the expected predictive relationship between Narcissism and conspicuous consumption is affected by the methodology used.

This study suffers from a number of limitations. We relied on the self-reports of an *ad hoc* sample of Serbian university students, and on an unstandardized translation of RSPQ. In an attempt to control for socially desirable responses, we studied ATCC, which is only an implied expression of actual conspicuous consumption. As attitudes are only predictive of actual behaviour (Ajzen & Cote, 2008), positive ATCC is only an indirect indication of truly existing behaviour. The direct measurement of conspicuous consumption is hindered by the fact that it is often publicly declared as frivolous and objectionable (O’Cass & McEwen, 2004; Eastman & Eastman, 2011). In this study, ATCC was inspected only with respect to brand name clothes, a manifestation of conspicuous consumption that was readily recognisable to our adolescent participants. Therefore, our findings cannot be generalised to other forms of conspicuous consumption and to other age groups without qualification. While apparel is a universally practiced channel of social communication, it may well be that ‘norm of dress’ (Veblen, 2005/1899) has quite exceptional ways of projecting status among the young. Another key limitation of this study lies in the fact that our data failed to replicate the expected predictive relationships between BFI traits (Conscientiousness and Openness) with respective DT (Psychopathy and Narcissism) and RSPQ (Dominant Leadership) traits. This deficiency may point at some other unspecified inadequacies of our sample and/or our procedure.

CONCLUSIONS

Literature abounds with evidence on the fact that manifold manifestations of conspicuous consumption are widely distributed across situations, cultures and historical periods. However, there are not many studies on the psychological underpinnings predisposing individuals to this form of status-bearing signalling. Drawing on our previous research, the present study places the propensity for conspicuous consumption within a broad theoretical framework consisting of relevant basic personality traits, specific malevolent personality traits, and the modalities of social competition among the young. Thus, it provides a more nuanced perspective on what is commonly believed to be a ubiquitous behavioural bias. Providing evidence for personality-based individual differences in the ATCC expands the opportunities for future studies investigating the connection between other known psychological correlates of DT and individualistic social rank styles, and the motivation for excessive spending

on functionally dubious items. For instance, it would be interesting to empirically test the expected differential association between ATCC and the affective resonance vs. affective dissonance, and the bright vs. dark side of narcissism dichotomies.

REFERENCES

- Ackerman, R. A., Donnellan, M. B., Roberts, B. W., & Fraley, R. C. (2016). The effect of response format on the psychometric properties of the Narcissistic Personality Inventory: Consequences for item meaning and factor structure. *Assessment, 23*(2), 203-220. <https://doi.org/10.1177%2F1073191114568113>
- Ackerman, R. A., Witt, E. A., Donnellan, M. B., Trzesniewski, K. H., Robins, R. W., & Kashy, D. A. (2011). What does the narcissistic personality inventory really measure? *Assessment, 18*(1), 67-87. <https://doi.org/10.1177/1073191110382845>
- Ajzen, I., & Cote, N. G. (2008). *Attitudes and the prediction of behavior*. In W. D. Crano & R. Prislin (Eds.), *Frontiers of social psychology. Attitudes and attitude change* (289-311). New York, NY: Psychology Press.
- Ames, D. R., Rose, P., & Anderson, C. P. (2006). The NPI-16 as a short measure of narcissism. *Journal of Research in Personality, 40*(4), 440-450. <https://doi.org/10.1016/j.jrp.2005.03.002>
- Berger, J. (2017). Are luxury brand labels and “green” labels costly signals of social status? An extended replication. *PLoS ONE, 12*(2), e0170216. <https://doi.org/10.1371/journal.pone.0170216>
- Bliege Bird, R., & Smith, E. A. (2005). Signaling theory, strategic interaction, and symbolic capital. *Current Anthropology, 46*(2), 221-248. <https://doi.org/10.1086/427115>
- Bradlee, P. M., & Emmons, R. A. (1992). Locating narcissism within the interpersonal circumplex and the five-factor model. *Personality and Individual Differences, 13*(7), 821-830. [https://doi.org/10.1016/0191-8869\(92\)90056-U](https://doi.org/10.1016/0191-8869(92)90056-U)
- De Fraja, G. (2009). The origin of utility: Sexual selection and conspicuous consumption. *Journal of Economic Behavior & Organization, 72*(1), 51-69. <https://doi.org/10.1016/j.jebo.2009.05.019>
- Dinić, B. M., Petrović, B., & Jonason, P. K. (2018). Serbian adaptations of the Dark Triad Dirty Dozen (DTDD) and Short Dark Triad (SD3). *Personality and Individual Differences, 134*, 321-328. <https://doi.org/10.1016/j.paid.2018.06.018>
- Dinić, B. M., Wertag, A., Tomašević, A., & Sokolovska, V. (2020). Centrality and redundancy of the Dark Tetrad traits. *Personality and Individual Differences, 155*, 109621. <https://doi.org/10.1016/j.paid.2019.109621>
- Eastman, J. K., & Eastman, K. L. (2011). Perceptions Of Status Consumption And The Economy. *Journal of Business & Economics Research (JBBER), 9*(7), 9-20. <https://doi.org/10.19030/jber.v9i7.4677>
- Fastoso, F., Bartikowski, B., & Wang, S. (2018). The “little emperor” and the luxury brand: How overt and covert narcissism affect brand loyalty and proneness to buy counterfeit. *Psychology & Marketing, 35*(7), 522-532. <https://doi.org/10.1002/mar.21103>
- Gilbert, P. (2016). *Human nature and suffering*. London, United Kingdom: Routledge, Taylor & Francis Ltd.
- Griskevicius, V., Tybur, J. M., Sundie, J. M., Cialdini, R. B., Miller, G. F., & Kenrick, D. T. (2007). Blatant benevolence and conspicuous consumption: When romantic motives elicit strategic costly signals. *Journal of Personality and Social Psychology, 93*, 85-102. <https://doi.org/10.1037/0022-3514.93.1.85>
- Hart, W., Tortoriello, G. K., Richardson, K., & Breeden, C. J. (2020). Substantive vs. superficial self-enhancement: Differentiating narcissism constructs from self-

- esteem following failure. *Personality and Individual Differences*, 152, <https://doi.org/10.1016/j.paid.2019.109560>
- Hennighausen, C., Hudders, L., Lange, B. P., & Fink, H. (2016). What if the rival drives a Porsche? Luxury car spending as a costly signal in male intrasexual competition. *Evolutionary Psychology*, 14(4), 1-13. <https://doi.org/10.1177/1474704916678217>
- Hinz, O., Spann, M., & Hann, I. H. (2015). Research note—can't buy me love... or can I? Social capital attainment through conspicuous consumption in virtual environments. *Information Systems Research*, 26(4), 859-870. <http://dx.doi.org/10.1287/isre.2015.059>
- Jones, D. N., & Paulhus, D. L. (2017). Duplicity among the dark triad: Three faces of deceit. *Journal of Personality and Social Psychology*, 113(2), 329-342. <https://doi.org/10.1037/pspp0000139>
- Lee, K., & Ashton, M. C. (2005). Psychopathy, Machiavellianism, and narcissism in the Five-Factor Model and the HEXACO model of personality structure. *Personality and Individual Differences*, 38(7), 1571-1582. <https://doi.org/10.1016/j.paid.2004.09.016>
- Lens, I., Driesmans, K., Pandelaere, M., & Janssens, K. (2012). Would male conspicuous consumption capture the female eye? Menstrual cycle effects on women's attention to status products. *Journal of Experimental Social Psychology*, 48(1), 346-349. <https://doi.org/10.1016/j.jesp.2011.06.004>
- McAndrew, F.T. (2019). *Costly Signaling Theory*. In: Shackelford T., Weekes-Shackelford V. (Eds.), *Encyclopedia of Evolutionary Psychological Science (1-8)*. Springer, Cham. https://doi.org/10.1007/978-3-319-16999-6_3483-1
- McCrae, R. R., Costa, P. T. (1996). Toward a new generation of personality theories: Theoretical contexts for the Five-Factor Model. In J. S., Wiggins (Ed.), *The Five-Factor Model of personality: Theoretical perspectives (51-87)*. New York, NY: Guilford Press.
- McCrae, R. R., & Costa, P. T., Jr. (2013). Introduction to the empirical and theoretical status of the five-factor model of personality traits. In T. Widiger & P. T. Costa Jr. (Eds.), *Personality disorders and the five-factor model of personality. 3rd ed.* (15-27). Washington, DC: American Psychological Association. <https://doi.org/10.1037/13939-002>
- Mitić, A., Petrović, I., & Đurić, V. (2018). Social rank styles, Machiavellianism and the attitude toward conspicuous consumption. *Primenjena psihologija*, 11(2), 207-225. <https://doi.org/10.19090/pp.2018.2.207-225>
- Neave, L., Tzemou, E., & Fastoso, F. (2020) Seeking attention versus seeking approval: How conspicuous consumption differs between grandiose and vulnerable narcissists. *Psychology & Marketing*. <https://doi.org/10.1002/mar.21308>
- Nelissen, R. M. A., & Meijers, M. H. C. (2011). Social benefits of luxury brands as costly signals of wealth and status. *Evolution and Human Behavior*, 32, 343-355. <https://doi.org/10.1016/j.evolhumbehav.2010.12.002>
- O'Cass, A., & McEwen, H. (2004). Exploring consumer status and conspicuous consumption. *Journal of Consumer Behaviour*, 4, 25-39. <https://doi.org/10.1002/cb.155>
- O'Boyle, E. H., Forsyth, D. R., Banks, G. C., Story, P. A., & White, C. D. (2015). A meta-analytic test of redundancy and relative importance of the dark triad and five-factor model of personality. *Journal of Personality*, 83(6), 644-664. <https://doi.org/10.1111/jopy.12126>
- Paulhus, D. L. (2014). Toward a taxonomy of dark personalities. *Current Directions in Psychological Science*, 23(6), 421-426. <https://doi.org/10.1177/0963721414547737>
- Paulhus, D. L. & Williams, K. M. (2002). The Dark Triad of personality: narcissism, Machiavellianism, and psychopathy. *Journal of Research in Personality*, 36(6), 556-563. [https://doi.org/10.1016/S0092-6566\(02\)00505-6](https://doi.org/10.1016/S0092-6566(02)00505-6).

- Qiu, Q., Wang, Y., Richard, J., & Wang, X. (2017). The Impact of Country of Brand Image on Symbolic Value of Luxury Brands. *Asian Journal of Business Research*, 7(1), 94-122. <https://doi.org/10.14707/ajbr.170033>
- Reidy, D. E., Zeichner, A., Foster, J. D., & Martinez, M. A. (2008). Effects of narcissistic entitlement and exploitativeness on human physical aggression. *Personality and Individual Differences*, 44(4), 865-875. <https://doi.org/10.1016/j.paid.2007.10.015>
- Roy Chaudhuri, H., Mazumdar, S., & Ghoshal, A. (2011). Conspicuous consumption orientation: Conceptualization, scale development and validation. *Journal of Consumer Behaviour*, 10(4), 216-224. <https://doi.org/10.1002/cb.364>
- Rucker, D. D., & Galinsky, A. D. (2008). Desire to acquire: Powerlessness and compensatory consumption. *Journal of Consumer Research*, 35(2), 257-267. <https://doi.org/10.1086/588569>
- Saad, G. (2007). *The evolutionary bases of consumption*. Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Sedikides, C., Gregg, A. P., Cisek, S., & Hart, C. M. (2007). The I that buys: Narcissists as consumers. *Journal of Consumer Psychology*, 17(4), 254-257. [https://doi.org/10.1016/S1057-7408\(07\)70035-9](https://doi.org/10.1016/S1057-7408(07)70035-9)
- Smederevac, S., Mitrović, D. i Čolović, P. (2007). The structure of the lexical personality descriptors in Serbian language. *Psihologija*, 40, 485-508. <https://doi.org/10.2298/PSI0704485S>
- Sundie, J. M., Kenrick, D. T., Griskevicius, V., Tybur, J. M., Vohs, K. D., & Beal, D. J. (2011). Peacocks, Porsches, and Thorstein Veblen: Conspicuous consumption as a sexual signaling system. *Journal of Personality and Social Psychology*, 100(4), 664-680. <https://doi.org/10.1037/a0021669>
- Vasilyev, A. V., Kovalchuk, V. K., Korkiya, E. D., & Mamedov, A. K. (2017). Conspicuous consumption as an attribute of sociocultural decadence in Russia. *Man in India*, 97(10), 399-414.
- Veblen, T. (2005). *Conspicuous consumption* (Vol. 38). Penguin Books. UK.
- Velov, B., Gojković, V., & Đurić, V. (2014). Materialism, narcissism and the attitude towards conspicuous consumption. *Psihologija*, 47(1), 113-129. <https://doi.org/10.2298/PSI1401113V>
- Vize, C. E., Collison, K. L., Crowe, M. L., Campbell, W. K., Miller, J. D., & Lynam, D. R. (2019). Using dominance analysis to decompose narcissism and its relation to aggression and externalizing outcomes. *Assessment*, 26(2), 260-270. <https://doi.org/10.1177/1073191116685811>
- Vize, C. E., Lynam, D. R., Collison, K. L., & Miller, J. D. (2018). Differences among dark triad components: A meta-analytic investigation. *Personality disorders: Theory, research, and treatment*, 9(2), 101-111. <https://doi.org/10.1037/per0000222>
- Wai, M., & Tiliopoulos, N. (2012). The affective and cognitive empathic nature of the dark triad of personality. *Personality and Individual Differences*, 52(7), 794-799. <https://doi.org/10.1016/j.paid.2012.01.008>
- Wang, Y., & Griskevicius, V. (2014). Conspicuous consumption, relationships, and rivals: Women's luxury products as signals to other women. *Journal of Consumer Research*, 40(5), 834-854. <https://doi.org/10.1086/673256>
- Zeigler-Hill, V., Vrabel, J. K., McCabe, G. A., Cosby, C. A., Traeder, C. K., Hobbs, K. A., & Southard, A. C. (2019). Narcissism and the pursuit of status. *Journal of Personality*, 87(2), 310-327. <https://doi.org/10.1111/jopy.12392>
- Zuroff, D. C., Fournier, M. A., Patall, E. A., & Leybman, M. J. (2010). Steps toward an evolutionary personality psychology: Individual differences in the social rank domain. *Canadian Psychology/Psychologie Canadienne*, 51(1), 58. <https://doi.org/10.1037/a0018472>

АВЕРЗИВНЕ ОСОБИНЕ ЛИЧНОСТИ И ИНДИВИДУАЛИСТИЧКИ СТИЛОВИ ДРУШТВЕНОГ ПОЗИЦИОНИРАЊА КАО ПРЕДИКТОРИ ПОЗИТИВНОГ СТАВА ПРЕМА УПАДЉИВОЈ ПОТРОШЊИ

Ања Митић¹, Вељко Ђурић¹, Ивана Петровић²

¹Универзитет Унион, Факултет за правне и пословне студије др Лазар Вркатаић,
Нови Сад, Србија

²Универзитет у Београду, Филозофски факултет, Београд, Србија

Резиме

Симболичка вредност робе коју купујемо је вековима ишла „руку под руку“ са њеном функционалном вредношћу. То је посебно уочљиво код таштих драгулија – скупоцености које имају за циљ да изазову дивљење и завист других. Њихова функционална вредност је занемарљива у односу на оно што невербално комуницирају, што даље производи друштвено одмеравање, такмичење и класно позиционирање. Како је упадљива потрошња еволутивно адаптивна карактеристика (присутна код многих животиња, посебно као репродуктивна стратегија), поставља се питање да ли она код људи представља просоцијалну или аверзивну карактеристику. У складу са тим, желели смо да испитамо које базичне особине личности учествују у интерперсоналним стратегијама које фаворизују упадљиву потрошњу као средство самопромоције.

У складу са претпоставкама утицајних истраживача из ове области, креиран је теоријски модел који је затим емпиријски проверен на узорку од 400 испитаника. Коришћена је анализа пута, те је моделирањем структуралним једначинама рачунат предиктиван утицај особина и стилова. На овај начин је проверена и смисленост хијерархијског устројства ових варијабли. У складу са претпоставкама, базичне особине личности су предвиђале димензије Мрачне тријаде, а оне су предвиђале стилове социјалног позиционирања и став према упадљивој потрошњи. Међу значајним предикторима се издвајају неуротицизам, екстраверзија и непријатност (од Великих пет), све три димензије Мрачне тријаде (нарцизам, макијавелизам, психопатија), као и два стила позиционирања – компетитивни и индивидуалистички. На овај начин је објашњено 24% варијансе упадљиве потрошње. Ниједна просоцијална карактеристика се није показала статистички значајним предиктором у овом моделу. Подобност модела је тестирана релевантним статистичким показатељима, те испуњава све критеријуме одличног теоријског и емпиријског поклапања.

Уз сва истраживачка ограничења и недостатке, рад пружа нов и занимљив поглед на упадљиву потрошњу и њено устројство у савременом друштву. Истраживања која претходе овом раду допринела су његовој ширини у одабору варијабли, његовом методолошком асортиману, као и логичном следу закључака. Сва је прилика да раскош, брендирана одећа, скупи аутомобили и други јавни показатељи богатства имају своје еволутивно упориште. Но, нису све еволутивно развијене стратегије просоцијалног типа, а упадљива потрошња то засигурно није. Она је оружје манипулативних стратегија обмане оних који теже друштвеној моћи, не бирајући за то средства и жртве, те плашт несигурних, рањивих и покорних конформиста, као и завидних, насилних нарциса и макијавелиста.

GATED COMMUNITIES AS A SYMBOL OF INEQUALITY

Snežana Đorđević*

University of Belgrade, Faculty for Political Sciences, Belgrade, Serbia

Abstract

This article takes the concept of gated communities to represent a special form of securitised housing, developed in the United States in the 20th century and popularised around the world in later years, and examines it as such. The neo-liberal society is an especially fertile ground for the development of this concept due to the unequal distribution of wealth, growing social stratification, poverty and segregation. Often, the surrounding roads are privatised and access to public areas is restricted for the purposes of these settlements, which leaves entire complexes within cities inaccessible to the majority of citizens. All these processes are in conflict with the democratic concept of the open city and the model of mixed housing, nurtured in the welfare state. The segregation of citizens, and their marginalisation and displacement (gentrification), along with the endangerment and privatisation of public spaces significantly reduce the democratic capacity of urban communities. The main concern of this research is the examination of the reasons which contribute to the expansion of gated communities, and the effects they have on the spirit of the urban community (alienation) and the democratic capacities of cities. The aim of the paper is to examine the notion of gated communities on a sample of cities in the Anglosphere (USA, Canada, New Zealand), and to analyse their specific effects. The analysis of the existing research and case studies concerning gated communities in the world often consists of the use of statistical methods, regulatory change analyses, and the interviews and surveys of tenants, managers, politicians and officials. The comparative method, used in this paper, focuses on the similarities and differences of gated communities in different countries, which enabled us to draw conclusions on better housing and urban development policies (synthesis).

Key words: gated communities, public spaces, social segregation and poverty, privatisation, gentrification

* Corresponding author: Snežana Đorđević, University of Belgrade, Faculty of Political Sciences, 165 Jove Ilića Street, sneska152@gmail.com

ОГРАЂЕНА НАСЕЉА КАО СИМБОЛ НЕЈЕДНАКОСТИ

Апстракт

Овај чланак се бави концептом ограђених насеља, која представљају посебну форму безбедног становања која се развила у САД у 20. веку, а затим проширила светом. Услед неједнаке расподеле богатства, растућег друштвеног подвајања (стратификације), сиромаштва и сегрегације, неолиберално друштво представља посебно плодно тле за развој овог концепта. За потребе насеља овог типа се често приватизују околне саобраћајнице и приступи јавним површинама, чиме читави комплекси у граду постају недоступни већини грађана. Сви ови процеси су у супротности са демократским концептом отвореног града и моделом мешовитог становања негованог у држави благостања. Сегрегација грађана, њихова маргинализација и расељавање (центрификација), као и угрожавање и приватизација јавних простора значајно умањују демократски капацитет урбаних заједница. Главна истраживачка питања тичу се идентификације разлога који доприносе ширењу затворених насеља и анализе њиховог утицаја на дух урбане заједнице (отуђење) и на демократске капацитете града. Циљ рада је да представи ограђена насеља на узорку градова англосфере (САД, Канада, Нови Зеланд) и да анализира специфичне ефекте овог вида становања. Анализа постојећих истраживања и студија случаја ограђених насеља у свету се често ослања на статистичке методе и анализе регулаторних промена, те интервјуе и анкете станара, менаџера, политичара и званичника. Упоредни метод, коришћен у овом раду, фокусира се на сличности и разлике затворених насеља у различитим земљама и омогућава доношење закључака о могућој, оптималној политици становања и урбаног развоја (синтеза).

Кључне речи: ограђена насеља, јавни простори, друштвена сегрегација и сиромаштво, приватизација, центрификација

INTRODUCTION

The Notion of Fenced Housing and Issues for Debate

Gated communities developed in the United States during the 1970s as residential settlements for the rich, characterised by fences, gates, guards and cameras. During the 21st century, this concept of securitised architecture and urbanism expanded to many countries (Bagaen & Uduku, 2010, p. 2). It has great consequences for the spirit of the city, and its social and democratic development.

Debate

Cities within the neoliberal, capitalist society emphasise that citizens are free to choose to live in gated communities that offer the services of monitoring, and control and protection of residential buildings and settlements, as well as many other services (gyms, recreation facilities, shopping malls, cafes, restaurants and places to meet and relax, etc.), all of which incur additional costs. In relation to this, spatial planners and managers take this type of need very seriously, and securitised architec-

ture and urbanism are becoming an important part of spatial planning (Bagaen & Uduku, 2010, p. 2).

Spatial separation indirectly means that 'other' areas and their inhabitants are unacceptable, and that they are a source of insecurity and crime. Many authors are advocates of a social democratic concept of society based on the principle of equality among all people, and on efforts to combat poverty, because excessive social differences undermine the chance for democracy. Fencing, they point out, encourages the separation of people and reduces the chance of people meeting, getting to know each other, socialising and creating a real community. Therefore, this very controversial concept should not be taken as a recipe for quality urbanism (Glatze, Webster & Frantz, 2006, Smith, 1996, Smith & Williams, 2007).

On the other hand, many authors do not problematize the social environment, but emphasise the good sides of these settlements (their usefulness for tenants) and affirm this concept of housing, relying on a long tradition of fenced buildings in the history of urbanism. They start with the ambience of medieval European societies and cities with fortified castles, high walls, and often a canal that can only be crossed via a suspension bridge¹. The authors point out the rich tradition of fenced settlements from other cultures and from all continents (Latin America, Asia, Africa, and Australia). For example, cities in the Middle East have a long tradition and urban culture of separating rich people into houses and castles surrounded by walls and tall vegetation. More recently, separate settlements were built for foreigners (workers from Western countries) (Bagaen & Uduku, 2010, pp. 3-4; Bagaen, 2010, p. 15-27).

In that sense, these authors see gated communities as a continuation of that tradition, and it is natural for them that this housing concept is very popular and eagerly accepted around the world. They do not connect securitised architecture with the social environment of insecurity, violence, social inequality and injustice, which a democratic society should aim to change.

Instead, they find the basis of the popularity of this concept *in human nature and needs*. On the basis of their empirical analyses, they conclude that there are two bases for the emergence of these settlements: (1) a fear of crime, and the need to protect family, apartment and privacy; and (2) the need for people to boast of their wealth, higher social status, spatial separation, and obvious ability to pay for this type of service (snobbery, belonging to a closed club of the rich and powerful) (Bagaen & Uduku, 2010, p. 6).

¹ Another example, which this group of authors does not mention, are the ghettos in some medieval cities, which separated the Jews, their inhabitants, from other citizens. These ghettos were locked at night.

This second group of needs is rarely analysed - it is assumed to be natural, and the focus of the analysis is placed on the relationships between the people living in the analysed gated community. This research indicates that these relationships depend a lot on the nature of the inhabitants (friendliness), on their profession and the amount of free time at their disposal, and on designing a space for socialising in the community. However, this group of authors does not raise the question of the extent to which gated communities separate tenants from other citizens, or the question of whether this separation harms them as social and political beings. Both dimensions are very important. As for social issues, it seems that the tenants do not need 'wider' socialisation. On the contrary, there is a need to separate oneself from risky social groups, which are poorer and less 'happy' than them. In terms of the political dimension, this social group is characterised by a privileged position, good social networking, and good influence on political centres, which they use to protect their interests. 'Other' citizens, as empirically proven, lose power, importance and influence in society (marginalisation, displacement, repression). Gated communities are a symbol of the neoliberal society, with great class and social differences, in which there is very little room for democracy.

COMPARATIVE STUDY

USA – Los Angeles

American cities have an interesting past of gated communities, encouraged by *functional zoning* in spatial planning, wherein parts of the city are separated for business and trade (centre), industry (specific locations), and housing and recreation (the suburbs, on the outskirts of the city, surrounded by greenery). The homogeneity and stability of the community were preserved by regulations which introduced a number of restrictions regarding the potential tenants' wealth, skin colour, and other characteristics (*social zoning*). That was a good basis for establishing gated communities over time. From the very beginning, a private type of managing these settlements was developed, marked as common interest developments (CID). The Property Owner Association (POA) was established as the main governing body of the settlement (Bagaean & Uduku, 2010, pp. 95,101, McKenzie E. 2006).

This process is best explained on the example of a specific city. Los Angeles had about 1,700 fenced buildings and settlements in the early 1960s. In the decade following the execution of this research, the city will have almost 20,000 gated buildings and settlements. Among the first gated communities established in Los Angeles are Rolling Hills (1935) and Bradbury (1938), followed by Seal Beach (1946) and Hidden Hills (1950). This practice was especially developed in Orange, San Bernardi-

no and Riverside counties (Bagaen & Uduku, 2010, pp. 97-98). The following figure shows some of these elite, residential settlements.



Figure 1. 1a. Hidden Hills; 1b. Riverside;
and 1c. Bradbury gated communities

Sources: https://www.realtor.com/realestateandhomes-search/Hidden-Hills_CA;
<https://www.castorage.com/blog/the-pros-and-cons-of-riverside-ca/>;
<https://homesoftherich.net/2010/09/mansions-galore-in-bradbury-ca/>

The main reasons for fencing were cited to be security and the preservation of the value of the entire residential settlement (buildings, green space, fountain, etc.), as well as the value of real estate. (Caldeira T.P.R. 2000, Low S. 2003) The cost of *expanding the city*² is passed onto property owners (often an association of owners exists), and to development managers (developers). The residents of gated communities are, in fact, doubly taxed – in addition to paying regular taxes (to the city), they pay for the maintenance of the settlement (surveillance system supervision, cleaning, maintenance etc.).

The development manager is in charge of buying land, arranging it, and negotiating with the city officials about the standard of arrangement and construction. The manager signs a contract with the best bidders - architects who need to build houses and facilities and, finally, promotes this product (the new settlement and apartments) on the market with the aim of selling it at the highest possible price (Bagaen & Uduku, 2010, p. 101).

The city demands that these settlements meet all urban and architectural standards. Besides standards concerning the type of buildings and the quality of infrastructure (water supply, sewerage, heating, electricity, IT), there are often requirements for landscaping (Bagaen & Uduku,

² American cities have traditionally been family house oriented, and have therefore expanded rapidly through urbanisation. The construction of new settlements is expensive because it requires large investments in infrastructure, so the question of who is in charge of financing it always arises. The expansion of cities has become a problem around the world, especially due to the large influx of inhabitants, with wild settlements emerging on the borders of cities without the construction of the necessary infrastructure. In American cities, the structure of settlements is changing. Increasingly, apartments (high-rise buildings or large complexes of buildings) are more sought after than houses, and this shift is known as densification and the intensification of urban functions (urban space provides many services).

2010, p. 99). Besides regular taxes, the city often creates *hook-up fees* for special services made available to the settlement. Therefore, managers create a flexible design for the settlement to reduce the financial burden that public planning imposes on them.

These private settlements are very useful for the city – in addition to paying high taxes which increase the city's budget, they ensure the security of property not only within the settlement in question but also in neighbouring settlements.

These settlements often receive privileges. A good example is Los Angeles city investing 13% of its budget in the gated part of the Calabasas area - the western part of the city. The investment concerned landscaping, and the creation of a public golf club as a centre for rest and relaxation (Bagaean & Uduku, 2010, p. 99, Le Goix, 2010, p. 102). There is a long list of such projects, and gated communities are considered to be permanent rent seekers. These activities further deepen unequal distribution.

The prevailing problems of small investments in public housing (privatisation), the reduction of the social housing fund and its poor maintenance, and a lack of limit on rents (regulations insensitive to the position of the poor) contribute to the reduced availability of housing for the poor. This increases the number of poor settlements and homeless people. The consequences of unequal distribution and growing social inequalities are physically visible in American society and its cities. To get a clearer picture, we have to take into consideration the numerous ghettos in all American cities, and the criminalisation of homelessness (Giuliani's policy of zero tolerance to crime), wherein homeless people are forbidden to sit or sleep on the streets or in parks, and are often imprisoned instead of being provided with accommodations. Even their freedom, as a basic human right, is endangered (Reese, Daverteuil, & Thach, 2010. p. 319). An increase in crime rates, in turn, increases insecurity in the community, and further encourages fencing (Webster, 2002; Glasze, Webster, & Frantz, 2006).

The spatial increase of gated communities spontaneously led to the closure of some streets connecting them with public spaces (parks or shores of lakes, rivers, oceans). On that basis, 'ordinary' citizens' access to these public areas was severely restricted or entirely cut off. For example, the Rincon Point gated community (in Los Angeles), located along the Pacific coast, privatised and closed streets which lead to the coast. In order to alleviate this injustice (because regulations require all citizens to have access to the coast), three parking lots were constructed to enable citizens to enter *a very limited area of the coast* (protecting the privacy of the residents) in five places (Bagaean & Uduku, 2010, pp. 101-103).

Another example is the failed idea of the Capistrano Unified School District³ of Los Angeles, which wanted to build a new primary school in the gated settlement of Coto De Caza in order to reduce its expenses (Figure 2). In addition to the children from this settlement, other children would go to that school. Students, their parents, teachers and other school staff who live in other settlements, would receive *special passes* that would be valid during working hours⁴. The inhabitants of the settlement (1700 of them) were very dissatisfied with this project, and 84% of them refused it in the referendum. It is interesting to note that the parents of potential students from other settlements were also not in favour of the idea, because they did not like the regime of limited access to the fenced school (Nguyen, 1999; Le Goix, 2010, p. 102).



Figure 2. 2.a and 2.b. Coto de Caza gated community

Sources: <https://tours.previewfirst.com/pw/62381>; <https://realestatebyrana.com/coto-de-caza-realtor-rana-zand/>

The location and settlement management model. When gated, private settlements are established outside of cities, counties are in charge of their regulation. The Property Owner Association (POA) pays for all services. However, some of the services, such as water supply, sewerage, fire-fighting and some specific police services severely increase costs, and these settlements try to incorporate themselves into a part of the city that suits them. Namely, due to their wealth, one of the biggest fears of these communities is that they will be annexed⁵ by poor city municipali-

³ In the USA, primary and secondary schools are run by special government units – school districts. They are in charge of founding schools, hiring teachers and staff, financing, implementing programmes, enrolling children, and controlling the quality of work;

⁴ Such passes already exist in some other schools of this school district.

⁵ Annexation is the process of annexing one part of the city to another, and it is realised by the city. In the USA, there is a great sensitivity to these issues due to the culture of individualism and the underdeveloped culture of solidarity with the poor, which is a trademark of social democratic societies and values. In the past, the practice of annexation caused long, exhausting legal battles, especially on the eastern coast (old cities), with the

ties, which would benefit from their funds. Nowadays, both the district and the city *enable the self-initiative incorporation* of these settlements into the part of the city that suits them, allowing the gated settlement to have access to all public services at regular prices. The settlement is given the status of an independent local government unit, with the PAO as the main authority. Many of these settlements are called *minimum states*, and their establishment can be seen as a form of sustainable public-private partnership (PPP) that contributes to taxes, security and the increase of real estate value throughout the city (Bagaeen & Uduku, 2010, pp. 107-108; Le Goix 2010, p. 99).

In short, gated settlements are oases for the rich which separate them from the rest of the urban community, inaccessible to other residents of the city. These settlements are the embodiment of the notion of an ‘escape from misery and poverty’, and are a symbol of the collapse of democratic communities.

Canada - Toronto

Canada was a developed welfare state, but since the 1980s, it has gradually begun to abandon social democratic values due to globalisation. Now, this society is neoliberal, with a post-Fordist economy. Additionally, serious changes are taking place in the field of spatial planning, construction, and housing. Numerous authors have researched the effects of globalisation and the globalised economy on models of government organisation and management (entrepreneurial government, deregulation, privatisation, new public management). Moreover, numerous studies analyse the effects of these processes on urban design, construction, and housing models which are more attuned to the needs of neoliberal society. (McKenzie, 2005) There are numerous case studies of gentrification, as the notion of moving poor people from neglected settlements to periphery locations. This attractive resettled urban space is used for the development of business, tourism, trade and housing built primarily for wealthier citizens (August, 2008, Epstein, 2017).

Canada has a permanent influx of immigrants. In the past twenty years, people migrating to Canada have been quite wealthy, very well educated and with very well paid jobs. The policies of city officials must take care of their specific life style, including their housing demands.

The classic, North American model of the city, according to which one works in the centre and lives in the suburbs, is becoming obsolete in many respects. The younger population finds commuting⁶ to be a waste

rich part of the city aiming to keep its independence despite the city's efforts to provide all parts of the city with a package of minimal public services.

⁶ Commuting is a long daily drive from home to work, and back home.

of time and energy, so young people look for apartments in the centre of the city, close to work and all the important institutions they need (markets, shopping malls, galleries, theatres, libraries, parks, recreational spaces). This population significantly reduces the number of cars used, promoting efficient public transport (metro in big cities), walking, and cycling. A number of construction companies point out that they are building on the routes of metro stations (within a distance of 90 meters), while others take into consideration more diverse factors, choosing to build on plots on the coasts of lakes and the sea, or near metro stations, shopping malls and parks (Rosen & Walks, 2015, p. 164).

Strong competition in the field of well-paid jobs often requires people to be fully committed, without a limited working day (constant availability of employees to the employer). Thus, the phenomenon of *workaholism* is developed, leaving people little room for a private life, a family, and especially children. Therefore, tenants from this rather large group are ‘*empty nesters*’ - singles, people with a partner, or couples with only one child. In this context, large houses become an unnecessary luxury.

In the process of adapting to these needs, Canadian cities accept the principles of *dense housing* and *urban intensification* in spatial planning, offering apartments (condos) in tall buildings or building complexes in gated communities (Rosen & Walks, 2015, pp. 154-156). At the same time, a condo represents a luxuriously equipped housing unit within a luxury housing complex (vertical and horizontal division, depending on the type of building), and implies a *private management model*. Tenants have the opportunity to choose a model of protection. In high-rise buildings, cards allow tenants to take the elevator only to the floor their apartment is located on, and to some floors where various common services are located. Not infrequently, these complexes contain spaces for washing and drying clothes, swimming pools, recreation centres, libraries, restaurants, or halls and spaces for various other needs (celebrations, events, meetings, etc.).

The transition from the concept of welfare state housing to the concepts of the neoliberal society. In order to more clearly see the great changes in the way of living in Canadian cities, it should be noted that the welfare city had a spatial planning model defined through *functional zoning* – production in *industrial zones*, business, trade and cultural institutions in the city’s *centre*, and residential zones on the outskirts of the city, with green spaces, recreational facilities, and cultural and educational institutions in accordance with the wealth of the community. *Social zoning* was a consequence of this model. Richer people lived in luxurious settlements, the middle class lived in standard quality settlements, while the poor lived in more modest settlements and buildings. However, for the majority of the Canadian population, the *mix housing* model was dominant. Unlike American cities in which ghettos existed, Canadian cities did

not allow this kind of segregation. There were some settlements based on grouping the population by ethnicity (Italian, Chinese or Latin Quarter) or profession (art quarters, IT experts, scientists and researchers in university campuses), but these groupings enriched the city with diversity and in no way endangered the democracy of the community.

At that time, the welfare state and the city authorities had a *policy of limiting rents* that kept up the citizens' standard of living. Furthermore, the city or state provided buildings and apartments as affordable housing for more vulnerable social groups (people with lower salaries, young people, artists, etc.). There were special housing programmes that provided subsidised (paid) housing for the most vulnerable social groups. The constant construction of these buildings and their maintenance, in spite of great financial expenses, were eagerly accepted by welfare states, including Canada, because of their great benefit to society.

But the neoliberal government believes that such an approach is neither justified nor sustainable. First of all, American cities, along with Canadian and European cities, underwent a change: social housing was sold at prices more affordable than the market ones, and the maintenance costs were automatically passed onto the tenants. Poor tenants could not buy apartments (this was the basis for further social stratification) and were forced to rent apartments on the private market. They could only rent bad apartments, on the outskirts of the city and at increased rents rates (regulation removed rent limit), which opened the way to housing poverty and homelessness.

The development of condo-ism in Canadian cities. The influence of corporate groups, organisations and agencies has been growing in Canadian cities, especially large ones such as Toronto, Vancouver, and Montreal. They indicate that rent restrictions actually decrease developmental potentials, because the construction of apartments (condos)⁷ demands payment in advance, at prices more favourable for investors. This new business model has significantly strengthened construction and has increased the income of the construction industry and the city. In that context, the city changed regulations related to zoning, the principles of construction, and the design of the settlement, adjusting them to the new model of housing and living (Rosen & Walks, 2015, p. 157-165).

There are good examples that illustrate these changes. Zoning regulations in Toronto have enabled the construction of two 20-storey buildings (42,000 m²) on the shores of lakes in Downtown and North York, which are symbols of development (Figures 3a, 3b and 3c). Corporate organisations succeeded in getting permits for the construction of two

⁷ Condominiums existed in Europe during the 19th century, and later spread around the world.

buildings with 39 floors and 56 floors, respectively (doubled the space to 93 000m²). This project drastically increased the earnings and income of the city. Of the entirety of the city's budget, 750,000 euros (one million Canadian dollars) were allocated for social housing, and 150,000 euros (200,000 Canadian dollars) were allocated for the improvements and enrichment of the transport system (Rosen & Walks, 2015, p. 162, 163). In this way, the city discovered the formula of development and gave priority to it, carefully monitoring the process of spatial planning and removing all obstacles to development. The following figure, Figure 3, presents: (3a.) two settlements (Downtown and North York) on a city map; (3b.) the panorama view of these settlements; and (3c.) two tall buildings whose construction demanded a change in regulations.



Figure 3. 3a. Map of the largest construction space in Toronto: Downtown and North York; 3b. Panorama of new buildings; and 3c. Two solitaires constructed on the basis of changed regulation

Sources:

[https://br.pinterest.com/pin/484629609883289572/?amp_client_id=CLIENT_ID\(\)&mweb_unauth_id={{default.session}}&simplified=true](https://br.pinterest.com/pin/484629609883289572/?amp_client_id=CLIENT_ID()&mweb_unauth_id={{default.session}}&simplified=true)

<https://torontorealtyboutique.com/2020-toronto-real-estate-market-predictions/>

<https://www.tridel.com/pre-construction-condos-north-york/>

In relation to this, the Ontario⁸ Municipal Board (OMB) formed a quasi-judicial body that constantly monitors the challenges and problems in spatial planning and urban development. Furthermore, on the basis of this, the Board corrects regulations and zoning, and supports entrepreneurship and development.

These processes run a similar course in other Canadian cities. The following figure, Figure 4, presents: (4a.) a map of luxury settlements on the Pacific coast in Vancouver; (4b.) the panorama of the new white city on the Pacific coast; and (4c.) the beautiful building on Bullard Square.

⁸ Toronto is the largest city in Ontario State.



Figure 4. 4a. Map of the luxury settlements in Vancouver on Pacific coast; 4.b. Panorama of this settlements; and 4.c. Lovely building on Bullard Square

Sources: <https://www.sonjapedersen.com/region3d-6.html>

<https://www.straight.com/news/condo-listings-increase-in-greater-vancouver-but-prices-expected-to-remain-flat>

<https://renx.ca/downtown-vancouver-condo-market-shows-signs-of-life/>

The model of private management has been applied in these settlements⁹, meaning that the tenants form the main governmental body, usually in the form of an association of apartment owners who govern the settlement (Low et al. 2012). The owner manages the space in a private building, in which apartments are rented out, while a representative of a government manages a public building, and a board of apartment owners manages a condominium (Rosen & Walks, 2015, p.156).

A city of inequality. Although funds are still allocated for social housing in Canadian cities, it is not enough for investments in housing for the poor to simply exist, because the neoliberal economy constantly deepens social differences and affects social stratification, encouraging numerous spatial injustices. In the process of spatial planning and development of cities, the practice of gentrification, which displaces the poor population in order to build commercial, business and luxury housing facilities on the soil of their settlements, survives. The increase in social disparities, segregation, housing poverty and even homelessness can be seen ‘on the face’ of Canadian cities.

New Zealand - Auckland

The third example discussed in this paper concerns the gated settlements in New Zealand. It indicates that this model of housing does not necessarily strengthen social division and segregation. New Zealand, together with Australia, has developed a democratic, decentralised political system with a participatory decision-making model, and has preserved a good part of the welfare state’s values. New Zealand is a leader in the development of new public management (NPM), with a rich practice of creating services ‘tailored to the needs of citizens’. The cities and settle-

⁹ They can, in the legal sense, appear in the form of: CID (common interest development), community association (CA) or common interest community (CIC).

ments of both countries are examples of open, democratic cities. The concept of mixed housing and the concept of social housing has been largely preserved. Great efforts have been made to make cities pleasant for all residents (liveable city), and public spaces are designed as beautiful and pleasant places for people to meet, and socialise (open city). Homelessness is not a big problem in these cities.

Urban settlements were built according to the British model of arranging spaces, with streets, squares, and buildings organised into blocks. Buildings and houses differ depending on the wealth of the inhabitants, but their style is similar. Gated communities are only a part of the architectural trend, integrated into other urban architectural models that do not alienate or seriously separate citizens from each other.

Gated communities are not developed for security as is the case in the USA, but rather in order to protect privacy. A number of settlements in Auckland, the capital city, are growing rapidly (sprawl), and the city is also investing heavily in the construction industry. Part of these settlements in the suburbs are gated communities, but the fences are not too high, especially on the street side. There are fences, gates, and sometimes cameras and guards, and inscriptions such as 'no parking' occur frequently, while inscriptions such as 'dangerous dog' or 'no entry' are rare occurrences (Dupuis & Dixon, 2010, pp. 118-119).

An empirical study was conducted in Auckland, in the North Shore City neighbourhood, which boasts 220,000 residents and yet more free space for further expansion. Some of the new settlements are gated¹⁰. Interviews were conducted with the residents of 10 different gated settlements (different size, quality of construction, social structure of residents, type of apartments, etc.). The residents are well educated, they hold well-paid jobs, they often own apartments or houses in these settlements, and they frequently travel (Dupuis & Dixon, 2010, pp. 119-122).

Tenants often bought apartments without even paying attention to the fact that the apartment was in a gated settlement, which is a good indicator that this society does not have a lot of crime, so security is not a priority for tenants in that sense. However, they point out that they have felt secure since moving to the settlement, although there is no immediate danger.

As a reason for choosing this settlement, the tenants stated that the position of the settlement suited them due to its good connection with the city centre, and its proximity to family, relatives or friends. Furthermore, they liked the lifestyle in which the maintenance of green spaces and buildings is performed by the settlement services (in their private houses, they had to do it themselves), and in which the safety of their housing is

¹⁰ Development managers took over this settlement model from Australia (mostly from Queensland State). The first settlement was built in 1993, and there are 17 so far.

guaranteed when they are on the road. They stated that exclusivity is not an important feature of these settlements, often stressing that they used to live in more luxurious houses before.

The answer to the question concerning the existence and nature of the mutual relations of the settlement's inhabitants, and the dilemma of whether there is a community spirit largely depends on the people who inhabit it. In some settlements, relations are good, and inhabitants constantly agree on common issues (maintaining the space, painting the fence or solving some problems which can bring the tenants very close) and even socialise. They also care about the preservation of everyone's privacy. Conversely, there are tensions in some communities, where some want benefits without investing anything. Tenants often point out that the design of settlements and housing units, and the design of space can make it easier or harder for people to connect and communicate (Dupuis & Dixon, 2010, pp. 125-127).

Regarding the sustainability of these settlements, New Zealand has recently been paying great attention to climate change, and the problem of uneven rainfall causing floods and droughts. Many settlements have installed solar panels (green energy) and underground reservoirs to collect excess water during floods, which is used for irrigation in times of drought. The good sides of these settlements are the protection of privacy, and the availability of public goods, such as the beautiful beaches on the ocean coast along which these settlements were built. The practice of closing coasts is avoided, which further indicates the standard of open cities.

Researchers point out the potential downsides of these settlements for residents. Among the first mentioned is the possible isolation for settlements made on meadows on the outskirts of the city, which are far from the centre. Citizens are either entirely cut off from or are left with weak ties to lines of public transport, and are directed to the use of personal transport (cars). In the USA, for example, no one would see this as a problem (Dupuis & Dixon, 2010, p.127).

We can conclude that, in cities in New Zealand, a gated settlement is just one of the options, which does not separate people, and does not endanger the quality of democracy and the decision-making processes, and, consequently, truly represents a very good example.

CONCLUSION

Gated communities in the neoliberal city are a consequence of growing inequalities, and a symbol of the division of people and the segregation of the rich, which threaten the quality of the urban community and its democratic capacity. There are many instruments that cumulatively create a divided city – priority is given to development and profit, and the privileges of the rich are carefully preserved. The processes of spatial

planning and the ‘renewal’ of the neoliberal city are, as a rule, accompanied by gentrification and the displacement of poorer residents to even worse conditions. Growing social disparities are poorly overcome in the area of housing because little is invested in social housing and rents are not limited, so housing poverty and homelessness, as the worst phenomena, are constantly growing.

This type of problem can be solved only by returning to social democratic values in redistribution, to greater investments in vulnerable social groups (today, this is a large part of the population), and to increased availability of housing. Protecting, beautifying and increasing the functionality of public spaces and facilities, as places for meeting and socialising with people, renews both the community and the chance for democracy.

REFERENCES

- August, M., (2008). Social Mix and Canadian Public Housing Redevelopment: Experiences in Toronto, *Canadian Journal of Urban Research*, 17(1), 82-100
- Bagaeen S. & Uduku O, (Eds.). (2015). *Beyond Gated Communities*, London, New York Earthscan by Routledge.
- Bagaeen, S., (2015). Beyond Gated Communities – Urban Gating, soft Boundaries and Networks of Influence and Affluence. In: Bagaeen S. & Uduku O, (Eds.). *Beyond Gated Communities*. (p. 9-25). London, New York Earthscan by Routledge.
- Bagaeen S. & Uduku O, (Eds.). (2010). *Gated Communities - Social Sustainability in Contemporary and Historical Gated Developments*, London, Washington DC. Earthscan.
- Bagaeen S., & Uduku O., (2010). Gated Histories: An Introduction to Themes and Concepts. In: Bagaeen S. & Uduku O, (Eds.). *Gated Communities*, (p. 1-8). London, Washington DC. Earthscan.
- Bagaeen S, 2010, Gated Urban Life versus Kinship and Social Solidarity in the Middle East In: Bagaeen S. & Uduku O, (Eds.). *Gated Communities*, (p. 15-27). London, Washington DC. Earthscan.
- Caldeira, T.P.R. (2000). *City of Walls: Crime, Segregation and Citizenship in Sao Paulo*, Berkley, CA: Univesity of California Press.
- Dupuis, A., & Dixon J. (2010). Barriers and Boundaries: An Exploration of Gatedness in New Zealand. In: Bagaeen S. & Uduku O, (Eds.). *Gated Communities*, (p. 115-129). London, Washington DC. Earthscan
- Gillad, R., & Walks, A., (2015). Beyond Gating - Condo-ism as a way of urban life. In: Bagaeen S. & Uduku O, (Eds.). *Beyond Gated Communities*. (p.154-169). London, New York Earthscan by Routledge.
- Glasze, G. (2005). Some Reflections on the Economic and Political Organisation of Private Neighbourhoods, *Housing Studies*, 20(2), 221-233. doi:10.1080/0267303042000331745
- Glasze, G, Webster C., & Frantz K (Eds). (2006). *Private Cities: Global and Local Perspectives*, London: Routledge & Taylor and Francis.
- Griffin, E. (2017). A kinder, gentler gentrification: racial identity, social mix and multiculturalism in Toronto’s Parkdale neighborhood, *Social Identities*. 4/6. p.

- 707-726. doi: 10.1080/13504630.2017.1310039, ISSN: 1350-4630 (Print) 1363-0296 (Online)
- Le Goix, R., & Callen, D., (2010). Production nad Social Sustainability of Private Enclaves in Suburban Landscapes - French and US Long Term Emergence of Gated Communities and Private Streets. In: Bagaeen S. & Uduku O, (Eds.). *Gated Communities*. (p. 93-114). London, Washington DC. Earthscan.
- Low, S. (2003). *Behind the Gates: Life, Security and the Pursuit of Happiness in Fortress America*, New York, NY: Routledge.
- McKenzie E. 2006. The Dinamics of Privatopia: Private Residential Governance in the USA, In Glasze, G, Webster C., & Frantz K. (Eds). *Private Cities: Global and Local Perspectives*. (p.142-152). London: Routledge & Taylor and Francis.
- McKenzie, E. (2005). Constructing the Pomerium in in Las Vegas: A Case Study of Emerging Trends in American gated communities, *Housing Studies*, 20(2), 187-203. doi:10.1080/026730303042000331727
- Neil, S. (1996). *The New Urban Frontier- Gentrification and Revanshist City*, London, UK: Routledge.
- Neil, S. & Williams Peter (Eds.). (2007), *Gentrification of the City*, New York, NY: Routledge.
- Nguyen, T. (1999). Coto De Caza Residents say no to School withing Gates, Los Angeles Times, March 4th, Orange Countzt edition, pB1.
- Reese, E., Daverteuil G. & Thach L. (2010). Weak Center Gentrification and the Contradictions of Containment: Deconcentrating Poverty in Downtown Los Angeles, In: *Journal Compilation, Joint Editors and Blackwell Publishing Ltd*. Oxford, UK, Malden MA, USA: Blackwell Publishing.
- Webster C., 2006. Dynamic Urban Order and the Rise of Residential Clubs. In Glasze, G, Webster C., and Frantz K (eds). *Private Cities: Global and Local Perspectives*. (p.153-169). London: Routledge & Taylor and Francis.
- Webster, C. (2002). Property Rights and the Public Realm: Gates, Green Belts and Gemeinschaft, *Environmental and Planning B: Planning and Design*, 29(3), 397-412. doi:10.1068/b2755r

ОГРАЂЕНА НАСЕЉА КАО СИМБОЛ НЕЈЕДНАКОСТИ

Снежана Ђорђевић

Универзитет у Београду, Факултет политичких наука, Београд, Србија

Резиме

Ограђена насеља су настала у САД у 20. веку и тек су 1980-их, путем глобализације и неолибералног друштва, преузета широм света као облик безбедне архитектуре и урбанизма.

У САД су ова насеља уклопљена у друштвено окружење због великих социјалних разлика, духа индивидуализма, несолидарности са сиромашним насељима и становништвом, и навикнутости на просторне неједнакости и неправде. Ова насеља су стално тражила, захтевала и очекивала разне услуге од градске власти. Бројни су примери даљег ограђивања простора око ових насеља (улица и приступа јавним површинама попут паркова, обала река, језера, океана, итд.), што је додатно поделило грађане у граду, маргинализовало сиромашније грађане и под-

стакло их да се осећају инфериорно. У том смислу, овај концепт подрива осећај заједништва грађана и демократски потенцијал града.

Канада, која је по социјалдемократском моделу организације и вредностима била блиска европским земљама, од 1990-их полако напушта те вредности и даје предност развоју и профиту. У просторном планирању и концепту становања тежи ка згушњавању становања, ка промоцији станова уместо кућа, и ка интензивирању простора. Развој грађевинске индустрије и профит постали су приоритети, а доступност доброг становања за угрожене друштвене групе губи на значају за градске функционере. Центрификација и различити облици просторне неправде оставили су ружне оживљке на канадским градовима.

У овим условима расте сиромаштво, али и бескућништво, које се раније, у доба социјалне државе, није толерисало ни у овој земљи, као ни у Европи.

Најбољи случај преставља Нови Зеланд, који је сачувао социјалдемократске вредности као део демократског друштва партиципативног одлучивања. У случају Новог Зеланда се може закључити да су ограђена насеља само једна од форми становања, која не ствара јаз међу људима, нити угрожава демократске капацитете заједнице.

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THE DEVELOPMENT OF SMART TRANSPORT IN BELGRADE - WHAT CAN BE LEARNED FROM THE GOOD PRACTICE OF COPENHAGEN, VIENNA AND LJUBLJANA

Aleksandar Kovačević*

University of Belgrade, Faculty of Political Sciences, Belgrade, Serbia

Abstract

Big cities confront several transportation concerns, including traffic congestion, air pollution, public transportation availability, and infrastructural issues. City governments must provide residents with the best solution to these problems. The goal of this study is to examine the development of smart transportation in smart cities. Smart transportation is the most significant functional feature of any smart city, as it provides high-quality, environmentally friendly transportation serving a specific population. It encompasses a variety of forms of transportation, including walking, biking, carsharing, and public transportation. This research focuses on the question of whether various modes of smart transportation can resolve Belgrade's persistent transportation problem. Firstly, we define smart cities, smart transportation, smart mobility, and sustainable urban mobility. The evolution of smart transport requires changes in spatial planning, which include monitoring people's mobility (sensors), and their (non-)retention in squares and other public places, and developing these locations to meet residents' demands. Secondly, we consult data on smart cities like Copenhagen, Vienna, and Ljubljana in order to develop the optimal scenario for our case study of Belgrade as a smart city in the transportation field.

Key words: smart cities, smart transportation, smart mobility; smart tools, air pollution

* Corresponding author: Aleksandar Kovačević, University of Belgrade, Faculty of Political Sciences, 165 Jove Ilića Street, 11000 Belgrade, Serbia, koca.kovacevic91@gmail.com

РАЗВОЈ ПАМЕТНОГ ПРЕВОЗА У БЕОГРАДУ – ШТА МОЖЕМО НАУЧИТИ ИЗ ДОБРЕ ПРАКСЕ КОПЕНХАГЕНА, БЕЧА И ЉУБЉАНЕ

Апстракт

Велики градови се суочавају са бројним изазовима у превозу, међу којима су саобраћајне гужве, загађеност ваздуха, доступност јавног превоза и инфраструктурни проблеми. Градске власти треба да пронађу најбоље начине за превазилажење ових изазова. Овај рад се фокусира на развој паметног превоза у паметним градовима. Паметан превоз је најважнији функционални аспект концепта паметних градова, будући да представља квалитетан и еколошких прихватљив облик превоза. Он укључује различите облике превоза као што су пешачење, бициклизам, дељење возила и јавни превоз. Ово истраживање вођено је питањем да ли различити облици паметног превоза могу решити вишегодишњи проблем са превозом у Београду. Починемо са дефиницијама концепата паметних градова, паметног превоза, паметне мобилности и одрживе урбане мобилности. Развој паметног превоза подразумева промене у просторном планирању које се ослањају на сазнања стечена праћењем кретања људи (путем сензора), њиховог (не) задржавања на трговима и другим јавним просторима, и укључују пројектовање јавних простора према захтевима грађана. Након тога, консултујемо податке о паметним градовима попут Копенхагена, Беча и Љубљане како би креирали најбољи сценарио за студију случаја града Београда као паметног града у области транспорта.

Кључне речи: паметни градови, паметан превоз, паметна мобилност, паметни алати, загађење ваздуха

INTRODUCTION

The notion of smart cities and its application in modern society are discussed in this paper. In our opinion, the most crucial functional feature of smart cities is a high-quality, accessible, and environmentally friendly transportation system serving a specific population. That is what we refer to as a ‘smart transportation system’. In this research, we use some aspects of smart transportation systems, such as the existing transportation model and the role of ICT in transportation reforms, with examples of some implemented solutions. We pay special attention to transportation reform projects that emphasise the use of smart solutions and eco-friendly modes of transport. We also discuss the P+R system as one component of a smart parking solution. As a result, we explore the smart transportation system, and its implementation in several countries and cities as part of our comparative approach. We chose Copenhagen, Vienna, and Ljubljana as examples of successful transportation reforms. To construct a smart transportation system, we need to utilise a variety of digital tools and smart sensors. To bring the idea of a smart city to life, we must embrace all of the benefits of the Fourth Industrial Revolution. The main research question is whether various modes of smart transportation can resolve Belgrade’s persistent transportation problem. To begin answering this research question, we con-

sider the idea of smart cities and the manner in which this idea is being implemented in various cities.

THE CONCEPT OF SMART CITIES

Cities as local governments gained prominence during times of crisis (beginning in the 1970s), when it became obvious that rising social issues needed to be handled locally. As a consequence, cities have become important developers of new policies and venues for the creation of new entrepreneurial institutions, tools, and work techniques (Đorđević, 2012, p. 173). However, a comprehensive description of the notion of the smart city is difficult to come by. As a result, a multidisciplinary approach is necessary. Academics have attempted to describe the smart city, but local governments have tried to put the idea into practise by constructing various prototypes or smart projects (Dameri & Rosenthal-Sabroux, 2014, p. 10). The difficulty in defining smart cities stems mostly from two factors. First, the difficulty stems from the meaning we assign to the word 'smart', which gives rise to phrases such as 'Intelligent City', 'Knowledge City', 'Wired City', and 'Digital City'. Secondly, the difficulty stems from a lack of understanding of the word 'smart'. (Cocchia, 2014, p. 18). Giffinger et al. (2007) identify six key characteristics of smart cities, including smart economy, smart people, smart transportation, smart environment, and smart living (Giffinger et al., 2007, p. 11). Dameri (2013) defines the smart city as:

a well-defined geographical area, in which high technologies such as ICT, logistic, energy production, and so on, cooperate to create benefits for citizens in terms of well-being, inclusion and participation, environmental quality, intelligent development.

(Dameri, 2013, p. 2549)

Đorđević (2019) identifies three key characteristics of smart cities: democratic organisation, smart and modern management, and leadership that engages people and other stakeholders in the development of public policies and high-quality public services (Đorđević, 2019, p. 362). It can be noticed, then, that one of the most important aspects of the notion of the smart city is the widespread use of various smart tools.

The Fourth Industrial Revolution is defined by the use of the mobile Internet, a variety of low-cost sensors, artificial intelligence, and chine learning (Schwab, 2016, p. 11-12). Schwab (2016) goes on to emphasise the emergence of many megatrends, the most important of which is the Internet of Things (IoT). IoT is defined by Haller et al. (2009) as:

a world where physical objects are seamlessly integrated into the information network, and where the physical objects can become active participants in business processes.

(Haller et al., 2009, p. 15)

People have gotten somewhat addicted to using smart gadgets in regular communication, as their whole lives have migrated to the Internet. Many of the issues encountered by cities, as shown in Figure 1, cannot be addressed without the deployment of technology breakthroughs. Moreover, digitalisation has substantial consequences for city operations.

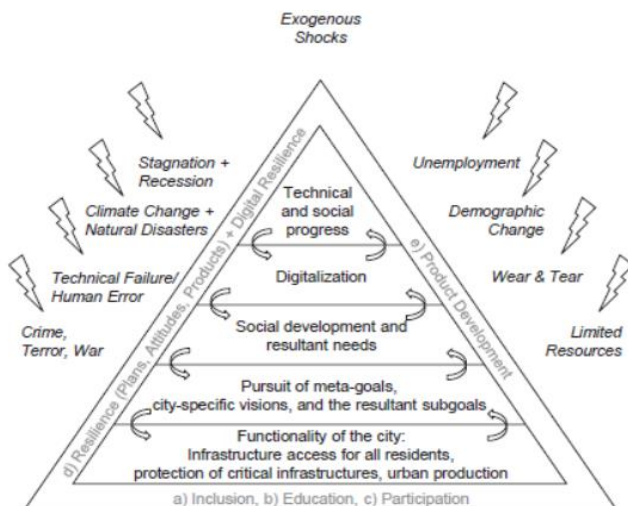


Figure 1. Challenges facing cities.

Source: (Etezadzadeh, 2016, p. 43)

How does digitalisation affect cities? First and foremost, cities need infrastructure that is both efficient and effective. Cities may therefore become more open, safe, and functional (Etezadzadeh, 2016, pp. 43-45). So, it is important to monitor who has access to this information in order to keep it safe.

SMART MOBILITY, SMART URBAN MOBILITY AND SUSTAINABLE URBAN MOBILITY

As previously mentioned, Giffinger et al. highlight the six most significant qualities of smart cities. Smart mobility has been facilitated by the development of infrastructure and the use of contemporary technologies in modern cities. This concept's key features are local and (inter-)national accessibility, the availability of ICT infrastructure, and sustainable, creative and safe transportation methods (Giffinger et al., 2007, p. 12). Smart mobility entails the construction of the necessary infrastructure to support various digital tools, followed by a radical change in the existing transportation system and the development of 'green' means of transport. Various authors claim that a smart transportation system lies within the following

four pillars. The first pillar is shared mobility, which is divided into at least four categories: carsharing, carpooling, e-hailing, and demand-responsive transportation. Automated mobility, as the second pillar, includes the process of equipping cars with various sensors (Lane Assist, Automated Cruise Control (ACC), Blind Spot Sensor, and so on) that can perceive the car's surroundings and respond in real time to prevent traffic collisions. Electric transportation, as the next pillar, entails the advancement of electric and hybrid cars (Audouin & Finger, 2019a, p. 4). Integrated mobility, as the last pillar, entails merging two or more separate public or private transportation services for travel purposes. As a result, the idea of Mobility as a Service (MaaS) has emerged, and it is described as:

a digitally supported distribution model bundling several transport options together, and enabling the user to plan their trips, select the transport option that best suits their need, and finally book and pay for it via an app.

(Audouin & Finger, 2019a, p. 5)

While smart mobility merits a multidisciplinary approach, there are comparatively few academic discussions or more extensive literature on this subject. This notion was a “buzz phrase in the planning and transport fields in the last decade”, according to Papa and Lauwers (2015, pp. 543-546), who divided it into two phases: techno-centric and consumer-centric aspects of smart mobility. Smart urban mobility might be defined as “connectivity in towns and cities that is affordable, effective, attractive, and sustainable” (Lyons, 2018, p. 9).

The notion of ‘smart mobility’ is inextricably tied to the idea of sustainable urban mobility. The European Commission advises member states to adopt and implement the Sustainable Urban Mobility Plan (SUMP), as a strategic document aimed at satisfying people’s and businesses’ mobility demands in cities and their surroundings, with the aim of achieving a higher quality of life. Sustainable urban mobility is a proactive and comprehensive approach to addressing the many difficulties that arise in daily traffic. It aims to improve people’s lives by making them more mobile. It entails the development of various forms of transportation in functioning urban areas with high workforce mobility (Rupprecht Consult, 2019, p. 9). This plan requires a very careful review of existing solutions, which completes the whole process of making public policies.

THE CONCEPT OF SMART TRANSPORTATION – LESSONS FROM COPENHAGEN, VIENNA AND LJUBLJANA

We examine alternative approaches to transportation reform from a comparative viewpoint. Copenhagen, Vienna, and Ljubljana are used in this study. We compare these three cities to Belgrade for numerous reasons.

Firstly, these cities are establishing a model by implementing smart solutions in transport reforms. Secondly, these cities are the capitals of and largest cities in their respective countries. Thirdly, with the exception of Ljubljana, these cities cover territories of approximately the same size, and their populations are nearly identical. In addition, Vienna and Belgrade are part of the group of Danube River cities and towns. Having been part of Yugoslavia, Ljubljana and Belgrade developed in the same manner for more than seventy years. Vienna has a long history of well-organised public transportation, and it might serve as a model for Belgrade's transportation reforms. Copenhagen is the most bike-friendly city in the world, and it is also trying to reduce air pollution. While Belgrade has a lot of problems with air pollution, especially in the city centre, the lessons from Copenhagen's transportation changes could serve as examples of best practises. Due to their similarities, these cities could serve as examples for transportation reform in Belgrade. In this study, we focused on three areas: 1) the transportation models; 2) the role of ICT in transportation reform; and 3) projects in transportation reform.

Before we begin our research, we must first note the global statuses of these cities. Copenhagen ranked 7th on the Smart City Index for 2021 (IMD World Competitiveness Center, 2021, p. 9). Copenhagen is ranked 6th on the Smart Mobility Synthetic Indicator, with a rating of 3.12 (Garau et al., 2016, p. 45). Vienna ranked 11th on the Smart City Index for 2021 (IMD World Competitiveness Center, 2021, p. 9). The Global Liveability Index for 2019 pronounced Vienna as the most liveable city on the planet (The Economist Intelligence Unit, 2019, p. 4). We can confidently state that Ljubljana is the smartest city in the area of the Western Balkans. Ljubljana was the European Green Capital in 2016. Furthermore, Ljubljana ranked 14th on the list of bike-friendly cities in 2019, with a total score of 57.1% (The Copenhagenizeindex, 2019).

Transport Models in Copenhagen, Vienna And Ljubljana

To begin with, we should explore the modes of transportation used in these cities. The differences across transportation models are shown in Figure 2¹. According to our research, increasing the percentage of people using eco-friendly modes of transportation, including bicycling, walking,

¹ Figure 2 shows a comparison of the observed cities' transportation models. According to the figures for Copenhagen for 2019, the overall share of public transportation is 21%, the share of walking is 21%, and the share of cycling is 28%, while the total percentage of cars in all transportation is 30%. (The City of Copenhagen, 2020, p. 3). Official statistics for 2019 show that public transportation accounts for 38% of total transportation in Vienna, walking accounts for 30%, and cycling accounts for 7%, while private cars account for 25% (Bauer, 2020, p. 15). According to data from 2013, cars accounted for 41.5% of all transportation in Ljubljana, bicycles 11.1%, public transportation 12.6%, and walking 34.80 percent (Milovanovič, 2017, p. 15).

and modern public transportation, is a top priority for cities. Denmark's capital aims to be carbon neutral by 2025. Copenhagen's authorities have created a green transportation package that includes urban development and green transportation adapted to smooth traffic flow. They want to ensure that at least one-third of all transportation is done by bicycle, one-third by public transportation, and one-third by vehicle (The City of Copenhagen, 2013, p. 9).

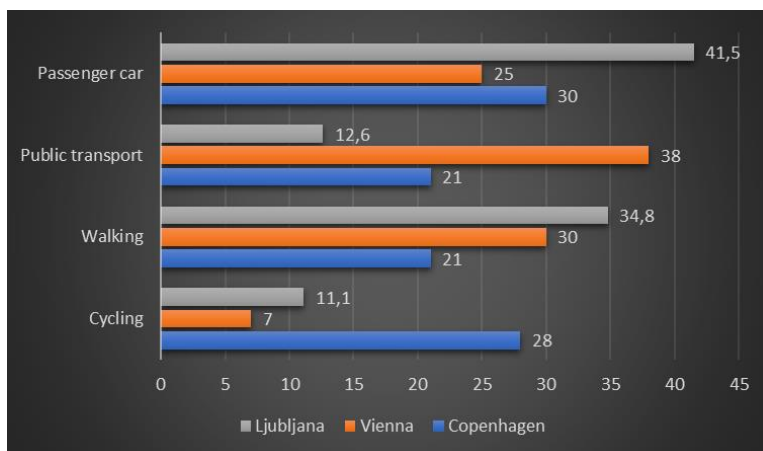


Figure 2. Transport model of Copenhagen, Vienna and Ljubljana

Vienna enacted a 2025 Urban Development Plan in 2014. This plan envisions Vienna as a liveable, socially equitable, gender-equitable, educational, cosmopolitan, wealthy, integrated, participative, and environmentally sustainable city. Thus, the primary objective should be the growth of public transportation, walking, and cycling, rather than an increase in the number of private vehicles (The City of Vienna, 2014, p. 24). Vienna approved a sustainable urban mobility strategy in 2015, and it includes a fair, healthy, compact, eco-friendly, robust and efficient mode of transport (The City of Vienna, 2015, pp. 19–24). In 2019, the City of Vienna approved the Smart City Wien Framework Strategy 2019-2050. As a result, they hope that 85% of all transportation will be eco-friendly by 2030 (The City of Vienna, 2019, p. 68).

The City of Ljubljana adopted the Urban Mobility Strategy in 2017, with the goal of increasing the proportion of environmentally friendly modes of transportation. Since 2003, the number of private vehicles has decreased significantly. This is a positive achievement, but it is insufficient in helping to achieve the carbon-neutral objective set by Copenhagen. The number of pedestrians has almost doubled, but the drop in the use of public transportation and a minor rise in cycling are concerning facts. To meet their target, which allows vehicles a maximum 33% share in all transport-

tation and environmentally friendly modes of transportation a 67% share, Ljubljana has developed a strategy based on increasing the share of pedestrian, bicycle and public transport, and on decreasing the use of private cars in transportation (Milovanovič, 2017, pp. 19–21).

The Role of ICT in Transport Reform

The importance of ICT in the transportation reforms in these cities is the second major topic of this paper. ICT play a critical role in the Copenhagen transportation overhaul. Copenhagen has created a central unit that monitors 360 traffic lights, and prioritises buses and bikes, enabling them to move freely (The City of Copenhagen, 2013, p. 19). Copenhagen participated in EU C-Mobile application initiative to regulate traffic flow. This software tells users how fast they need to ride their bike or drive to get through the green light at the next traffic light. The software is completely hands-free, and gives information in the form of visual or audible signals. This project entails creating a C-ITS (Cooperative Intelligent Transportation System) infrastructure that supports a variety of technologies, including mobile internet and wireless internet access in cars (802.11p standard), and allows a large number of people to take advantage of these services (Ferrandez, 2018, p. 1).

Vienna has used ICT to modernise its transportation system, and has built the first intelligent traffic light in Meidling, near the school, so as to improve transportation safety, particularly for pedestrians. This traffic light uses a camera with software equipped to identify the pedestrian's desire to cross the street, and sends a signal to the traffic light to change the light to green (Wien zu fuss, 2019). In addition, the city intends to replace 200 push-button traffic lights, particularly in school zones (Liceras, 2019). Since 2016, Slovenia has been a member of the large European project C-road. The primary goal of this project is to gather real-time traffic data. The pilot location is on the portion of Highway A1 between Postojna and Divaca. Nine roadside ITS stations (RSUs), and an additional mobile roadside ITS maintenance vehicle were placed along the motorway. The motorway company installed the RSUs linked to the central ITS station (C-ITS back office) at the DARS Maintenance and Control Centre Kozina (Štern, 2021). They created the mobile application Traffic Plus, which uses the 3G/4G cellular network to facilitate data interchange between connected vehicles and the Cloud. Users may now receive and send traffic information and signalling using this programme, which has been modified to serve as an On-Board Unit (OBU) (Štern, 2021).

Different Transport Modes and Projects in Transport Reform

The third crucial factor is the development of various modes of transportation and initiatives in transportation reform. Copenhagen – A Cyclist City is a comprehensive policy prepared by the city authorities, meant

to be implemented between 2011 and 2025. The Bycyklen, which was the first large-scale bike-sharing system in Europe, serves as the basis for this plan. This system was first implemented in 1995, with the introduction of 1,000 specially constructed bicycles and eight bike racks, and it has now grown to include over 2,000 bicycles and 110 bike racks. It is part of the coin-deposit system (Shaheen et al., 2010, p. 160). During 2013, this system encountered a lot of problems. In October 2014, the city launched a new CityBike programme based on the IoT, which included the use of electric-assisted cycles with inbuilt GPS trackers and tablet computers on the bicycles' handlebars (Behrendt, 2016, p. 159). The main goal of this policy is to build a bike superhighway called a 'cycle highway', where commuters' needs are the most important (Sekretariatet for Supercykelstier, 2020).

Copenhagen provides a variety of options for reducing the use of private cars in transport. It is important to note that Uber, the world's best-known ride-sharing service, does not operate in Copenhagen. Copenhagen developed the P+R system, which enables car owners to park on the outskirts of the city and travel by public transportation. Copenhagen participates in the EU-funded carsharing programme through the smartphone application Share Now. In 2019, the Share Now application was formed by the merging of Car2Go and DriveNow. Over 500 vehicles from various manufacturers, including Mercedes-Benz, BMW, Mini, Fiat 500, Smart, and electric vehicles, are available via Share Now. Value-seeking, convenience, lifestyle, and sustainability are four motivating patterns identified by Schaefer (2013, pp. 73–75). Danish researchers noted considerable support for the utilitarian goal of being more flexible without a vehicle, which is the driving force behind carsharing. On the other hand, environmental considerations are often emphasised as a benefit, but not as the primary motivation (Garret et al., 2020, p. 16).

Vienna's public transportation system is one of the best in the world. As a result, the city of Vienna spends heavily on the modernisation of transportation. The city has begun work on the implementation of ideas involving mobility as a service (MaaS). The SMILE project (which stands for "Simply MobiLE") was launched in 2012 by the Austrian Federal Railway Company (BB) and Wiener Stadtwerke. Due to the cessation of public support and the competing interests of the corporation that led this application, this project concluded by the end of 2014 (Audouin & Finger, 2019b, p. 9–10). In 2015, Wiener Stadtwerke established Upstream, a start-up subsidiary that debuted the WienMobil app in 2017. It provides customers real-time integrated schedule information as well as information on potential delays, allowing them to travel by public transportation without difficulty (Li, 2019, pp. 238–239). The carsharing system Car2Go has been operating in Vienna since December 2011, offering consumers over 1,000 different types of Mercedes, BMW, Mini, and Smart cars to choose from. This system allows one to choose and book a vehicle using a smartphone app, and

pay for each minute of driving at a reasonable rate (Hudak, 2016, p. 4). In addition, Uber operated in Vienna for a time. Uber ceased operations in the summer of 2019 due to a lawsuit accusing them of offering transportation services without the required licences (Wolf, 2019).

The incorporation of bicycles into Vienna's public transportation system was first proposed in the early 1990s. However, there was not enough political will or financial assistance in the 1990s to carry out this project. In 2002, the private ViennaBike organisation launched a bicycle-sharing programme, but it did not survive long due to considerable losses. The CityBike system launched in May 2003, with 50 stations. In 2015, there were 121 stations and more than 1,500 bicycles available, and Gewista records more than a million rides every year (Laa & Emberger, 2020, p. 150). In Vienna, an effort was made to build a free-floating bike-sharing system (FFBS), but the system ran into various issues such as poor parking, low-quality bikes, vandalism, and the exploitation of parking places for privately owned bicycles (Laa & Emberger, 2020, p. 151). Finally, the city of Vienna strengthened its bicycle sharing regulations in 2018. According to these rules, each bicycle must be authorised and registered by the city, whereupon it is given a unique identity number. Shared electric scooters are another transportation innovation in Vienna. In 2018, the first shared e-scooters debuted in Vienna. Currently, there are six distinct e-scooter service providers. These operators use scooters licenced by the city, and given a unique licence plate (Radics, 2020, p. 2).

The bicycle sharing system is Ljubljana's most important contribution to the development of eco-friendly transport. The BicikeLJ system is the outcome of a public-private cooperation between the city of Ljubljana and Europlakat. It began operating in May 2011, with 30 stations and 300 bicycles. There are now 73 stations and 730 bicycles in the BicikeLJ, with plans to expand the network (Mestna Občina Ljubljana, 2021). The BicikeLJ allows Ljubljana's residents and visitors to hire bicycles at self-service terminals located throughout the city centre and in P+R facilities (Bauchinger et al., 2021, p. 12). In collaboration with Zagreb and Bratislava, Ljubljana joined the EU-funded URBAN-E project. This initiative seeks to promote e-mobility, multimodal transportation, and green transportation in metropolitan areas, with a focus on reducing CO₂ emissions (URBAN-e, Outline of the Action, 2017). As part of this project, the first public mini-hub for charging electric cars was built in March 2019 (Mestna Občina Ljubljana, 2019).

Ljubljana is currently implementing a project of 12 EURBAN electric cars as an eco-friendly mode of transport, which was first tested on public transport in 2016. This initiative began on the city's rural eastern outskirts, and then extended to include the adjacent rural roads. During low service timeslots, customers were picked up and brought to normal bus stops. The services are charged in the same manner as ordinary public

transportation, and are the same price as a single bus journey. The small number of passengers was a concern with this approach (Bauchinger et al., 2021, p. 12). For tourist trips, Ljubljana debuted the Urban Electric Train in 2016. Also, small electric cars, known as ‘Cavaliers’, were introduced to carry people in the pedestrian zone (Betterlifestyle Team, 2016). Avant2go, Slovenia’s first MaaS carsharing system, was established in 2016 by the cities of Ljubljana, Maribor, Kranj, and Murska Subota, in collaboration with Slovenian IT specialists and automotive firms. This system consists entirely of electric cars from a variety of manufacturers. Avant2Go’s services are straightforward and transparent: users use a smartphone app to find an available car, reserve it, activate it, and return it to a parking area designated for these vehicles (Kogoj, 2018, p. 37). The lack of parking spaces was solved by converting some streets into one-way parking lots, which allowed people to park on the road. The city also implemented a system of preferential cards for residents, which has reduced the pressure on parking spaces caused by visitors. Ljubljana has launched an initiative to develop a P+R at the urban periphery, where drivers may leave their cars and use public transportation to reach their desired locations in the city (Milovanovič, 2017, pp. 40–41). The city created the Urbana Card, a contactless smart card that can be used to pay for public transportation, parking and several municipal services (Single City Card Urbana, 2021).

SMART TRANSPORT SOLUTIONS IN BELGRADE

Finally, we can discuss how smart transportation solutions can be implemented in Belgrade. In December 2020, Belgrade adopted the Sustainable Urban Mobility Plan (SUMP). Belgrade’s data varies from that of the other cities in the sample because 49.93% of the city’s transportation model is comprised of public transportation, 24.32% is comprised of passenger cars, 24.25% is comprised of pedestrians, and only 0.75% of the model is comprised of bicycles (Transport model of Belgrade, 2015). As a result, the development of Belgrade’s plan as a bicycle city is now unattainable, since it requires a change in the habits of Belgrade’s residents. However, in recent years, Belgrade’s streets have seen an increase in the number of bicycles, particularly in the city’s recreational areas. Thus, Belgrade’s growth plan envisions bicycles and walking having a 30% overall share in the city’s transport model, and the building of 100 kilometres of new cycling pathways (Sustainable Urban Mobility Plan, 2020, p. 57). Three scenarios are envisaged in this plan. The city has chosen the third scenario, which entails a complete reorganisation of the transportation system, with an emphasis on increasing the share of bicycles and walking, maintaining a stable share of public transportation, and decreasing the share of private motorised vehicles in total transportation (Sustainable Ur-

ban Mobility Plan, 2020, pp. 131–133). The SUMP envisions Belgrade as a city that is adaptive, sustainable, high-quality, logical, efficient, and tolerant. The campaign to implement this plan, called ‘Belgrade on the move’, rests on increasing walking (25%) and cycling (4%), maintaining a high proportion of public transport (48%), and reducing private cars in transport (20%) (Sustainable Urban Mobility Plan, 2020, pp. 137-138). Belgrade highlights the role of eco-friendly modes such as car and bike sharing, and electric cars, and, in the future, it will work to integrate these modes to decrease air pollution, which is at an all-time high. What is the best scenario for Belgrade?

The following Table provides proposals for all three of the mentioned areas. The city of Belgrade is in the early stages of introducing smart solutions. One of the innovations is the implementation of a P+R system, in which users with personalised Bus Plus cards who also own cars may use the system by registering on the parking service website. Other users may use SMS to pay for this service (Park and ride in Belgrade, 2021). This system is comparable to those used in other cities, although it has a few drawbacks. The first disadvantage is that customers who do not have a customised Bus Plus card will be unable to combine public transportation and parking. A similar card, which is currently in use in Ljubljana, may be a viable alternative. The fact that these services are restricted to a single area – the city’s cultural and commercial centre, which is located near the city centre, is another negative aspect. Furthermore, despite the fact that these facilities are well linked to other parts of Belgrade, there are no alternative eco-friendly modes available. As a consequence, Belgrade should follow the example of the observed cities in formulating a solution to this problem. Since 2019, seven electric cars have been integrated into public transportation in Belgrade’s core pedestrian zone, only one of which is suited for handicapped people. This mode of transportation is comparable to Ljubljana’s Cavalier system. Belgrade has launched a park and bike system, which enables users to rent a bicycle for the same fee charged for parking (Park and cycling in Belgrade, 2021). The biggest benefit of the system is the convenient location of these facilities, but its downside is that it is not part of the bike-sharing system. Finally, Car: Go (a Serbian counterpart of Uber) is an active ride-sharing application in Belgrade that was designed as a smart transportation system in smart cities. Belgrade has traffic management systems that integrate a variety of sensors to manage traffic congestion. These systems should be similar to Copenhagen’s, with a central control unit that handles traffic lights and prioritises eco-friendly modes of transportation. At the end of last year, Belgrade began the creation of a bike-sharing system. The plan is to build 150 public bicycle racks and 100 km of bicycle paths (Danas Online, 2021). As a result, we can advise municipal officials to draw on the rich expertise of other communities in order to execute the most cost-effective solution for their inhabit-

ants' requirements. Many of Belgrade's transportation problems might be solved by consulting this expertise.

Table 1. Recommendation for transport reform in Belgrade

Transport models	<ul style="list-style-type: none"> ▪ construct a green transportation package that comprises sustainable urban development and eco-friendly forms of transport adapted to reduce traffic flow and air pollution; ▪ increase the percentage of walking, cycling, and public transportation in the overall transportation system.
The role of ICT	<ul style="list-style-type: none"> ▪ development and enhancement of mobile applications that provide real-time transport information to citizens; ▪ intelligent transportation management systems that promote environmentally sustainable means of transport; ▪ smart bus stops for public transport.
Different transport modes and projects	<ul style="list-style-type: none"> ▪ establishment of a bike-sharing programme; ▪ deployment of mobility as a service; ▪ public authorities providing incentives to encourage the use of electric vehicles in transport; ▪ expansion of park-and-ride and park-and-bike networks; ▪ the development of a Belgrade city card that may be used for public transport, parking, admission to museums and theatres, etc.

CONCLUSION

Smart city initiatives are spreading rapidly all over the globe. The creation of smart transportation systems using ICT is one of the most important advancements. Cities are opting to implement green solutions in transportation reform in the face of severe climate change, induced by the greenhouse effect. As a result, the cities investigated in this research aim to enhance their use of eco-friendly modes of transportation. They boast major achievements in this process, dependent on the prior status of transportation, infrastructure, and people's habits and social backgrounds. As a result, all attributes should be considered while developing smart solutions. Copenhagen and Vienna, for example, have a long history of using cycling as a form of transportation. Ljubljana, on the other hand, has a strong preference for cycling and smart carsharing. These cities are attempting to limit the use of private cars in their transportation systems. Belgrade is in the early stages of developing smart solutions.

The SUMP is a new document that covers important topics. Belgrade's advantage is its high proportion of public transportation in overall transportation. Belgrade must preserve its market share and improve its transportation system by adopting cars that run on ecologically acceptable fuels. Belgrade's drawback is its low percentage of bicycles. Therefore, we cannot predict whether it will become a bicycle-friendly city in the future.

However, great progress may be made in this arena by implementing bike-sharing systems and cycling infrastructure, such as bicycle routes and intelligent traffic signals that promote non-motorised modes of transportation. If Belgrade follows through on its plan, the overall percentage of bicycles in transportation might rise beyond the target of 4%. Belgrade has to come up with innovative concepts like carsharing, making electric car charging more convenient, and modifying the laws for vehicles in urban and green areas. If the offered remedies are implemented, Belgrade has the possibility of becoming the green capital. This means that building a new city today is impossible without digital tools and smart solutions.

REFERENCES

- Audouin, M., & Finger, M. (2019a). Introduction. In M. Audouin, & M. Finger (Eds.), *The Governance of Smart Transportation Systems*. Cham: Springer.
- Audouin, M., & Finger, M. (2019b). Empower or Thwart? Insights from Vienna and Helsinki regarding the role of public authorities in the development of MaaS schemes. *Transportation Research Procedia* 41, 6-16.
- Bauchinger, L. et al. (2021). Developing Sustainable and Flexible Rural–Urban Connectivity through Complementary Mobility Services. *Sustainability* 2021, 13(3), 1-23. doi:10.3390/su13031280
- Bauer, R. (Ed.). (2020). *Vienna in Figures*. Vienna: Statistics Vienna.
- Behrendt, F. (2016). Why cycling matters for Smart Cities. Internet of Bicycles for Intelligent Transport. *Journal of Transport Geography*, 56, 157-164.
- lay. (2016). *Kavalir: getting around the city centre by electric car*. Retrieved February 24, 2022, from Betterlifestyle: <https://bit.ly/3Hj0PFU>
- Cocchia, A. (2014). Smart and Digital City: A Systematic Literature Review. In R. P. Dameri, & C. Rosenthal - Sabroux, *Smart City-How to Create Public and Economic Value with High Technology in Urban Space* (pp. 13-43). Springer: Cham.
- Dameri, R. P. (2013). Searching for Smart City definition: a comprehensive proposal. *International Journal of Computers & Technology*, 11(5), 2545-2551.
- Dameri, R. P., & Rosenthal-Sabroux, C. (2014). Smart City and Value Creation. In R. P. Dameri, & C. Rosenthal-Sabroux, *Smart City-How to Create Public and Economic Value with High Technology in Urban Space* (pp. 1-12). Cham: Springer.
- Danas Online. (2021). *150 public bicycle stations and 100 kilometers of bicycle paths are planned in Belgrade*. Retrieved Februar 24, 2022, from <https://bit.ly/3JYixqH>
- Đorđević, S. (2012). *Contemporary urban studies*. Belgrade: Čigoja.
- Đorđević, S. (2019). Smart policies and inovative services. In B. Stojkov (Ed.), *The e-Future of Cities, Proceedings from scientific conference* (pp. 361-374). Belgrade: Faculty of Geography and Academy of Engineering Sciences of Serbia.
- Etezadzadeh, C. (2016). *Smart city - Future city*. Wiesbaden: Springer.
- Ferrandez, R. (2018). Modelling the C-ITS architectures: C-MobILE case study. *25th ITS World Congress, 17-21 September 2018, Paper ID EU-TP1425*, (pp. 1-10). Copenhagen, Denmark.
- Garau, C. et al. (2016). Cagliari and smart urban mobility: Analysis and comparison. *Cities*, 56, 35-46.
- Garret, A. H. (2020). Free-floating carsharing in Copenhagen: A study on user experience in a cycling city. *Danish Journal of Transportation Research*, 3, 14-34.
- Giffinger, R. et al. (2007). *Smart cities – Ranking of European medium-sized cities*. Vienna: Centre of Regional Science.

- Haller, S. et al. (2009). The Internet of Things in an Enterprise Context. In J. Domingue (Ed.), *Future Internet-FIS 2008* (pp. 14-28). Berlin Heidelberg: Springer-Verlag.
- Hudak, S. (2016). *Untersuchung der räumlichen und zeitlichen Charakteristika von car2go in Wien*. Wien: TU Wien.
- IMD World Competitiveness Center. (2021). *Smart City Index for 2021*. IMD World Competitiveness Center.
- Kogoj, T. (2018). *The connection between transformational management and innovation: the case of the Avant2Go electric vehicle sharing project (Master's thesis)*. Ljubljana: University of Ljubljana, Faculty of Economics.
- Laa, B., & Emberger, G. (2020). Bike sharing: Regulatory options for conflicting interests—Case study Vienna. *Transport Policy*, 98, 148-157.
- Li, Y. (2019). The Role of Public Authorities in the Development of Mobility-as-a-Service. In M. Audouin, & M. Finger (Eds.), *The Governance of Smart Transportation Systems* (pp. 229-248). Springer: Cham.
- Liceras, P. (2019). *Vienna will install smart traffic lights that will recognise when pedestrians want to cross the street*. Retrieved July 12, 2021, from Tomorrow city: <https://bit.ly/3gLVr9Q>,
- Lyons, G. (2018). Getting smart about urban mobility – Aligning the paradigms of smart and sustainable. *Transportation Research Part A*, 115, 4-14.
- Mestna Občina Ljubljana. (2019). *The first public mini hub for fast charging of electric vehicles in Slovenia is in Ljubljana*. Retrieved February 15, 2022, from <https://bit.ly/35FRH13>
- Mestna Občina Ljubljana. (2021). *BicikeLJ bicycle rental system*. Retrieved February 15, 2022, from <https://bit.ly/3xxqPQa>
- Milovanovič, K. (2017). *Integrated transport strategy of the City of Ljubljana*. Ljubljana: Mestna občina Ljubljana.
- Papa, E., & Lauwers, D. (2015). Smart Mobility: Opportunity or Threat to Innovate Places and Cities. In M. Schrenk (Ed.), *Real CORP 2015. Plan together-right now-overall. From Vision to Reality for Vibrant Cities and Regions, Proceedings of 20th International Conference on Urban Planning, Regional Development and Information Society* (pp. 541-548). Vienna: CORP.
- Park and cycling in Belgrade*. (2021). Retrieved February 15, 2022, from <https://bit.ly/2Ui3OTa>
- Park and ride in Belgrade*. (2021). Retrieved February 16, 2022, from <https://bit.ly/3cMt3n1>
- Radics, M. (2020). Shared Electric Scooters in Vienna: Analyzing Usage Characteristics with limited data. *Forschungsbereich Verkehrsplanung und Verkehrstechnik*, 1-24. doi:10.34726/1032
- Rupprecht Consult (Ed.). (2019). *Guidelines for Developing and Implementing a Sustainable Urban Mobility Plan, Second Edition*. Cologne: Rupprecht Consult,.
- Schaefers, T. (2013). Exploring carsharing usage motives: A hierarchical means-end chain analysis. *Transportation Research Part A: Policy and Practice*, 47, 69-77.
- Schwab, K. (2016). *The Fourth Industrial Revolution*. Geneva: World Economic Forum.
- Sekretariatet for Supercykelstier. (2020). *Cycle superhighways - Supercykelstier*. Retrieved February 15, 2022, from <https://bit.ly/2U7dkly>
- Shaheen, S. et al. (2010). Bikesharing in Europe, the Americas, and Asia—Past, Present, and Future. *Journal of the Transportation Research Board*, (2143), 159-167.
- Single City Card Urbana*. (2021). Retrieved February 15, 2022, from <https://bit.ly/35zYzAw>
- Sustainable Urban Mobility Plan, Skupština grada Beograd, No: 34-833/20-C. (2020).
- Štern, A. (2021). On the way to C-ITS harmonisation through EU. In R. Rijavec (Ed.), *29th International Symposium on Electronics in Transport : ISEP 20-21 : smart and green mobility for citizens and businesses : proceedings*. Ljubljana: Electrotechnical Association of Slovenia, ITS Slovenia.

- The City of Copenhagen. (2013). *Action Plan for Green Mobility*. Copenhagen: Technical and Environmental Administration.
- The City of Copenhagen. (2020). *Cykelredegørelse 2020*. Copenhagen: The City of Copenhagen.
- The City of Vienna. (2014). *STEP 2025-Urban Development Plan Vienna - True Urban Spirit*. Vienna: Municipal Department 18 (MA 18) - Urban Development and Planning.
- The City of Vienna. (2015). *Urban Mobility Plan Vienna*. Vienna: Urban Development Vienna.
- The City of Vienna. (2019). *Smart City Wien Framework Strategy 2019–2050*. Vienna: Vienna Municipal Administration.
- The Copenhagenizeindex. (2019). Retrieved February 20, 2022, from <https://bit.ly/3gCBJgQ>
- The Economist Intelligence Unit. (2019). *The Global Liveability Index 2019*. London: The Economist Intelligence Unit Limited. Retrieved February 22, 2022, from <https://bit.ly/3t0DScp>
- Transport model of Belgrade. (2015). Belgrade: Faculty of transport and traffic engineering, CEP.
- Wien zu fuss. (2019). *Intelligente Ampel: erkennt FußgängerInnen*. Retrieved February 20, 2022, from <https://bit.ly/3iPRAeE>,
- Wolf, B. (2019). *Guess Who's Back – Uber! Metropole*. Retrieved February 20, 2022, from <https://bit.ly/3gYHQ0b>

РАЗВОЈ ПАМЕТНОГ ПРЕВОЗА У БЕОГРАДУ – ШТА МОЖЕМО НАУЧИТИ ИЗ ДОБРЕ ПРАКСЕ КОПЕНХАГЕНА, БЕЧА И ЉУБЉАНЕ

Александар Ковачевић

Универзитет у Београду, Факултет политичких наука, Београд, Србија

Резиме

Велики градови се суочавају са бројним изазовима у превозу, међу којима су саобраћајне гужве, загађеност ваздуха, доступног јавног превоза и инфраструктурни проблеми. Градске власти настоје да пронађу најефикаснија решења за ове проблеме, те да уведу паметне облике превоза. У паметне облике превоза убрајамо еколошки прихватљиве облике превоза: пешачење, бициклизам, дељење возила и реформисани јавни превоз. На самом почетку је потребно да дефинишемо концепт паметних градова. Паметни градови су јасно дефинисане географске области које се одликују демократском организацијом, модерним менаџментом који користи дигиталне алате у управљању и грађанима који учествују у креирању локалних јавних политика. Један од најважнијих аспеката паметних градова је паметна мобилност. Паметна мобилност почива на четири стуба: дељена мобилност, аутоматизована мобилност, електрична мобилност и интегрисана мобилност. Европска комисија препоручује државама чланицама усвајање Плана одрживе урбане мобилности којим се захтева увођење зелене агенде у систем транспорта, уз обавезно укључивање грађана и других заинтересованих актера. У анализу су укључени пионири у развоју концепта паметне мобилности као што су градови Копенхаген, Беч и Љубљана. Компаративна анализа укључује три важна аспекта: транспортни модел посматра-

них градова, улогу информационо-комуникационих технологија у реформи превоза, и различите облике превоза и пројекте у реформи превоза. Компаративна анализа транспортних модела показује усмереност анализираних градова ка увођењу еколошки прихватљивих облика превоза. Градови уводе паметне системе надзора и контроле над саобраћајем у циљу смањења саобраћајних незгода и гужви, и повећања безбедности на путевима. За потребе остваривања ових циљева развијају се различите мобилне апликације које повезују кориснике и паметне сензоре. Градови развијају еколошки прихватљиве облике превоза и приступају различитим пројектима у реформи превоза. Копенхаген је усмерен ка развоју бициклизма, те настоји да развија посебне путеве на којима бициклисти имају првенство пролаза. У циљу смањења употребе приватних аутомобила у превозу, Копенхаген развија и системе за дељење возила који укључују углавном електрична возила. Са друге стране, Беч посебно инсистира на функционалном јавном превозу, уз неизоставно дељење возила, и на систему градских бицикала и електричних скутера. Љубљана такође развија систем дељења бицикала, али и систем посебних електричних возила која превозе путнике од руралних делова града до регуларних аутобуских стајалишта. Такође, у Љубљани је имплементиран посебан систем дељења возила који је дело стручњака из Словеније.

Град Београд је на самом почетку имплементације паметног превоза, те је потребно доста времена не би ли се извукле лекције из богате европске праксе. Београд је крајем 2020. године донео План одрживе урбане мобилности, којим је дефинисан правац развоја града у наредном периоду. Транспортни модел Београда одликује се великом заступљеношћу јавног превоза, те развој паметног превоза треба усмерити у том правцу. Београд се не може похвалити великим бројем бицикала у превозу, пре свега због конфигурације терена и навика грађана, те се бициклизам не може развити у оном облику у ком се развија у другим градовима. Београд треба да настоји да смањи употребу приватних возила у превозу уз промовисање еколошки прихватљивих облика превоза.

QUANTIFYING THE EFFECTS OF BREXIT VIA THE APPLICATION OF EVENT STUDY METHODOLOGY

Nenad Tomić, Violeta Todorović, Aleksandra S. Vasić*

University of Kragujevac, Faculty of Economics, Kragujevac, Serbia

Abstract

The effects of the EU-UK Withdrawal Agreement, reached on 17 October 2019, on the stocks listed on the London Stock Exchange are the subject of the paper. The classic event study methodology was used to quantify impact. This research is based on a sample of 138 stocks, divided into five sample sections according to the company's business sector. In contrast to the research conducted after the referendum, which showed a clear negative impact on almost all of the observed sectors, the research conducted in this paper does not provide a unique conclusion. Three sectors recorded obvious positive effects, namely the financial sector, the food industry, and the medical sector, while no sector suffered obvious negative effects. The remaining two sectors did not provide data to aid in reaching a clear conclusion, as there were positive, negative and statistically insignificant results across different tests.

Key words: event study, abnormal return, Brexit, parametric tests, non-parametric tests.

КВАНТИФИКОВАЊЕ УТИЦАЈА БРЕГЗИТА НА ПРИНОСЕ АКЦИЈА МЕТОДОЛОГИЈОМ СТУДИЈЕ ДОГАЂАЈА

Апстракт

Предмет истраживања рада су ефекти договора о иступању Уједињеног Краљевства из Европске уније (ЕУ), постигнутог 17. октобра 2019. године, на акције листиране на Лондонској берзи. За квантификовање утицаја коришћена је класична методологија студије догађаја. Истраживање је изведено на примеру 138 акција, подељених у пет узорака према пословном сектору компаније. За разлику од истраживања спроведеног након референдума, које је показало јасан негативан утицај иступања из ЕУ на скоро све посматране секторе, истраживање спроведено у овом раду не даје јединствен закључак. Идентификована су три сектора која јасно бележе позитивне ефекте, а то су финансијски сектор, прехранбена индустрија и медицински сектор, док није било сектора у којима су јасно забележени негативни ефекти

* Corresponding author: Aleksandra S. Vasić, University of Kragujevac, Faculty of Economics, Liceja Kneževine Srbije 3, 34000 Kragujevac, Serbia, apesterac@kg.ac.rs

иступања из ЕУ. Код преостала два сектора је било позитивних, негативних и статистички безначајних резултата на различитим тестовима, те није могуће формирати дефинитиван закључак.

Кључне речи: студија догађаја, екстра принос, Брегзит, параметарски тестови, непараметарски тестови.

INTRODUCTION

Trading on financial markets is characterised by the pronounced price volatility of financial instruments. In relation to stock trading, day-to-day events have some effect on whether prices rise or drop. Price changes often occur due to isolated events that affect only one particular company. Such events are stock splits, announcements of financial results, or internal turmoil. However, price changes can be driven by external factors that the company cannot influence. Such events can have a broad impact, affecting the entire market or specific business sectors. When analysing price changes, a very important parameter is change intensity. In other words, the question arises as to whether prices fluctuate within an established trend or exceed the expected limits under the influence of events. The event study methodology is used to determine the statistical significance of positive or negative stock returns.

The subject of this study are the effects of the EU-UK Withdrawal Agreement, reached on 17 October 2019, on the stocks listed on the London Stock Exchange. Reaching the agreement was marked by a number of activities following the June 2016 exit referendum. This paper analyses the effects of the UK's definitive withdrawal from the EU, neglecting any previous activities within the Brexit process. The research focuses on the sample of a total of 138 stocks listed on the London Stock Exchange, divided into five sample sections by business sector. This paper has one main objective and two specific objectives. The main objective is to determine the existence of a statistically significant abnormal return with reference to the observed samples. Achieving the main objective makes it possible to meet the first specific objective, i.e. to identify the differences in reactions among the observed sectors. The second specific objective is to compare the reactions of the observed business sectors to the Withdrawal Agreement with those produced by the referendum three years earlier.

After years of controversy over the UK's status in the EU, June 2016 saw a referendum on a possible exit. Contrary to expectations, almost 52% of the votes were in favour of the UK's exit from the EU. This initiated the process of the so-called Brexit. In accordance with the results of the referendum, Article 50 of the Treaty on the Functioning of the European Union obliged the Government to initiate negotiations on leaving the EU. Negotiations were necessary as the UK, as part of the EU, took on a number of international rights and obligations. The question that arose was how to

treat these rights and obligations once the UK ceased to be a member of the EU. Despite the need to regulate outstanding issues as soon as possible, the UK Government delayed the start of the negotiation process. The day after the referendum, David Cameron, the Prime Minister, resigned. Shortly afterwards, Theresa May replaced him. Although her plan to open negotiations was adopted in December of the same year, more than a year and a half passed before the UK's preliminary separation proposal was made. The EU rejected the proposal, so negotiations continued. In the summer of 2019, Theresa May resigned as she repeatedly failed to receive Parliamentary support for her Brexit plans. Boris Johnson became the new Prime Minister. His initial plan was for the UK to leave the EU unilaterally by 31 October 2019 if no agreement could be reached. Following intense diplomatic activity, an agreement was reached on 17 October 2019, and 31 January 2020 was set as the date of the UK's formal exit from the EU.

The first part of the paper reviews the existing event study literature regarding political event analysis. Particular attention is given to previous research related to the Brexit process. The second part outlines the methodological bases of the paper, which include describing the event study procedure, defining the research timeframe, and determining the tests to be conducted. The third part of the paper presents the research results, after which key effects are discussed.

REVIEW OF LITERATURE

Brexit has been a ubiquitous topic in economic literature for the past four years. Predictions of its effects on the real sector have been made with the aim of quantifying the potential decline of the UK and European economies in certain industries. Following the assumptions made by Gordon (2018), Wyman and Chance (2018) predicted that the sectors to be hit the hardest would be the chemical, automotive and food industries, the aviation, energy and technology, and pharmaceutical and financial companies. However, while some studies predict effects on the real sector, a considerable number of papers deals with effects on financial markets. Vikash, Pham and Moosa (2016) used event study methodology to analyse the impact of the outcome of the referendum on LSE-listed stocks by sector. They concluded that the largest number of sectors, mostly banks, insurance companies and travel agencies, recorded a negative abnormal return. Using the event study methodology, Schaub (2016) analysed the impact of the referendum on the British stocks traded in the US, and found a significant negative abnormal return in the first two days after the referendum. Oehler, Horn and Wendt (2017) applied event study analysis to a number of LSE-listed companies and concluded that, contrary to expectations, domestic-oriented companies experienced more pronounced negative effects than export-oriented companies. Bohdalova and Gregus (2017) analysed the impact of Brexit on six European markets, finding significant effects only in Ireland,

while no effects were recorded in Poland. Using event study methodology to analyse LSE, Breinlich, Leromain, Novy, Sampson, and Usman (2018) concluded that all companies to report markedly negative results after the referendum came from the construction, finance or airline sectors. Caporale, Gil-Alana and Trani (2018) applied the ARMA model to analyse the effects of Brexit on FTSE 100 stocks and the pound, comparing the currency against the US dollar, the euro and the Japanese yen, and reported adverse effects in all cases but the pound to yen case. Tomić et al. (2019) used event study methodology to analyse the impact of the outcome of the referendum on five selected sectors, and found statistically significant negative abnormal returns in the financial, and food and energy sectors, while the medical sector recorded a partially positive effect. Shahzad, Rubbaniy, Lensvert, and Bhatti (2019) performed cross-sectoral analysis using a modified event study procedure. They found that the referendum itself did not produce a statistically significant negative effect, and that the events following the referendum even created a significant positive effect in certain sectors. Škrinjarić (2019) relied on event study methodology to analyse the impact of Brexit on Central and South-East European markets, and found negative cumulative abnormal return with no statistical significance.

One can see that all previous studies analyse the effects of the referendum. The number of studies that deal with post-referendum Brexit events is limited. Muller (2020) conducted research focused on insurance companies, where the UK's withdrawal from the EU in January 2020 itself was used as an event. It showed significant negative abnormal returns in the periods before the event, but also significant positive abnormal returns following the event. There is an obvious lack of studies concerned with the periods of reaching the Withdrawal Agreement and the Withdrawal itself, for which this research will try to compensate. The analysis will cover five sectors, with the objective being not only to determine the results of the Withdrawal Agreement on representative industries but also to compare these results to those related to the referendum.

THEORETICAL FRAMEWORK

Event Study Procedure

The event study methodology was first applied in the late 1960s in the study of Fama, a Nobel Prize winner (Fama, Fischer, Jensen & Roll, 1969). It is a statistically intensive methodology, driven by the emergence of statistics computational methods (Eckbo, 2007, p. 5). The current event study process was formulated in the 1980s by Brown and Warner (1980; 1985), Dodd and Warner (1983) and Corrado (1989). The essence of the event study is to determine the normal return on a single stock by comparing historical returns with projected returns based on a long-term trend over a period believed to feel the effects of the event. A positive difference in

historical return and estimated return gives a positive abnormal return, while a negative difference represents a negative abnormal return. For statistical analysis, the values of the abnormal return in the event window are essential. However, in order to determine the normal return, it is necessary to observe the return on all stocks subject to analysis and the market indicator over a long period of time. This time interval is called the estimation window. Normal returns are determined on the basis of historical returns in the estimation window immediately preceding the event window.

The estimation window is a longer time period wherein the return trend on each observed stock is determined according to the market indicator (usually the stock index). The estimation window is a time interval ranging between two and eight months preceding the event itself. According to Serra (2002), it compensates for numerous daily events that affect the stocks of individual companies or groups of companies (p. 2). Due to its high impact on the normal return, it is of great importance that no major crisis affects the stock group and the whole market during the estimation window. With a shorter estimation window, minor events are also likely to have a high impact on normal return, leading to bias. Longer estimation windows carry a higher risk of including specific crises, which can again lead to bias. Therefore, a large number of authors choose the estimation window of six months.

The event window is several times shorter than the estimation window, and represents the time interval when the effects of the event on stock return are to be expected. Most often it is set asymmetrically relative to the day of the event, with the direction of asymmetry depending on the anticipation of the event itself. As the UK's exit from the EU was an expected event, the event window will cover more days before the event itself, and less after the event, considering that the effects of the expected event begin to be felt even before the event itself takes place. For research purposes, we constructed an asymmetric event window which starts two days before the event (T_{-2}), and ends one day after the event (T_{+1}). The time horizon is shown in Figure 1. The day marked with 0 represents the first day of the estimation window, so stock returns were monitored as of day 0. Days marked with T_{-2} and T_{+1} represent the first and last days of the event window. The effects of events are analysed within this asymmetric period, which includes the aforementioned days. T_0 marks the day of the event itself. The period between 0 and the first day of the event window is denoted by L_1 .

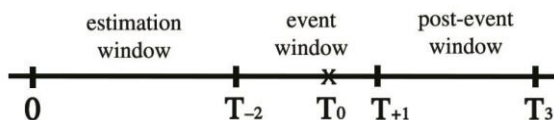


Figure 1. Event study time horizon

The essence of the event study is to determine the abnormal return on the observed stock sample. For an individual stock i on day t during the event window, the abnormal return is the difference between the historical return and the expected return on that stock on the observed day:

$$AR_{it} = R_{it} - E(R_{it}) \quad (1)$$

$$Var(AR_{it}) = \sigma_{\varepsilon_i}^2 \quad (2)$$

where AR_{it} is the abnormal return on i -th stock on day t within the event window (between T_1 and T_2 in Figure 1), R_{it} is the historical return on the observed stock on a particular day, and $E(R_{it})$ is the expected return on the same stock on that day, with the estimate based on the model selected to determine normal return; $\sigma_{\varepsilon_i}^2$ denotes the AR_{it} variance. Abnormal return always exists and its statistical significance should be proven through analysis.

Abnormal return aggregation for analysis purposes can be performed in several ways. The first way is to aggregate returns at the level of each day of the event window in order to determine the average abnormal return on day t , (\overline{AR}_t) . Another way is to aggregate at the level of individual stocks over multiple days of the event window (or throughout the entire event window), thereby obtaining the cumulative abnormal return on stock i , CAR_i .

$$\overline{AR}_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \quad (3)$$

$$Var(\overline{AR}_t) = \frac{1}{N^2} \sum_{i=1}^N \sigma_{\varepsilon_i}^2 \quad (4)$$

$$CAR_{i(t_1, t_2)} = \sum_{t=t_1}^{t_2} AR_{it}, \quad T_1 < t_1 \leq t_2 \leq T_2 \quad (5)$$

$$Var(CAR_{i(t_1, t_2)}) = \sigma_{\varepsilon_i(t_1, t_2)}^2 = (t_2 - t_1 + 1) \sigma_{\varepsilon_i}^2 \quad (6)$$

Finally, the average cumulative abnormal return, \overline{CAR} , can be determined as the average of cumulative abnormal returns on each individual stock over the same time interval. For the purposes of analysis, we also need a standardised cumulative abnormal return on each individual stock, $SCAR_i$, obtained by dividing CAR_i and the standard deviation of the particular stock:

$$\overline{CAR}_{(t_1, t_2)} = \frac{1}{N} \sum_{i=1}^N CAR_{i(t_1, t_2)} \quad (7)$$

$$Var(\overline{CAR}_{(t_1, t_2)}) = \frac{1}{N^2} \sum_{i=1}^N \sigma_{\varepsilon_i(t_1, t_2)}^2 \quad (8)$$

$$SCAR_{i(t_1, t_2)} = \frac{CAR_{i(t_1, t_2)}}{\sigma_i} \quad (9)$$

The condition for equations (2), (4), (6) and (8) is the high value of L_1 , where variance formulas are reduced to a given form (MacKinlay, 1997, p. 21).

Statistical Tests

Within the event study, two types of tests are applied – parametric and non-parametric. The study uses the parametric t-test, J₁ and J₂ tests, and the non-parametric J₃ (Sign test) and J₄ (Corrado test) tests.

The essence of the t-test is to test the difference between the realised and the hypothetical statistical value. The zero hypothesis in the case of the t-test is the absence of a statistically significant abnormal return, and the alternative hypothesis rejects the null hypothesis.

$$H_0 : \overline{AR} = 0 , \quad H_1 : \overline{AR} \neq 0 \tag{10}$$

$$t = \frac{\overline{AR}_t - AR_0}{s/\sqrt{N}} \tag{11}$$

The t-test statistic is presented in equation (11). It is calculated for each day of the event window. Since AR₀ = 0, the t-statistic is calculated by dividing the average abnormal return on the observed day by the quotient of the standard deviation of the whole sample and the root of the number of observations (according to Samitas & Kenourgios, 2004, p. 172). The critical value for rejecting the null hypothesis is ± 1.96, with a confidence level of 95%.

The remaining two parametric tests, J₁ and J₂, give unique results for the entire event window. J₁ tests the \overline{CAR} value, while J₂ tests the \overline{SCAR} value. The zero hypothesis is that \overline{CAR} and \overline{SCAR} values are not statistically significantly different from 0, so the alternative hypothesis rejects the null hypothesis. The critical values for these tests are also ± 1.96, with a confidence level of 95%, since these are two-tailed tests.

$$H_0 : \overline{CAR} = 0 , \quad H_1 : \overline{CAR} \neq 0 ,$$

$$\text{and } H_0 : \overline{SCAR} = 0 , \quad H_1 : \overline{SCAR} \neq 0 \tag{12}$$

$$J_1 = \frac{\overline{CAR}_{(t_1,t_2)}}{\sqrt{\hat{\sigma}_{t_1,t_2}^2}} \tag{13}$$

$$J_2 = \sqrt{\left(\frac{N(L_1-4)}{L_1-2}\right)} \overline{SCAR}_{(t_1,t_2)} \tag{14}$$

Of the non-parametric tests, the Sign test and the Corrado test, referred to in literature as J₃ and J₄ tests, are used in the paper. The Sign test tests the distribution of observed statistics around median value (Luoma, 2011). Since the existence of abnormal returns is determined in this case, the median value is 0. The null hypothesis states that there is an equal distribution of the positive and negative values of the observed statistics around the median value, and the alternative hypothesis rejects the null hypothesis. Sign test statistics are given in equation (16).

$$H_0 : Me = 0.5 , \quad H_1 : Me \neq 0.5 \tag{15}$$

$$J_3 = \left(\frac{N^{+(-)}}{N} - 0.5\right) \frac{\sqrt{N}}{0.5} \tag{16}$$

N is the number of total observed stocks, and $N^{+(-)}$ is the number of positive or negative statistics. The statistic of interest is CAR_i . Authors usually focus on the number of positive ones, except in the case of one-tailed tests, when examining whether the observed event leads to a negative abnormal return. The critical value of the test is ± 1.64 in the case of the two-tailed test.

The Corrado test, or the J_4 test, examines the return ranks for each observed stock (Corrado & Zivney 1992). The observation period is represented by the estimation window and event window in aggregate. Since only the return ranking is relevant to the analysis, extreme values do not affect the value of the test statistic. What differentiates this test from the J_3 test is the fact that it observes the stock return rank during the event window versus the combined estimation window and event window. It tests each day of the event window individually, with some days showing statistical significance and some not (similar to the t-test). The null hypothesis states that there is an equal distribution of the observed statistics around the median value, and the alternative hypothesis rejects the null hypothesis with the conclusion that the distribution is not even. The formula for the J_4 test is found in Cowan (1992) and Kolari & Pynnonen (2008):

$$J_4 = \frac{1}{N} \sum_{i=1}^N (K_{i0} - \frac{L_2+1}{2}) / S(L_2) \quad (17)$$

$$S(L_2) = \sqrt{\frac{1}{L_2} \sum_{t=T_0+1}^{T_2} (\frac{1}{N} \sum_{i=1}^N (K_{it} - \frac{L_2+1}{2}))^2} \quad (18)$$

The median rank is denoted as $(L_2 + 1)/2$, K_{i0} is the return rank on the event day, $S(L_2)$ is the standard deviation of the return rank, K_{it} is the return rank of the i -th stock on the t -th observed day, $t \in L_2$. The critical value of the test is ± 1.64 in the case of the two-tailed test, which is applied in this paper. It should be borne in mind that non-parametric tests are subject to constant adjustments to the test procedure and methodology.

RESULTS

An asymmetric $T_{-2} - T_{+1}$ event window was used in the analysis, with T_0 denoting the event day of 17 October 2019. A six-month estimation window, beginning with 15 April 2019, was used to estimate market trends. The authors used the FTSE 100 index as a benchmark for market trends. A total of 138 stocks of companies listed on the London Stock Exchange were analysed. Historical data was downloaded from *Yahoo! Finance*, and all statistical calculations were performed using the IBM SPSS 20 software package.

The stocks were divided into five groups according to which business sector they belong to. In order to examine the effects of the UK's exit from the EU, both parametric and non-parametric tests were conducted

– the parametric t-tests, and J_1 and J_2 tests, and the non-parametric J_3 and J_4 tests. Table 1 shows the values of the obtained statistics. The values of statistics which have statistical significance are underlined.

Table 1. Values of test statistics by sector

Sectors	Observations	Period	t-test	J_1	J_2	J_3	J_4
Food sector	23	T-2	2,03579	<u>5,60837</u>	<u>5,70665</u>	<u>2,29366</u>	1,29378
		T-1	2,24394				1,70796
		T ₀	<u>2,06732</u>				0,98782
		T+1	0,27609				0,65126
Financial sector	39	T-2	6,58808	<u>8,38604</u>	<u>9,32759</u>	<u>4,0032</u>	2,70526
		T-1	-0,59897				-0,00708
		T ₀	0,84505				0,81441
		T+1	1,23105				0,53822
Energy sector	19	T-2	0,970866	<u>4,36232</u>	0,19154	-0,68825	0,01204
		T-1	1,394393				0,93878
		T ₀	0,578823				0,25275
		T+1	0,783356				0,20059
Medical sector	23	T-2	1,69803	<u>2,76267</u>	<u>2,5465</u>	<u>2,71069</u>	0,05554
		T-1	0,72816				-0,06016
		T ₀	0,58302				0,24991
		T+1	0,70394				-0,1157
Technology sector	34	T-2	-0,03091	1,89351	<u>-3,33535</u>	<u>3,67424</u>	0,94361
		T-1	-0,28276				-0,4486
		T ₀	1,01923				-0,19723
		T+1	1,29805				1,3342

Source: Authors

This research did not yield consistent results. Unlike the results regarding the 2016 referendum, which were all negative across different studies, the majority of the results in this study showed positive effects. Namely, the financial sector, the food industry, and the medical sector experienced the Withdrawal Agreement's positive effects, which was confirmed by different tests. All sectors showed statistically significant positive results on the J_1 , J_2 and J_3 tests. The financial sector showed significant positive results on the t-test and the J_4 test for T-2, while the window statistics of these two tests were not significant for other days of the event. The t-test for the food industry showed consistent positive effects on T-2, T-1 and T₀, while J_4 confirmed the significance on T-1. There was no significance in the t-test and the J_4 test for the medical sector, which means that this sector failed to prove significance at the level of a single day, but showed a significant cumulative effect, measured by J_1 , J_2 and J_3 .

The energy sector did not provide enough data to aid in reaching a meaningful conclusion, as there was only one statistically significant result. While the majority of the statistics were positive, only the J_1 test statistic

was significant. All t-test statistics were positive with low value, leading to a significant cumulative result, measured by J_1 . The technology sector yielded even more inconsistent results. There were two significant statistics: a negative J_2 test statistic, and a positive J_3 test statistic. The J_2 measure standardised CAR, which means that those stocks with a negative CAR also showed a lower volatility of returns. That is why the average standardised CAR was negative even though the majority of the stocks have a positive CAR.

CONCLUSION

The general conclusion is that the tests provided unexpected results, especially compared to the results obtained three years earlier, after the referendum. The most surprising results were obtained in the financial sector, where all tests showed significant positive effects. A number of studies mentioned in the literature review attest to the negative effect of the referendum on the financial sector. Thus, it was expected that the Withdrawal Agreement would have effects similar to those of the referendum. The food and healthcare sectors also showed significant positive abnormal returns, while the remaining two sectors showed high inconsistency between different tests. In the case of the technology sector, there were both positive and negative abnormal returns which were statistically significant, while the case of the energy sector revealed a single significant test statistic.

The achievement of political stability that the Withdrawal Agreement brought about can be the explanation for these unexpected results. The UK government had set a deadline for reaching a Withdrawal Agreement – 31 October 2019, and planned to unilaterally withdraw if no agreement was reached. It is certain that the absence of an agreement would have been a severe blow to all internationally oriented companies in the UK, and therefore the agreement came as a kind of desired and salutary legal framework to prevent a wider crisis.

This research can be improved on two grounds. Firstly, further research can focus on the analysis of several important successive dates during the Brexit process on the same sample of stocks, allowing for a comparison of the results obtained in both papers. In addition to the referendum and the Withdrawal Agreement, one can also consider the activation of the Agreement on 31 January 2020, and the dates related to the political crisis in the UK as important dates. Secondly, further research may compare the effects of Brexit on the London Stock Exchange with results that would be obtained by analysing the financial markets of key EU members such as Germany, France and Italy. It would be interesting to see if, and to what extent these results are correlated.

REFERENCES

- Bohdalova, M., & Greguš, M. (2017). The Impacts of Brexit on European Equity Markets. *Financial Assets and Investing*, 8(2), 5-18. doi: 10.5817/FAI2017-2-1
- Breinlich, H., Leromain, E., Novy, D., Sampson, T., & Usman, A. (2018). The Economic Effects of Brexit: Evidence from the Stock Market. *Fiscal studies – Journal of applied public economics*, 39(4), 581-623. doi: 10.1111/1475-5890.12175
- Brown, S. J., & Warner, J. B. (1980). Measuring security price performance. *Journal of Financial Economics*, 8(3), 205–258.
- Brown, S.J., & Warner, J.B. (1985). Using daily stock prices: The case of event study. *Journal of financial economics*, 14, 3-31.
- Caporale, G.M., Gil-Alana, L., & Trani, T. (2018). Brexit and Uncertainty in Financial Markets. *International Journal of Financial Studies*, 6(1), 21-30. doi: 10.3390/ijfs6010021
- Corrado, C.J. (1989). A nonparametric test for abnormal security-price performance in event studies. *Journal of financial economics*, 23(2), 385-395.
- Corrado, C. J., & Zivney, T. L. (1992). The specification and power of the sign test in event study hypothesis test using daily stock returns. *Journal of Financial and Quantitative Analysis*, 27, 465–478.
- Cowan, A.R. (1992). Nonparametric Event Study Tests. *Review of Quantitative Finance and accounting*, 2(4), 343–358.
- Dodd, P., & Warner, J.B. (1983). On corporate study: A study of Proxy contest. *Journal of Financial Economics*, 11(1-4), 401-438.
- Eckbo, B.E. (ed.) (2007). *Handbook of corporate Finance: Empirical Corporate Finance*. Amsterdam, The Netherlands: North-Holland.
- Fama, E., Fischer, L., Jensen, M.C., & Roll, R. (1969). The adjustment of stock prices to new information. *International Economic Review*, 10(1), 1-21.
- Gordon, S. (2018). Brexit to hit 5 sectors hardest, research shows. *Financial Times*, March 12th.
- Kolari, J.W., & Pynnonen, S. (2008). Nonparametric rank test for event studies. In: *21st Australasian Finance and Banking Conference*. Australia, Sydney: School of Banking and Finance at the Australian School of Business.
- Luoma, T. (2011). A Sign Test of Cumulative Abnormal Returns in Event Studies Based on Generalized Standardized Abnormal Returns. *SSRN Electronic Journal*. doi: 10.2139/ssrn.1904336
- MacKinlay, A.C. (1997). Event Studies in Economics and Finance. *Journal of Economic Literature*, 35(1), 13-39.
- Muller, A. (2020) Impact of Brexit news on the stock prices of european insurance companies: an event study approach based on indexation and sub-indexation. *German Journal of Risk and Insurance*, 111, 379-407.
- Oehler, A., Horn, M., & Wendt, S. (2017). Brexit: Short-term stock price effects and the impact of firm-level internationalization. *Finance Research Letters*, 22, 171-185. doi: 10.1016/j.frl.2016.12.024
- Samitas, A., & Kenourgios, D.F. (2004). Market Efficiency and Signaling: An Event Study Analysis for Athens Stock Exchange. In: *Proceedings of the 1st Applied Financial Economics (AFE) International Conference on Advances in Applied Financial Economics, May 28th-30th* (pp. 163-175). Greece, Samos island.
- Schaub, M. (2016). Initial wealth effects of the Brexit vote on UK ADRs. *Applied economic letters*, 24(17), 1232-1236. doi: 10.1080/13504851.2016.1270398
- Serra, A.P. (2002). *EVENT STUDY TESTS - A brief survey*. Working Papers da FEP no. 117

- Shahzad, K., Rubbaniy, G., Lensvert, M.A.P.E., & Bhatti, T. (2019). UK's stock market reaction to Brexit process: A tale of two halves. *Economic Modelling*, 80, 275-283. doi: 10.1016/j.econmod.2018.11.013
- Škrinjarić, T. (2019). Stock Market Reactions to Brexit: Case of Selected CEE and SEE Stock Markets. *International journal of financial studies*, 7(1), 1-14. doi: 10.3390/ijfs6010021
- Tomić, N., Todorović, V., & Pešterac, A. (2019). Measuring the effects of Brexit using event study methodology. *Ekonomika preduzeća*, 67(7-8), 426-434. doi: 10.5937/EKOPRE1908426T
- Vikash, R., Pham, H.N.A. & Moosa, I. (2016). The sectoral effects of Brexit on the British economy: early evidence from the reaction of the stock market. *Applied economics*, 49(26), 2508-2514. doi: 10.1080/00036846.2016.1240352
- Wyman, O. & Chance, C. (2018). *The "Red Tape" cost of Brexit*. Marsh & McLennan Companies.

КВАНТИФИКОВАЊЕ УТИЦАЈА БРЕГЗИТА НА ПРИНОСЕ АКЦИЈА МЕТОДОЛОГИЈОМ СТУДИЈЕ ДОГАЂАЈА

Ненад Томић, Виолета Тодоровић, Александра С. Васић
Универзитет у Крагујевцу, Економски факултет, Крагујевац, Србија

Резиме

Рад анализира ефекте договора о иступању Уједињеног Краљевства из Европске уније (ЕУ), постигнутог 17. октобра 2019. године, на акцији листираних на Лондонској берзи. Истраживање је изведено на примеру од укупно 138 акција листираних на Лондонској берзи, подељених у пет категорија према пословном сектору. Главни циљ рада је да се утврди постојање статистички значајног екстра приноса на примеру посматраних узорака. Постизањем главног циља могуће је испунити и први изведени циљ, а то је да се утврде разлике у реакцијама на догађај између пословних сектора. Други изведени циљ подразумева поређење реакција посматраних пословних сектора након постигнутог договора о иступању са ефектима које је изазвао референдум три и по године раније.

Након вишегодишње полемике о статусу Уједињеног Краљевства у ЕУ, јуна 2016. године је организован референдум о могућем изласку из Уније. Супротно очекивањима, готово 52% бирача гласало је за излазак Уједињеног Краљевства из ЕУ. У складу са резултатима референдума, те у складу са чланом 50 Уговора о функционисању Европске уније, Влада Уједињеног Краљевства је била у обавези да покрене преговоре о изласку из ЕУ. Након интензивне дипломатске активности, договор је постигнут 17. октобра 2019. године, а 31. јануар наредне године је одређен као формални датум изласка Уједињеног Краљевства из ЕУ. Брежит је у временском периоду између референдума и коначног изласка из ЕУ био свеприсутна тема у економској литератури. Вршена су предвиђања ефеката на реални сектор, са циљем квантификовања потенцијалног пада британске и европске привреде у одређеним индустријама.

За квантификовање утицаја у овом раду коришћена је класична методологија студије догађаја. Суштина студије догађаја се односи на утврђивање нормалног приноса једне акције поређењем историјски остварених приноса са предвиђеним

приносима на основу дугорочног тренда у периоду за који се сматра да постоји ефекат догађаја. Позитивна разлика историјског приноса и процењеног приноса представља позитивни екстра принос, док негативна разлика представља негативни екстра принос. За статистичку анализу су битне вредности екстра приноса у периоду догађаја. Међутим, да би се претходно утврдио нормални принос, потребно је посматрати кретање приноса свих акција које ће бити предмет анализе и тржишни показатељ у дужем временском периоду. Тај временски интервал се назива периодом процене. Нормални приноси се утврђују на основу историјских приноса у периоду процене, који непосредно претходи периоду догађаја. За период процене се узима временски интервал од два до осам месеци пре самог догађаја. Период догађаја је вишеструко краћи од периода процене и представља временски интервал током кога се очекује ефекат догађаја на приносе посматраних акција. Најчешће се поставља асиметрично у односу на дан догађаја, а смер асиметрије зависи од антиципације самог догађаја. Пошто је излазак Уједињеног Краљевства из ЕУ био очекивани догађај, период догађаја обухвата више дана пре самог догађаја, а мање након остварења догађаја, јер ефекти очекиваног догађаја почињу да се осећају и пре његовог остварења. За процену тржишних кретања у овом раду је коришћен шестомесечни период процене који почиње 15. априла 2019. године.

Резултати овог истраживања су другачији од резултата постигнутих у већем броју студија усмерених на ефекте референдума. Супротно генералним очекивањима, негативни ефекат није недвосмислено забележен ни у једном сектору. Даље, у случају три сектора забележено је присуство позитивног екстра приноса, и то у финансијском сектору, прехрамбеној индустрији и медицинском сектору. Код последњег сектора, t-тест није показао статистичку значајност ни за један дан догађаја, али сви остали тестови имају статистички значајне вредности статистика. У односу на преостала два сектора није могуће доћи до недвосмисленог закључка јер су различити тестови забележили присуство и позитивног и негативног екстра приноса, док је највећи део вредности статистика био статистички без значаја. Посебну неконзистентност између различитих тестова показао је технолошки сектор, јер постоје и позитивни и негативни екстра приноси који имају статистичку значајност. Ипак, највеће изненађење представљају резултати тестова за финансијски сектор. Овакви резултати су неочекивани из два разлога. Прво, након референдума, компаније финансијског сектора су реаговале изразито негативно, па је стога очекивано да ће се реакција поновити. Друго, компаније финансијског сектора чешће су осетљиве на потресе који долазе из политичког окружења. Очекивано је да ће дезинтеграциони процес изазвати негативну реакцију на финансијском тржишту. Међутим, упркос набројаним аргументима, тестови су недвосмислено показали позитивну реакцију компанија на излазак Уједињеног Краљевства из ЕУ.

Узрок наведених резултата је дефинитивно висока варијабилност приноса у време периода догађаја. Пошто је догађај био очекиван, трговци на берзи су могли да се правремено припреме. Ефекат изненађења, који је постојао након референдума, изостао је у овом случају. Даље, за разлику од референдума, који је био шокантан, процес преговора око изласка био је дуг и мучан како за ширу јавност тако и за учеснике. Стога, постизање договора пратио је осећај олакшања, који се очигледно пренео на финансијско тржиште. Може се закључити да су ефекти изласка Уједињеног Краљевства из ЕУ на акције листиране на Лондонској берзи били далеко умеренији и позитивнији у поређењу са ефектима референдума.

THE ROLE OF EMPLOYER BRAND ATTRACTIVENESS IN THE HOTEL LABOUR MARKET

Jasmina Ognjanović*

University of Kragujevac, Faculty of Hotel Management and Tourism in
Vrnjačka Banja, Serbia

Abstract

The employer brand is seen as part of the intangible assets of a hotel that provides economic, functional, and psychological benefits to current and potential employees. This paper aims to identify and examine the influence of EBA on potential employees in the hotel industry. The study analyses the relationship between the dimensions of employer brand attractiveness and the decisions of potential employees - intent to join hotels and future behaviour. The sample includes 203 final year bachelor's students and master's students in the Hotel management course. The results reveal a positive effect of the dimensions of employer brand attractiveness (compensation and benefits, management value, and development and training) on intent to join. Also, the results reveal the effect of the dimensions (work/life balance, compensation and benefits, and development and training) on the future behaviour of potential employees.

Key words: employer brand, hotel, potential employees, intent to join, future behaviour.

УЛОГА АТРАКТИВНОСТИ БРЕНДА ПОСЛОДАВЦА НА ТРЖИШТУ РАДА ХОТЕЛСКЕ ИНДУСТРИЈЕ

Апстракт

Бренд послодавца представља део нематеријалне имовине хотела који обезбеђује економске, функционалне и психолошке користи значајне за тренутно и потенцијално запослене. Циљ рада је да идентификује у којој је мери атрактивност бренда послодавца значајна потенцијално запосленима на тржишту рада хотелске индустрије. Студија анализира везу између димензија атрактивности бренда послодавца и одлука потенцијално запослених, односно намере да приступе хотелу и будућег понашања. Узорак обухвата 203 студената завршних година основних и мастер студија студијског програма Хотелски менаџмент. Резултати студије ука-

* Corresponding author: Jasmina Ognjanović, University of Kragujevac, Faculty of Hotel Management and Tourism, Vojvodjanska bb, 36210 Vrnjačka Banja, Serbia, jasmina.lukic@kg.ac.rs

зују на то да димензије атрактивности бренда послодавца (компензације и користи, вредност управљања, обука и развој) позитивно утичу на намере потенцијално запослених да приступе хотелу. Резултати такође указују на то да димензије атрактивности бренда послодавца (баланс између живота и посла, компензације и користи, обука и развој) утичу на будуће понашање потенцијално запослених.

Кључне речи: бренд послодавца, хотел, потенцијално запослени, намера приступања хотелу, будуће понашање.

INTRODUCTION

Human resources are becoming key factors in maintaining the competitive advantage and business success of hotels. For these reasons, the demand for talented and valuable employees is becoming higher than the supply, which is, in turn, resulting in more intense competition among hotels in the labour market. According to Eurostat (2022), the number of employees in the accommodation sector equalled 1,985,200 in European Union countries in 2020, which is 17.5% less than the number recorded in 2019. In the period before the Covid crisis (2010-2019), the number of employees in the accommodation sector recorded a growth trend. In 2019, 24% of the total number of employees in the accommodation sector were people with tertiary education, and 51% were people with upper secondary and post-secondary non-tertiary education post-secondary education (Eurostat, 2022). In 2020, 17,300 people were employed in the accommodation sector in Serbia, which is 16.4% less than the number recorded in 2019. In 2019, employment was 37% higher, as compared to 2010 (Eurostat, 2022).

Gehrels (2019) states that the hotel industry has been suffering from a lack of employees with appropriate skills and from poor talent pipelines for a long time, especially when it comes to managerial positions. In addition, the hotel business is characterised by high labour turnover rates (Ladkin & Buhalis, 2016), which affects efficiency, productivity, and cost structure (Davidson, Timo, & Wang, 2010). Davidson et al. (2010), and Ladkin and Buhalis (2016) state that the real challenge for hotels is how to attract talents and use their potential.

To better face the current challenges, some hotels have been developing the employer brand in order to make the company an 'employer of choice' (Alshathry, Clarke, & Goodman, 2017). Thus, the employer brand emerges as a response to practical business needs, and is aimed at attracting and retaining valuable and talented candidates in an increasingly competitive labour market (Chhabra & Sharma, 2014).

"The hospitality is a service-oriented business, and service comes only from hotel employees" (Cheung, Kong, & Song, 2014, p. 1164), and thus building the employer brand in hotels is of particular benefit. The employer branding process focuses on two target groups: potential and

current employees (Alshathry et al., 2017). Since the subjects of the analysis are potential employees and their attitudes towards future employers, some authors (Santiago, 2019) suggest the use of the term employer brand attractiveness (EBA). EBA represents the perceived benefits that employees gain by working for a company (Berthon et al., 2005; Santiago, 2019).

Research shows that an employer brand is a powerful tool for attracting talented individuals from the labour market (Santiago, 2019). Certain studies indicate the significance of the employer brand for potential and current employees in the IT industry (Tanwar & Prasad, 2016; Deepa & Baral, 2019) and service industries (Schlager Bodderas, Maas, & Cachelin, 2011; Arasanmi & Krishna, 2019). However, research on the preferred dimensions of EBA among potential employees in the hotel industry is scarce. This can be characterised as the first research gap. Second, many authors (Sivertzen, Nilsen, & Olafsen, 2013; Chhabra & Sharma, 2014; Sharma & Prasad, 2018; Santiago, 2019) examine the impact of the employer brand on candidates' intention to join companies from different industries. However, the existing literature does not provide answers to the question of which dimensions of EBA are crucial in candidates' decision to apply for a job in a hotel. Third, the literature provides an answer to the question of how to improve the company's attractiveness in the labour market, but does not specify the dimensions of EBA that may affect the future behaviour of potential employees in the hotel industry. Also, it does not investigate whether the same dimensions of EBA that affect candidates' intention to join the company similarly affect the future behaviour of potential employees. This study defines a structural model that explores the preferred dimensions of EBA.

This paper aims to identify and examine the influence of EBA on potential employees in the hotel industry. The study should provide an answer to the question of how much EBA contributes to potential employees' intent to join a hotel and their future behaviour.

LITERATURE REVIEW

Employer Brand Concept

The employer brand is “the package of functional, economic, and the psychological benefit provided by employment, and identified with the employing company” (Ambler & Barrow, 1996, p. 187).

Employer brand development is monitored by dimensions that represent the benefits that potential employees gain by working for a hotel. This paper analyses the following dimensions of EBA: work/life balance, compensation and benefits, management value, and development and training. The choice of the dimensions of employer brand is based on two criteria. The first criterion concerns the socio-economic characteristics of

employees in the labour market in Serbia. The second criterion reflects the notion that the quality of hotel services depends on employee knowledge and satisfaction. Knowledge can be improved by investing in development and training, and management value. Employee satisfaction depends on the development of work/life balance, and compensation and benefits.

*Employer Brand Attractiveness and Potential Employees'
Intent to Join a Hotel*

Potential employees base their decisions to join a company on the general impression of EBA (Gehrels, 2019). The employer's attractiveness depends on the company's management initiatives to implement the employer branding strategy (Sharma & Prasad, 2018), and on the development of certain dimensions that make the employer attractive. The theories used to explain the role of the employer image among potential employees' are the signalling theory (Spence, 1973), and the social identity theory (Ashforth & Mael, 1989). According to the signalling theory, job seekers use available information from image characteristics as a signal about the working conditions in a company (Lievens & Slaughter, 2016). The considerations of social identity theory are based on the idea that people define themselves in terms of the organisation of which they are members (Ashforth & Mael, 1989).

Previous studies contribute to the understanding of the relationship between EBA and candidates' intent to join a company (Sivertzen et al., 2013; Zhu et al., 2014; Sharma and Prasad, 2018; Santiago, 2019).

*Employer Brand Attractiveness and Future Behaviour
of Potential Employees*

The application of the employer's branding strategy and the development of employer's brand value assumptions contribute to employees' commitment and additional engagement (Deepa & Baral, 2019). Additional employee engagement improves the individual and organisational performance of the company and reduces costs, improves customer satisfaction, increases revenues, profit margins, and rates of return on investment (Deepa & Baral, 2019). On the other hand, highly engaged employees enhance employer brand development (Deepa & Baral, 2019). The research on the relationship between the attractiveness of the employer and the future behaviour of the employees is theoretically based on social exchange theory. According to this theory, the behaviour of employees towards the organisation is strongly influenced by their perception of the organisation's behaviour towards them (Eisenberger & Huntington, 1986).

Although research on the role of the employer brand in attracting potential employees was conducted, little is known about how the em-

ployer brand influences employee behaviour (Gupta, Bhasin, & Mushtaq, 2021). The desired behaviour of employees is a result of the degree of support provided by the company (Arasanmi & Krishna, 2019), which is related to the development of the EBA.

DEVELOPMENT OF THE RESEARCH HYPOTHESES

‘Work/life balance’ refers to “the benefits that employees gain by meeting both business and family obligations, which contribute to the personal and professional success of employees” (Dabirian et al., 2019, p. 1406). Research proves that work/life balance is one of the preferred attributes of EBA (Jain & Bhatt, 2015; Sharma & Prasad, 2018). Murphy and Doherty (2011) state that support for the development of the work/life balance dimension comes from modern technology that enables work from home, and from the availability of managers even when they are not in their office. Also, employers who respect family obligations show respect and help the employees’ achievement of a sense of belonging to the company, which is reflected in the behaviour of employees. Based on the above, the following hypotheses will be tested:

H₁ – *Work/life balance positively contributes to the potential employees’ intent to join a hotel company; and*

H₂ – *Work/life balance positively contributes to the potential employees’ future behaviour in the hotel industry.*

Compensation and benefits represent “values to assess the extent to which an individual is attracted to an employer that provides an above-average salary” (Berthon et al., 2005, p. 159). Some studies (Agrawal & Swaroop, 2009; Chhabra & Sharma, 2014) analyse compensation as a desirable organisational attribute to potential employees that influences their decision to join the company. Compensation and benefits are especially important for ensuring employee satisfaction, which is reflected in the results of their work, their behaviour, and their attitude towards work. Mahmood, Akhtar, Talat, Shuai and Hyatt (2019) find that the reward strategy is positively related to job satisfaction and employee commitment. Based on the above, the following hypotheses will be tested:

H₃ – *Compensation and benefits positively contribute to the potential employees’ intent to join a hotel company; and*

H₄ – *Compensation and benefits positively contribute to the potential employees’ future behaviour in the hotel industry.*

Management value is described as “supervisory and management styles and practices following managers as leaders who inspire, encourage, protect and respect employees” (Dabirian et al., 2019, p. 1406). To attract talent to hotels, managers must create, maintain, and promote an attractive and healthy work environment (Willie et al., 2008). The development of management value indicates the treatment of employees by

managers, which can be a key factor on which applicants' decision to join the company will depend. Based on the above, the following hypotheses will be tested:

H₅ – *Management value positively contributes to the potential employees' intent to join a hotel company; and*

H₆ – *Management value positively contributes to the potential employees' future behaviour in the hotel industry.*

A large number of studies state that educational opportunities, opportunities for advancement, and challenging work profiles influence the intention of candidates to join a company (Schlager et al., 2011; Sharma & Prasad, 2018). For hotel job candidates, the most important thing is to believe that the employer offers opportunities for professional development (Willie et al., 2008). Sharma and Prasad (2018), and Santiago (2019) prove the impact of development and training on the intent to join a company. Investing in the development and training of employees strengthens the sense of the employer's commitment to employees, which is then reflected in the behaviour of employees. A study by Otoo and Mishra (2018) suggests the existence of a relationship between employee training and workforce productivity. Based on the above, the following hypotheses will be tested:

H₇ – *Development and training positively contribute to the potential employees' intent to join a hotel company; and*

H₈ – *Development and training positively contribute to the potential employees' future behaviour in the hotel industry.*

MATERIALS AND METHODS

Data Collection

The respondents are potential employees in the hotel industry, i.e. final-year students of bachelor academic studies and master academic studies in the field of Hotel Management. Students are considered to be the primary target groups for organisations interested in attracting skilled employees (Berthon et al., 2005; Tanwar & Kumar, 2019). Santiago (2019) states that students are yet to witness the corporate world and are actively present in the company's external environment.

Data collection was performed using a questionnaire survey. The questionnaire was distributed to 344 students via e-mail in 2021. Of this number, 203 fully completed questionnaires were returned, giving a satisfactory response rate of 59% (Dommeyer, Baum, Hanna, & Chapman, 2004).

Measures

The questionnaire is divided into four parts, and includes a total of 37 items; the first part covers the social and professional characteristics of respondents, while the second, third and fourth parts of the questionnaire include items related to dimensions of EBA, intent to join, and future behaviour of potential employees (Table 1). Since some items did not meet the set limit values ($0.4 < \text{standardised loading} < 0.9$), they were eliminated from the research, so the number of items was reduced to 23.

Items for the dimensions of EBA were defined based on the following studies: work/life balance (Tanwar & Prasad, 2016; Sharma & Prasad, 2018; Dabirian et al., 2019); compensation and benefits (Zhu et al., 2014; Tanwar & Kumar, 2019; Dabirian et al., 2019); management value (Dabirian et al., 2019); and development and training (Zhu et al., 2014; Tanwar & Prasad, 2016; Sharma & Prasad, 2018; Dabirian et al., 2019). The items used for the assessment variable *intent to join* were defined based on research conducted by Sivertzen et al. (2013), Sharma & Prasad (2018), and Santiago (2019). The variable *future behaviour* was observed through items defined based on the studies conducted by Na-nan and Saribut (2019) and Tseng and Wu (2017). Items were assessed based on a seven-point Likert scale ranging between 1 (Strongly disagree) and 7 (Strongly agree).

RESULTS

Demographics

The largest number of respondents (67% of the total number of respondents) have previously completed a level of education in the field of tourism and hospitality. The sample is dominated by respondents who have no work experience in the hotel industry (55% of respondents). Of all the respondents in the sample, 42% have up to 5 years of work experience in the hotel industry, while 3% have more than 6 years of work experience. The respondents are final-year students of bachelor studies (84%) and master's studies in the field of Hotel Management (16%).

Measurement Model

The evaluation of the overall model fit was done by confirmatory factor analysis (CFA) using maximum-likelihood estimates in AMOS 23. The measurement model was monitored via the following fit indices: Chi-square (χ^2), χ^2/df , NFI, CFI, RMSEA, IFI, and TLI. According to Hooper, Coughlan and Mullen (2008), and Forza and Filippini (1998), the values for an acceptable model fit are limited: GFI > 0.90; NFI > 0.80/0.90; CFI > 0.90; RMSEA < 0.08; IFI > 0.90; TLI > 0.90. The results show that the observed measurement model is an acceptable model fit (Legend in Table 1).

The reliability analysis was conducted using a Cronbach's alpha coefficient that should be greater than 0.7 (Nunnally, 1978). Table 1

shows the values of Cronbach's alpha coefficient, which ranges between 0.910 and 0.930 for the observed variables.

The application of confirmatory factor analysis (CFA) supports the necessity of conducting convergent validity analysis. The indicators monitored were average variance extracted (AVE) and composite reliability (CR). Table 1 shows the results of the CFA of the measurement model. According to Fornell and Larcker (1981), the AVE of each item should be greater than 0.5, and construct validity is established if CR is greater than 0.7. The value of standardised loading ranges between 0.344 and 0.894. Four items were excluded from the analysis due to the unsatisfactory value of standardised loadings. The AVE values range between 0.5955 (Work/life balance) and 0.7475 (Development and training opportunities), which is above 0.5, indicating good convergent validity of the latent constructs. For all observed variables, the CR value is higher than the recommended minimum value of 0.7 (Table 1).

Table 1. Standardised loadings, Cronbach's alpha coefficient, AVE, CR values

Items	Standardised loadings	Cronbach's alpha	AVE	CR
Work/life balance		0.919	0.5955	0.8110
I appreciate hotels in which performing business tasks does not imply only and solely present in the hotel, but certain tasks can also be done from home.	0.894			
I appreciate hotels that provide flexibility in performing business tasks ^a .				
I appreciate hotels where tasks are scheduled so I have time for both family and friends.	0.344			
I appreciate hotels in which in case of urgent family events, I can leave work during working hours.	0.529			
Compensation and benefits		0.910	0.6835	0.9147
I appreciate hotels that offer above-average earnings.	0.834			
I appreciate hotels that offer a good, overall package of benefits and compensation (pension insurance, health care, paid leave, etc.).	0.467			
I appreciate hotels that offer a fair reward system according to the work done.	0.467			
I appreciate hotels that guarantee job security (you are not afraid of being fired).	0.443			
I value hotels that guarantee security in the payment of salaries.	0.348			

Management value		0.920	0.7096	0.9067
I appreciate hotels where superiors have a clear business vision and clear control over the work of employees.	0.625			
I appreciate hotels in which superiors show competence and knowledge in performing business tasks.	0.730			
I appreciate hotels where superiors understand my business needs and requirements.	0.640			
I appreciate hotels where superiors show a high level of commitment to employees and help me solve my business tasks.	0.819			
I appreciate hotels where superiors encourage and support my work ^a .				
Development and training		0.915	0.7475	0.8987
I appreciate hotels that regularly organize education and training for their employees.	0.594			
I appreciate hotels that provide career development opportunities and that manage the careers of employees.	0.606			
I appreciate hotels that enable and support the development of creativity among employees ^a .				
I appreciate hotels that enable employees to acquire the skills necessary to perform assigned tasks.	0.599			
Intent to join		0.930	0.6290	0.8704
A hotel with the above characteristics would be my first choice on the job market.	0.699			
I would accept a business offer from a hotel like this.	0.649			
If this organisation invited me for a job interview, I would accept.	0.764			
I would exert a great deal of effort to work for this company.	0.605			
Future behaviour		0.913	0.6954	0.9011
With my work and behaviour, I want to contribute to achieving the business goals of the hotel with the above characteristics.	0.600			
If I worked in a hotel like this, I would adhere to all the rules and regulations prescribed by the hotel management.	0.628			
If I worked in a hotel like this, I would try to perform my business tasks responsibly.	0.825			
If I worked in a hotel like this, I would invest maximum effort in performing the assigned tasks.	0.836			
If I worked in a hotel like this, I would be willing to sacrifice my interest for the hotel ^a .				

Note: Model fit: $\chi^2 = 371.168$; d.f. = 211 (χ^2 /d.f. = 1.759); $p < 0.05$; GFI = 0.866; NFI = 0.912; CFI = 959; RMSEA = 0.061; IFI = 0.960; TLI = 0.951.

AVE = average variance extracted, C.R. = composite reliability
^a excluded variables due to high/low value of standardised loadings

Source: Author

Descriptive Statistics

Based on the mean value, it can be concluded that the most important dimensions of EBA for potential employees are: compensation and benefits (Mean = 6.31/7), and development and training (Mean = 6.30/7). Work/life balance has the lowest mean value (Mean = 6.04). The Management value has the greatest value of SD (SD = 1.11). Intent to join is most strongly correlated with compensation and benefits ($\rho = 0.668$; $p < 0.01$). Future behaviour is most strongly related to compensation and benefits ($\rho = 0.789$; $p < 0.01$).

Hypotheses Testing

Structural equation modeling (SEM) was used to test the set research hypotheses. Fit indices indicate the appropriateness of the structural model ($\chi^2 = 377.293$; d.f. = 212; $\chi^2/d.f. = 1.780$; $p < 0.05$; GFI = 0.865; NFI = 0.910; CFI = 958; RMSEA = 0.062; IFI = 0.959; TLI = 0.950). Figure 1 and Table 2 show a structural model with standardised path coefficients.

Table 2. Standardised parameter estimates

Path	Estimates	p	Support
H ₁ Work/life balance → Intent to join	0.134	0.527	No
H ₃ Compensation and benefits → Intent to join	0.550	0.025	Yes
H ₅ Management value → Intent to join	0.237	0.053	Yes
H ₇ Development and training → Intent to join	0.403	0.003	Yes
H ₂ Work/life balance → Future behaviour	0.366	0.031	Yes
H ₄ Compensation and benefits → Future behavior	0.359	0.054	Yes
H ₆ Management value → Future behaviour	0.044	0.628	No
H ₈ Development and training → Future behavior	0.213	0.029	Yes

Note: Model fit: $\chi^2 = 377.293$; d.f. = 212; $\chi^2/d.f. = 1.780$; $p < 0.05$; GFI = 0.865; NFI = 0.910; CFI = 958; RMSEA = 0.062; IFI = 0.959; TLI = 0.950

Source: Author

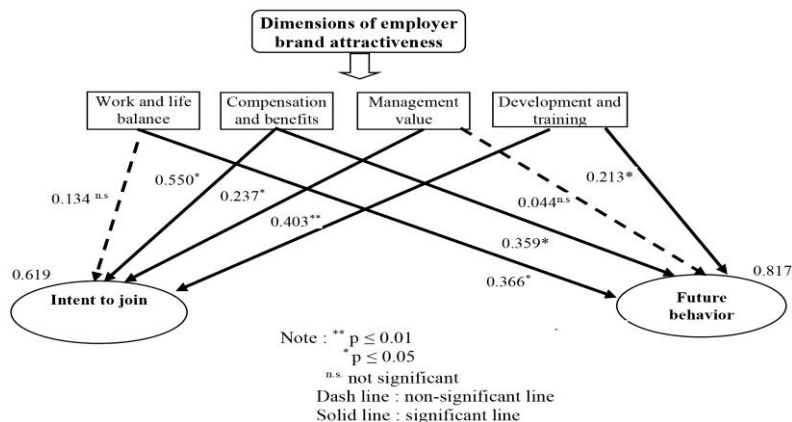


Figure 1. Estimates of the Model

Hypothesis H₂, Hypothesis H₃, Hypothesis H₄, Hypothesis H₅, Hypothesis H₇, and Hypothesis H₈ **are supported**.

Hypothesis H₁ and Hypothesis H₆ **are not supported**.

DISCUSSION

The importance of development and training in attracting individuals to companies is also supported by Zhu et al. (2014), Sharma and Prasad (2018), and Santiago (2019). Such results are in line with the theory of psychological contracts, according to which employees acquire skills through development and training in exchange for employee effort and flexibility. By providing employees with development opportunities and adequate training, companies make employees stand out in their responsibilities (Sharma & Prasad, 2018). However, the results of this study are different from those acquired by Sivertzen et al. (2013). The reason for this deviation may be cultural, or may be the result of focusing on one industry – in this case, the hotel industry. The results of this study show that intent to join is also affected by management value. The importance of quality supervisors and effective leadership for attracting employees was demonstrated by a number of authors (Berthon et al., 2005; Sharma & Prasad, 2018). The results of this study are compatible with the conclusion of Sharma and Prasad (2018) which states that the employer's trust in employees can be increased by developing a sense of employee belonging and acceptance from management, which results in positive employee behaviour.

Developing EBA not only attracts high-quality employees but also ensures the desirable behaviour of employees. Such results are consistent with the conclusion of Sivertzen et al. (2013), which states that a high level of employee competence, which leads to productive employee behaviour, depends on the employer's branding strategy. The social exchange theory supports the obtained results. Work/life balance has implications for employee behaviours which can act on organisational effectiveness (Mas-Machuca, Berbegal-Mirabent, & Alegre, 2016), productivity, and performance (Soomro, Breiteneker, & Shah, 2018). These results encourage management to invest in work/life balance, as Baum (2019) notes that various sustainable high-performance work systems, such as work/life balance, are not sufficiently present in the hotel industry. The results of this study show that employee satisfaction with compensation can affect their future behaviour in hotels, which is in line with the assumptions of several authors (Jung & Yoon, 2015; Joo-Ee, 2016). Weltmann (2019) believes that an increase in wages will improve employee behaviour, and that higher costs would be offset by the increased productivity of workers thus motivated. The results of this study support the assumption that investing in the development and

training of employees strengthens the sense of the employer's commitment to employees, which is, in turn, reflected in the behaviour of employees. Investing in development and training leads to employees' innovative behaviour, which increases the quality of the hotel service (Edghiem & Mouzoghi, 2018).

CONCLUSION

The results of this study show that the development of the dimensions of EBA affects the intent to join a hotel company and future behaviour.

Managerial Implications

The circumstances in the labour market of the hotel industry show that the hotel industry has been suffering from a lack of employees with appropriate skills, and from high labour turnover rates. It follows that the hotel management must pay special attention to attracting talented and valuable individuals, as well as to retaining them in the hotel long-term. Observing the potential employees' views on the dimensions of EBA gives a clearer picture of what they value, want, and expect the most from their employer. On the other hand, the hotel management must be able to monitor and support the wishes, needs, and intentions of current employees, which means monitoring the dimensions of the employer brand among employees.

By developing EBA, human resource management improves the process of attracting talented individuals, which creates numerous benefits for hotels: it reduces the cost of attracting employees, improves employment performance, and increases the number of registered talented individuals per open position. With the development of the employer brand, HR managers are allowed to choose from a wide range of different candidates for the appropriate position.

It is especially important for HRM that the dimensions of the EBA are realistically presented to potential employees so as to enable them to perceive the hotel, its values, and the culture promoted by the hotel in the right way. By matching the hotel's values with the values of potential employees, trust and the positive future behaviour of employees are achieved. By creating an impact on future behaviour, hotel management benefits through increased employee loyalty, commitment, and employee efficiency. By influencing future behaviour, managers achieve better communication and cooperation with employees.

Limitations and Future Study

This study has two limitations. The first limitation is the fact that it observes the EBA through internal dimensions (work/life balance, compensation and benefits, management value, development and training). It is believed that potential employees can better assess the external dimensions of EBA. However, a broader observation of the dimensions of the EBA makes it possible for an employer to monitor brand strength both internally and externally (Tanwar & Prasad, 2017). The second limitation of this study is related to the type of respondents. EBA analysis was conducted on a sample of potential employee's (students) who possess limited employment experience (Tanwar & Prasad, 2017). However, some authors (Sivertzen et al., 2013) state that earlier studies on employer brands mainly use students as respondents, which simplifies the comparison of results. As this research is focused on improving the attraction of valuable and talented potential employees, master's and bachelor's students were surveyed (Sharma & Prasad, 2018).

The study provides several questions and topics for future research. First, it is necessary to investigate whether potential employees prefer the same dimensions of EBA as hotel employees. Second, it is necessary to investigate whether employer brand development in hotels reflects on employee performance. Third, it is necessary to investigate whether it is possible to express the value of the employer brand in the balance sheet, and how the incurred costs should be stated.

REFERENCES

- Agrawal, R.K., & Swaroop, P. (2009). Effect of employer Brand image on application intentions of Bschool undergraduates. *Vision: The Journal of Business Perspective*, 13(3), 41-49. DOI: 10.1177/097226290901300304
- Alshathry, S., Clarke, M., & Goodman, S. (2017). The role of employer brand equity in employee attraction and retention: a unified framework. *International Journal of Organizational Analysis*, 25(3), 413-431. DOI: 10.1108/IJOA-05-2016-1025
- Ambler, T., & Barrow, S. (1996). The employer brand. *The Journal of Brand Management*, 4(3), 185-205. DOI: 10.1057/bm.1996.42
- Arasanmi, C., & Krishna, A. (2019). Employer branding: perceived organisational support and employee retention – the mediating role of organisational commitment. *Industrial and Commercial Training*, 51(3), 174-183. DOI: 10.1108/ICT-10-2018-0086
- Ashforth BE, & Mael F. (1989). Social identity theory and the organization. *Academy of Management Review*, 14(1), 20-39 DOI: 10.2307/258189
- Baum, T. (2019). Does the hospitality industry need or deserve talent? *International Journal of Contemporary Hospitality Management*, 31(10), 3823-3837. DOI: 10.1108/IJCHM-10-2018-0805
- Berthon, P., Ewing, M., & Hah, L. L. (2005). Captivating company: Dimensions of attractiveness in employer branding. *International Journal of Advertising*, 24(2), 151-172. DOI: 10.1080/02650487.2005.11072912

- Cheung, C., Kong, H., & Song, H. (2014). How to influence hospitality employee perceptions on hotel brand performance? *International Journal of Contemporary Hospitality Management*, 26(8), 1162-1178. DOI: 10.1108/IJCHM-02-2013-0090
- Chhabra, N.L., & Sharma, S. (2014). Employer branding: strategy for improving employer attractiveness. *International Journal of Organizational Analysis*, 22(1), 48-60. DOI 10.1108/IJOA-09-2011-0513
- Dabirian, A., Berthon, P., & Kietzmann, J. (2019). Enticing the IT crowd: employer branding in the information economy. *Journal of Business & Industrial Marketing*, 34(7), 1403-1409. DOI: 10.1108/JBIM-11-2018-0333
- Davidson, M., Timo, N., & Wang, Y. (2010). How much does labour turnover cost? A case study of Australian four- and five-star Hotels. *International Journal of Contemporary Hospitality Management*, 22(4), 451-466. DOI: 10.1108/95961190980000614
- Deepa, R., & Baral, R. (2019). Importance-performance analysis as a tool to guide employer branding strategies in the IT-BPM industry. *Journal of Organizational Effectiveness: People and Performance*, 6(1), 77-95. DOI: 10.1108/JOEPP-04-2018-0024
- Dommeyer, C.J., Baum, P., Hanna, R.W., & Chapman, K.S. (2004). Gathering faculty teaching evaluations by in-class and online surveys: their effects on response rates and evaluations. *Assessment & Evaluation in Higher Education*, 29(5), 611-623. DOI: 10.1080/02602930410001689171
- Edghiem, F., & Mouzughy, Y. (2018). Knowledge-advanced innovative behaviour: a hospitality service perspective. *International Journal of Contemporary Hospitality Management*, 30(1), 197-216. DOI: 10.1108/IJCHM-04-2016-0200
- Eisenberger, R., & Huntington, R. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71(3), 500-507. DOI: 10.1037/0021-9010.71.3.500
- Eurostat (2022). *European Statistical*. https://ec.europa.eu/eurostat/databrowser/view/tour_ifs2r2/default/table?lang=en Accessed 15.02.2022.
- Fornell, C., & Larcker, D.F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50. DOI: 10.2307/3151312
- Forza, C., & Filippini, R. (1998). TQM impact on quality conformance and customer satisfaction: A causal model. *International Journal of Production Economics*, 55, 1-20. DOI: 10.1016/S0925-5273(98)00007-3
- Gehrels, S. (2019). *Employer Branding for the Hospitality and Tourism industry: Finding and Keeping Talent*. Emerald Publishing Limited, Howard House, Wagon Lane, UK, (Chapter 1).
- Gupta, S., Bhasin, J., & Mushtaq, S. (2021). Employer brand experience and organizational citizenship behavior: mediating role of employee engagement. *Asia-Pacific Journal of Business Administration*, 13(3), 357-382. DOI: 10.1108/APJBA-08-2020-0287
- Hooper, D., Coughlan, J., & Mullen, M.R. (2008). Structural equation modelling: guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53-60.
- Jain, N., & Bhatt, P. (2015). Employment preferences of job applicants: unfolding employer branding determinants. *Journal of Management Development*, 34(6), 634 - 652. DOI: 10.1108/JMD-09-2013-0106
- Joo-Ee, G. (2016). Minimum wage and the hospitality industry in Malaysia: an analysis of employee perceptions. *Journal of Human Resources in Hospitality and Tourism*, 15(1), 29-44. DOI: 10.1080/15332845.2015.1008396
- Jung, H., & Yoon, H. (2015). Understanding pay satisfaction: The impacts of pay satisfaction on employees' job engagement and withdrawal in deluxe hotel.

- International Journal of Hospitality Management*, 48, 22-26. DOI: 10.1016/j.ijhm.2015.04.004
- Ladkin, A., & Buhalis, D. (2016). Online and social media Recruitment Hospitality employer and prospective employee considerations. *International Journal of Contemporary Hospitality Management*, 28(2), 327-345. DOI: 10.1108/IJCHM-05-2014-0218
- Lievens, F., & Slaughter, J. (2016). Employer Image and Employer Branding: What We Know and What We Need to Know. *Annual Review of Organizational Psychology and Organizational Behavior*, 3, 407-440. DOI: 10.1146/annurev-orgpsych-041015-062501
- Mahmood, A., Akhtar, M.N., Talat, U., Shuai, C., & Hyatt, J. (2019). Specific HR practices and employee commitment: the mediating role of job satisfaction. *Employee Relations: The International Journal*, 41(3), 420-435. DOI: 10.1108/ER-03-2018-0074
- Mas-Machuca, M., Berbegal-Mirabent, J., & Alegre, I. (2016). Work-life balance and its relationship with organizational pride and job satisfaction. *Journal of Managerial Psychology*, 31(2), 586-602. DOI: 10.1108/JMP-09-2014-0272
- Murphy, F., & Doherty, L. (2011). The experience of work life balance for Irish senior managers. *Equality Diversity and Inclusion: An International Journal*, 30(4), 252-277. DOI: 10.1108/02610151111135732
- Na-nan, K., & Saribut, S. (2019). Development and validation of an organisational commitment instrument for generation Y employees in small and medium-sized enterprises in Thailand. *Industrial and Commercial Training*, 51(4), 244-255. DOI: 10.1108/ICT-11-2018-0091
- Nunnally, J.C. (1978). *Introduction to Psychological Measurement*. McGraw-Hill, New York.
- Otoo, F.N.K., & Mishra, M. (2018). Measuring the impact of human resource development (HRD) practices on employee performance in small and medium scale enterprises. *European Journal of Training and Development*, 42(7/8), 517-534. DOI: 10.1108/EJTD-07-2017-0061
- Santiago, J. (2019). The relationship between brand attractiveness and the intent to apply for a job: A millennials' perspective. *European Journal of Management and Business Economics*, 28(2), 142-157. DOI: 10.1108/EJMBE-12-2018-0136
- Schlager, T., Bodderas, M., Maas, P., & Cachelin, J.L. (2011). The influence of the employer brand on employee attitudes relevant for service branding: an empirical investigation. *Journal of Services Marketing*, 25(7), 497 – 508. DOI: 10.1108/08876041111173624
- Sharma, R., & Prasad, A. (2018). Employer brand and its unexplored impact on intent to join. *International Journal of Organizational Analysis*, 26(3), 536-566. DOI: 10.1108/IJOA-11-2017-1280
- Sivertzen, A., Nilsen, E., & Olafsen, A. (2013). Employer branding: Employer attractiveness and the use of social media. *Journal of Product & Brand Management*, 22(7), 473-483. DOI: 10.1108/JPBM-09-2013-0393
- Soomro, A.A., Breitenecker, R.J., & Shah, S.A.M. (2018). Relation of work-life balance, work-family conflict, and family-work conflict with the employee performance-moderating role of job satisfaction. *South Asian Journal of Business Studies*, 7(1), 129-146. DOI: 10.1108/SAJBS-02-2017-0018
- Spence, M. (1973). Job market signaling. *The Quarterly Journal of Economics*, 87(3), 355-374. DOI: 10.2307/1882010
- Tanwar, K., & Kumar, A. (2019). Employer brand, person-organisation fit and employer of choice: Investigating the moderating effect of social media. *Personnel Review*, 48(3), 799-823. DOI: 10.1108/PR-10-2017-0299

- Tanwar, K., & Prasad, A. (2016). The effect of employer brand dimensions on job satisfaction: gender as a moderator. *Management Decision*, 54(4), 854 – 886. DOI: 10.1108/MD-08-2015-0343
- Tanwar, K., & Prasad, A. (2017). Employer brand scale development and validation: a second-order factor approach. *Personnel Review*, 46(2), 389-409. DOI: 10.1108/PR-03-2015-0065
- Tseng, L., & Wu, J. (2017). How can financial organizations improve employee loyalty? The effects of ethical leadership, psychological contract fulfillment and organizational identification. *Leadership & Organization Development Journal*, 38(5), 679-698. DOI: 10.1108/LODJ-07-2015-0142
- Weltmann, D. (2019). The efficiency of wages, profit sharing, and stock. *Journal of Participation and Employee Ownership*, 2(3), 222-235.
- Willie, P., Jayawardena, C., & Laver, B. (2008). Attracting and retaining quality human resources for Niagara's hospitality industry. *International Journal of Contemporary Hospitality Management*, 20(3), 293-301. DOI: 10.1108/09596110810866109
- Zhu, F., Wang, Z., Yu, Q., Hu, T., Wen, Y., & Liu, Y. (2014). Reconsidering the dimensionality and measurement of employer brand in the chinese context. *Social behavior and personality*, 42(6), 933-948. DOI: 10.2224/sbp.2014.42.6.933

УЛОГА АТРАКТИВНОСТИ БРЕНДА ПОСЛОДАВЦА НА ТРЖИШТУ РАДА ХОТЕЛСКЕ ИНДУСТРИЈЕ

Јасмина Огњановић

Универзитет у Крагујевцу, Факултет за хотелијерство и туризам у Врњачкој Бањи,
Србија

Резиме

Хотелску индустрију карактерише недостатак запослених са одговарајућим вештинама, посебно када су у питању руководеће позиције. Утицај демографије, глобализације и либерализације одразио се на неуједначен однос понуде и потражње за талентованим запосленима. Хотели бележе високу стопу флукуације запослених, што утиче на ефикасност и продуктивност рада, те на структуру трошкова. Имајући у виду ове проблеме са којима се сусреће хотелска индустрија, управљање људским ресурсима, привлачење и задржавање вредних запослених постаје приоритетни циљ менаџмента хотела.

Атрактивност бренда послодавца постаје важан фактор у привлачењу вредних запослених са тржишта рада. Развојем атрактивности бренда послодавца развијају се и промовишу одговарајуће користи за потенцијално запослене на тржишту рада. Изграђене користи диференцирају хотел у односу на конкуренте и чине га „пожељним местом за рад“. Од значаја користи атрактивности бренда послодавца за потенцијално запослене зависиће и њихова спремност да се придруже хотелу и њихово будуће понашање. Зато је циљ рада био да утврди снагу атрактивности бренда послодавца у привлачењу потенцијално запослених и у обликовању њиховог будућег понашања.

За потенцијалне запослене у хотелијерству пожељне димензије атрактивности бренда су компензације и корист, те обука и развој. Ове димензије је потребно развијати како би се унапредио процес привлачења талената, што је посебно важно

за хотелску индустрију која није препозната као атрактивна на тржишту рада. Друго, на одлуку о придруживању хотелу значајно утичу димензије: компензације и користи, вредност управљања, и обука и развој. Будуће понашање потенцијално запослених условљено је развојем следећих димензија: равнотежа између живота и посла, компензације и користи, и обука и развој. Улагањем у ове димензије, менаџмент хотела може постићи задовољавајуће резултате запослених тиме што ће утицати на њихово понашање и ангажовање.

SUSTAINABLE BANKING AND ITS MAIN DETERMINANTS – EVIDENCE FROM THE SERBIAN BANKING SECTOR

Nikola Stakić, Lidija Barjaktarović*

Singidunum University, Faculty of Business in Belgrade, Belgrade, Serbia

Abstract

Throughout the past decade, sustainability has been one of the most important topics among academics and within the business community. The adoption of ESG practice and the creation of holistic business models is on the agenda of the entire financial industry, predominantly among banking and investment entities. The paper aims to analyse the regulatory framework and current practice of sustainable business models with respect to the most important international banks operating within the Serbian economy. The analysis encompasses the descriptive assessment of ESG regulations, the reporting framework in the sustainability domain, and the quantitative analysis of ESG metrics and their statistical relationship with banks' financial performance. Due to various limitations, such as a lack of quantitative metrics and an unstandardized reporting practice, research was performed on a sample of four international banks operating in Serbia, for the period between the years 2015 and 2021. The statistical results of the regression analysis do not show a significant relationship between ESG metrics and the financial performance of the examined banks.

Key words: sustainability, finance and banking, ESG factors, Serbia.

ОДРЖИВО БАНКАРСТВО И ЊЕГОВЕ ОСНОВНЕ ДЕТЕРМИНАНТЕ НА ПРИМЕРУ БАНКАРСКОГ СЕКТОРА У СРБИЈИ

Апстракт

Одрживост је већ читаву деценију једна од најважнијих тема у академској и пословној заједници. Усвајање ЕСГ праксе и креирање холистичких пословних модела је на дневном реду целокупне финансијске индустрије, а нарочито унутар банкарских и инвестиционих институција. Рад има за циљ анализу регулаторног оквира и досадашње праксе одрживих пословних модела на узорку најзначајнијих

* Corresponding author: Lidija Barjaktarović, Singidunum University, Faculty of Business, Belgrade, Serbia, lbarjaktarovic@singidunum.ac.rs

међународних банака које послују у српској привреди. Анализа се састоји из дескриптивне оцене ЕСГ регулативе, оквира извештавања у домену одрживости, и квантитативне анализе ЕСГ индикатора и њиховог статистичког односа са финансијским перформансама банака. Услед многобројних ограничења, као што су недостатак квантитативних података и нестандардизована пракса извештавања, истраживање је спроведено на узорку који чине четири међународне банке које послују у Србији, за период између 2015. и 2021. године. Статистички резултати регресионе анализе не показују значајну везу између ЕСГ индикатора и финансијских перформанси банака.

Кључне речи: одрживост, финансије и банкарство, ЕСГ фактори, Србија.

INTRODUCTION

Despite the various systematic shocks related to the Covid-19 pandemic and its socio-economic aftermath, and the surging geopolitical conflicts, the existence of a strong and stable banking sector in Serbia is a solid reassurance, followed by the existence of constant and effective macro prudential measures and effective policies. The capital adequacy ratio, as one of the defining pillars of financial stability, is almost 3 times higher than the regulatory threshold (22.4% versus 8%), while simultaneously preserving the high quality of assets in the banking portfolio. Non-performing loans (NPL) have been experiencing a significant downtrend in the last 7 years, recording a historical low in 2020 by making less than 4% of the overall credit portfolio (National Bank of Serbia - NBS, 2022). Given the bank-centric nature of the domestic financial system, where the banking sector comprises more than 90% of overall financial assets (NBS, 2022), it is of great importance to systematically continue with the prudent supervision and preservation of financial stability and the overall health of the financial industry. There are 22 banks in the Serbian financial system¹ (21 traditional and 1 virtual), predominantly owned by foreign international banking groups headquartered in the European Union and characterised by a concentrated structure – the largest ten banks own 82% of the market share in total assets. Currently, there is an accelerating trend of consolidation in the Serbian banking industry, with several merges and acquisitions taking place, or being planned for the upcoming period.

The aim of this paper is to assess the practice of sustainable business among major banks (on group level) operating in the Serbian banking sector. The growing concern about climate change and its widespread consequences has emphasised the need to change business perspectives, and to shift the focus of businesses from the solely financial to the holistic, including the incorporation of sustainable and responsible aspects of banking performance. In that regard, there is an urgent need to factor non-

¹ This is true of the period during which this paper was written.

financial metrics into overall business performance. By their nature, climate risks can be considered systemic risks from the perspective of the financial system as well, with physical and transitional risk facets being directly involved. The banking sector, for instance, is indirectly exposed to physical and transitional climate risks, through loans to businesses and households. The impact of climate risks on the banking sector is twofold: on the one hand, climate risks are manifested through effects on the credit quality of clients, which is the value of the banks' assets, and on the other hand, climate risks are manifested through effects on the value of the received collateral. Given that the credit activity of banks in Serbia is their main business and profit generator, with the credit portfolio comprising almost two-thirds of the total banking assets, it is clear that there is need for more prudent risk management with respect to environmental considerations.

The paper is organised as follows. The introductory part is followed by a section giving a general overview of the concept of sustainability and its practice in the banking industry which is, in turn, followed by a section dedicated to a literature review. Research methodology, and research results and their discussion comprise the next two sections. The final section of the paper is concerned with the concluding remarks and considerations for further research.

OVERVIEW OF SUSTAINABLE BANKING

Bearing in mind the various environmental problems associated with raising the standard of living of the world's population, in 1983, the United Nations (UN) General Assembly convened the World Commission on Environment and Development (WCED), an international group of environmental experts, politicians and civil servants. The WCED (known as the Brundtland Commission) was in charge of proposing long-term solutions with the aim of achieving sustainable development. As a result, the Commission published the Brundtland Report (known as *Our Common Future*) in 1987, which introduced the concept of sustainable development and suggested ways in which it could be accomplished. The report set down the principles for the Rio de Janeiro Earth Summit held in 1992 (CFA Society UK, 2021). The Summit specified the functions of business and industry in the sustainable development agenda². According to the Rio Declaration, businesses have a responsibility to ensure that activities within their own operations do not cause damage to the environment, as businesses gain their rights through meeting the needs of society.

² It was the basis for the establishment of UN Sustainable Development Goals (SDG) in 2015.

It can be said that the foundations of modern, responsible investment can be found in the Rio Summit (UN, 2022).

The early phase of environmental, social and governance (ESG)³ investing is related to social responsible investment (SRI), i.e. investing in companies or industries which do business in accordance with holistic values, which are not solely related to financial performance. Later on, it became important for investors to take into consideration ethical issues of a social nature and environmental issues. The main differences between early and modern SRI are the increase in shareholder activism, and a more disseminated respect for environmental factors and investment in positive-screening, which enhance financial returns and better risk management within a socially aligned investment strategy. Accordingly, SRI finally connects ESG factors into a traditional investing framework centred only on achieved/expected profit and risk-adjusted returns.

The modern form of ESG investment began in 2004, when representatives of the UN invited the CEOs of major financial institutions to take part in the action of UN Global Compact (UNGC) and the International Finance Corporation, based on the integration of ESG into capital markets. The result of this initiative was a report called *Who Cares Wins*, which introduced the term 'ESG' (UN Department of Public Information, 2004). The report confirmed that the incorporation of ESG factors into capital markets produces more valuable business meanings, and leads to more sustainable markets and overall better results for societies. Simultaneously, the UN Environment Programme Finance Initiative (UNEP FI; 2005) produced the Freshfields Report, which found that ESG issues are relevant for financial valuation and, accordingly, for the operation of financial markets. The aforementioned reports supported the introduction of the Principles for Responsible Investment (PRI) at the New York Stock Exchange in 2006, and the Sustainable Stock Exchange Initiative in 2007. It should be emphasised that UNEP FI introduced a framework which includes: 1) Principles for Responsible Investment; 2) Principles for Sustainable Insurance, and 3) Principles for Responsible Banking (PRB). Accordingly, the PRB is a unique framework for ensuring that the signatory banks' strategies and practices align with the vision society set out for its future in the SDG and the Paris Climate Agreement.

Aracil, Najera-Sanchez and Forcadell (2021) defined sustainable banking as the delivery of "financial products and services, which are developed to meet the needs of people and safeguard the environment while

³ There is no universal standard for E, S and G issues. The understanding depends on the stakeholder point of view. However, it can be said in general that: 1) E factors pertaining to the natural world, 2) S factors affect the lives of humans, 3) G factors that involve issues tied to countries and/or jurisdictions, or are common practice in an industry; as well as the interest of broader stakeholder groups (CFA Society UK, 2021).

generating profit” (Yip & Bocken, 2018, p. 150). Sustainable banking (Jucken, 2004/2010) and related terms, such as banks’ Corporate Social Responsibility (CSR), ethical banks (Birindelli, Forretti, Intonti, & Iannuzi, 2015; San-Jose, Retolaza & Gutierrez-Goria, 2011), eco-banking, and green-banks (Bahl, 2012; Bouma, Jeucken & Klinkers, 2017) have been analysed extensively, as they play a crucial role in fostering sustainable development.

Having in mind the importance of the topic, Stefanović, Barjaktarović and Bataev (2021) analysed the digitainability (simultaneously focused on digitalisation and sustainability initiatives) and the profitability of the local sector in the period between 2011 and 2020 on a sample of 25 banks. This research revealed that 60% of the Serbian banking sector is characterised by digitainability, and that 80% of the sample has a positive ROE. With respect to the banks’ digitainability, it can be noticed that three out of four banks (Banca Intesa, UniCredit and Raiffeisen) are ranked in the first top ten banks on the Serbian market, while the last one (ProCredit) is ranked 13th (Table 1). Furthermore, the first three banks have better performances in profitability (ROA ranged between 1.3% and 1.9%), as compared to the average of the Serbian banking sector (ROA 1.2%). Moreover, their profitability results are better than the consolidated group performance (ROA ranged between 0.2% and 0.99%, and ROE ranged between 2.9% and 10.6% in 2021). Finally, the ProCredit bank displays a positive development of business, but its profitability (ROA 0.44% and ROE 3.89%) is lower compared to the consolidated group results (ROA was recorded to be 0.97%, and ROE was recorded to be 9.7% in 2021).

Table 1. Basic financial information on the analysed/relevant sample of Serbian banks at the end of 2021

Banks/ Indicators	Market share (%)			ROA (%)	ROE (%)	Cost/ income ratio (%)	
	Assets /ranking/	New Loans	Deposits				
Banca Intesa a.d. Belgrade	14.8	/1/	15.4	16	1.4	9.1	60
UniCredit bank Serbia a.d. Belgrade	10.7	/3/	10.55	10.7	1.3	7.9	56
Raiffeisen bank a.d. Belgrade	8.6	/5/	7.4	10.2	1.9	14.1	53
ProCredit bank a.d. Belgrade	3.1	/13/	2.96	3.1	0.44	3.89	81
Average of the Serbian banking sector					1.2	8.0	n/a

Source: Authors’ calculations on the basis of data available on the site of the NBS

It is important to emphasise that all of the banks in the sample have the relevant ESG data on their websites (more in the methodological part), and that their quality is relevant for further analysis (Mijokovic, Knezevic, & Mizdrakovic, 2020). In terms of environmental loans, three of the banks (Banca Intesa, UniCredit and ProCredit) offer energy effi-

ciency loans, while Raiffeisen offers loans for the digitalisation of businesses and the introduction of innovative products (Table 2). Furthermore, all of them are socially responsible and have received the VIRTUS award.

Table 2. ESG factor information on the analysed/relevant sample of Serbian banks

Banks	Environmental	Social	Governance	Digitainability & profitability	Comment
Banca Intesa a.d. Belgrade	+	+	+	+	Loans for energy efficiency; VIRTUS award;
UniCredit bank Serbia a.d. Belgrade	+	+	+	+	Loans for energy efficiency; VIRTUS award;
Raiffeisen bank a.d. Belgrade	+/-	+	+	+	Loans for digitalization of business and introduction of innovative products; VIRTUS award;
ProCredit bank a.d. Belgrade	+	+	+	+	Loans for energy efficiency; VIRTUS award;

Source: websites of analysed banks (Stefanovic et al., 2021)

If we analyse the banking groups' overall results, we can notice that all of the banks displayed a positive development of business, in accordance with the overall situation on the global market. Moreover, all banking groups have a higher CET1 ratio and higher leverage indicator values than is required by regulation. Furthermore, UniCredit has the best profitability (ROA, ROE, net income and net interest income) and NPL indicators. In terms of environmental loans, the UniCredit group is the leader, followed by the Intesa SanPaolo group, Raiffeisen Bank International, and the ProCredit group. It can be concluded that green projects are becoming increasingly important (Stojkovic, Jovanovic-Kranjec & Lukovic, 2021).

All of the aforementioned banking groups stress the fact that annual reports, consolidated financial reports, and consolidated non-financial reports are part of the integral reporting package. Their ESG reporting package consists of ESG ratings, or the following: 1) the environmental supply chain, which includes biodiversity, climate change, pollution and resources, and water security; 2) the social supply chain, which covers labour standards, human rights and community, health and safety, and cus-

tomers responsibility; and 3) the governance supply chain, which takes care of anti-corruption, corporate governance, risk management, and tax transparency.

The reports of the analysed banking groups differ in the manner in which they present their results to stakeholders (for example, the name of the environmental credit product and way of presenting the structure, purpose or beneficiary, terms which are used for donations and investments etc.), and in the process of adopting and implementing strategies.

LITERATURE REVIEW

Bearing in mind that the Serbian financial sector is bank-centric, there is a great need for this industry to accomplish SDG, due to the fact that they are the main intermediaries for the collection and placement of financial resources meant to achieve impact on the whole of society (Alexander, 2014; Beck, Demirgüç-Kunt & Levine, 2010; UN, 2015). For example, green loans impact the decrease of carbon emissions, which ensures the achievement of SDG ('double carbon' goal, whose climate goal is to reduce carbon emissions by 2030, and reach carbon neutrality by 2060). In other words, green credit can inhibit carbon intensity by promoting industrial structure upgrading, technological innovation, and signal effect (Hu & Zheng, 2021). Furthermore, different external factors such as the world economic crisis of 2008 (Mattila, Hanks & Kim, 2010; Ruiz & Esteban, 2014), the Fourth Industrial Revolution (Schwab, 2017), and the Covid-19 pandemic (Association of Serbian Banks-ASB, 2021) have had an impact on the banking industry's business model i.e. digitainability (Lichtenthaler, 2021; Sa, Santos, Serpa & Ferreira, 2021; Stefanovic et al., 2021). Sustainable banking (Jucken, 2004/2010) and related terms such as banks' Corporate Social Responsibility (CSR), ethical banks (Birindelli et al., 2015; San-Jose et al., 2011), eco-banking, and green-banks (Bahl, 2012; Bouma, Jeucken & Klinkers, 2017) have been analysed extensively, as they play crucial roles in fostering sustainable development.

Hu and Zheng (2021) mention that, in different research, authors use similar concepts such as sustainable finance, environmental finance, climate finance and green finance instead of the concept of green credits. In their study, Zhang, Wang, Zhong, Yang and Siddik (2022) discovered that an increase in banks' competitiveness, a reduction in long-term costs and expenses, the creation of online banking facilities, the improvement of customers' goodwill, and the reduction of a bank's carbon footprint are the key benefits of green banking development, as it helps in the achievement of a country's sustainable economic development. Furthermore, empirical results (Buallay, 2018) demonstrated that ESG significantly and positively impacts the performance of the European banking

sector. Moreover, European policy makers have increased their efforts in creating a regulatory framework which would improve sustainability in the financial system. The legislative framework is currently being enriched by policy makers and regulators who are carefully pursuing the objective of a more sustainable economic system in which financial institutions may act as catalysts (Bruno & Lagasio, 2021).

Aracil et al. (2021) did a comprehensive review which organises the literature within the field of sustainable banking. They made a representative sample of 676 studies (published in the period between 1995 and 2019) from WoS's SSCI database. The sample matches searches related to, among others, the key phrases 'sustainable bank', 'ethical bank', and 'corporate social responsibility', in combination with the term 'finance sector/industry'. Their findings are related to:

- 1) Sustainable banking research trends, and their evolution over time and across WoS categories and journals – a) papers on sustainable banking used to be published more often in Business, Economics, and Management journals than in mainstream Financial journals; b) papers on sustainable banking increasingly cover a range of environmental topics compared to business and ethics; and c) the crises caused by economic developments (in 2008) and the Covid-19 pandemic (2019-present) refreshed the research of sustainable banking;
- 2) Sustainable banking literature, and its integrative framework – a) this literature and its framework were built on three conceptual pillars, i.e. Ethical Foundations, Financial Products and Business-Case; b) the themes covered in this literature have changed from customer-experience to banks' contributions to environmental care; and c) it is expected that the publication of papers on sustainable banking will increase, specifically in the clusters of 'Microfinance', and 'SRI and green banking'; and
- 3) Links across domains and clusters, moving toward the convergence of instrumental and ethical perspectives in sustainable banking – a) this literature shows an increasing trend of covering the synergetic fit between customer experience and financial performance which considers questions of ethics; and b) microfinance and financial inclusion are important topics for different states, taking into consideration the normative or ethical aspects of sustainable banking.

Based on previous findings, we can observe that this research mainly follows the previously described trend, as it is categorised under the scope of journals on economy. It covers banking products, the impact on the environment, and the financial performance of key digitainability players in the Serbian banking market. Finally, this is the first study which takes into consideration the ESG elements of dominant financial

institutions in the Serbian banking industry, with an extensive analysis of the subject's regulatory framework.

METHODOLOGY

Analysing sustainable practice in the banking industry in Serbia based on various financial and non-financial reports was challenging due to the lack of, predominantly, quantitative and universally accepted metrics. In the Serbian banking sector, only three banks were found to have appropriate non-financial reports, although with descriptive elements: Banca Intesa a.d. Belgrade (2010-2019), Erste bank a.d. Novi Sad (2008-2020) and “3 bank” a.d. Novi Sad (2020). Further screening led to the discovery that several banking groups have those reports (with both quantitative and qualitative elements): 1) Intesa SanPaolo (2003-2021), 2) UniCredit (2001-2021), 3) Raiffeisen International Bank (2004-2021; where data related to the environmental credit portfolio exists starting with the year 2015), 4) Erste (2021), 5) NLB (2020), and 6) ProCredit (2013-2021). Finally, in order to have a unified time series, ranging between 2015 and the end of 2021, and in order to secure comparative data for environmental loans, the reduction of CO₂, and community donations, only four banking groups were taken into consideration in this research: Intesa SanPaolo, UniCredit, Raiffeisen International Bank, and ProCredit.

Given the fact that traditional lending and the interest rate differential are the most important sources of profit for the entire banking sector in Serbia (even in the decade-long low interest rate environment), we observed *environmental loan* as our main dependent variable, along with several financial and non-financial metrics, which represented independent variables. The reduction in CO₂ emissions and community investments were added to the analysis, among other ESG-related metrics, whereas the standard financial metrics included in the analysis, reflecting proxies for different business aspects, were ROE and net income (profitability), leverage (solvency), ratios of common equity capital and NPL (financial stability), and cost-to-income ratio (efficiency). In order to get a more normalised dataset, we transformed three absolute indicators pertaining to ESG into logarithmic values.

When it comes to traditional financial metrics, official financial statements and annual reports of the four aforementioned banks (on a consolidated level) were used as data sources. For ESG-related data, there is no unified source of information; they are a rather integral part of the broad ESG framework, which includes several sets of reports and regulations, as shown in Table 3.

Table 3. ESG data on the group sites of the analysed banks

No	Banking group	ESG data
1	Intesa SanPaolo	TCFD Report (parts: governance, strategy, risk management, metrics & targets); Sustainable reports (until 2016); Consolidated non-financial reports (2017-2021); ESG culture; Managing of ESG and Reputational Risk; CFO responsibility; Business plans and ESG plans for following periods: 2014-2017; 2018-2021; 2022-2025; Relevant regulation such as: TCFD, SAASB, UN Global Agreement and SDG, Equator Principles, WEF principles, UNEP FI- principles of responsible banking; GRI; Net Zero Banking Alliance; CDP; CSR governance; Ethical codes, good practices of sustainability, responsible financial investments; new products contribute do the decreasing impact on society ; EU Taxonomy regulation, EBA regulation
2	UniCredit	TCFD Report(parts: governance, strategy, risk management, metrics & targets); Integrated reports; Sustainable reports; Chief Sustainable Officer – on the group level; ESG principles include business model (creating value for stakeholders), governance, strategy, risk management, matrices & targets; Relevant regulation such as: TCFD, UN Global Agreement and SDG; Equator Principles, GRI; CDP (Carbon Disclosure Project); Net Zero Banking Alliance; EBA regulation;
3	Raiffeisen Bank International	TCFD(parts: governance, strategy, risk management, metrics & targets); Sustainable reports; Impact report; Sustainable committee; Group ESG & Sustainable Management; Responsible banking standard groups; Sustainable Finance Manager; Sustainable structure: responsible banker, fair partner and engaged citizen; GRI standards; CDP; Regulatory disclosure; EBA regulation;
4	ProCredit	Reporting package: Annual reports, Appendix, Disclosures; Non-financial reports; PCB Impact report, Results presentations; Group approach related to Environmental Strategy, Environmental Policy, Managing the environmental and social risk lending (holistic approach to credit risk);Greening ProCredit Guide; Business, Ethics and Environmental standards (plastic strategy, code of conduct, ProCredit impact package report; group environmental management); Group Environmental Management and Reporting Team, Environmental Committee; ESG Pillars: 1) Integrated Environmental system, 2) Managing of environmental and social risk in lending; Green finance /Green credit services (they monitor environmental performance); Relevant regulation: UN SDG, Responsible banking in practice; Partnership for carbon accounting financials (PCAF), GRI context; Performance in accordance with the regulation such as: GRI standards, European NFRD, UNSDG, UN Global Compact, UNEPFI - principles of responsible banking and PCAF; EBA regulation;

Source: sites of analysed banking groups (April, 2022)

Correlation and its significance for all of the selected variables during the study period will be determined. Regression analyses will be applied, with environmental loans and profitability proxies being tested separately as the dependent variables, and other ESG and financial metrics serving as independent variables.

RESULTS AND DISCUSSION

The main findings informed by the results of our analysis are given in this section. To begin with, basic descriptive statistics are presented in Table 4.

Table 4. Descriptive statistics for research variables

	ln_Net Income	ROE	Cost/ Income ratio	NPL	Leverage	CET I ratio	ln_Comm Invest	ln_tCO2 Red.	ln_Env. Loans
Mean	2.96	7.81	58.91	2.93	12.48	13.38	0.82	4.47	3.33
Standard Error	0.15	0.49	1.36	0.39	0.49	0.25	0.20	0.12	0.09
Median	3.16	7.60	56.45	2.48	12.70	13.60	1.10	4.42	3.26
Standard Deviation	0.77	2.59	7.22	2.08	2.61	1.35	1.06	0.65	0.47
Sample Variance	0.60	6.71	52.09	4.33	6.82	1.81	1.12	0.42	0.22
Kurtosis	-0.88	-0.62	-0.85	1.05	2.46	0.49	-1.30	-1.31	-0.49
Skewness	-0.73	0.19	0.74	1.11	1.13	-0.79	-0.48	0.41	0.11
Range	2.45	9.80	22.90	8.30	12.25	5.40	3.17	1.80	1.89
Minimum	1.62	2.90	50.80	0.30	8.60	10.00	-0.90	3.74	2.42
Maximum	4.07	12.70	73.70	8.60	20.85	15.40	2.27	5.54	4.31
Count	28	28	28	28	28	28	28	28	28

Source: Authors' calculations

According to expectations, all of the logged data indicators show less variation and standard error, contrary to the results for conventional financial indicators. The highest standard deviation, by far, can be observed in cost-to-income ratio, demonstrating the different approaches of the sampled banks with respect to efficiency features and operating management. Solvency results, demonstrated through the leverage indicator of the sampled banks, also differ substantially from each other. Variation is also high with respect to the profitability ratio of banks, where the ROE metric ranges between 2.90% and 12.70%. This is contrary to the results of net income, which show a significantly lower standard deviation.

Almost half of the variables feature nearly symmetrical distribution, with the skewness ranging between -0.5 and 0.5. On the other hand, the results for NPL and Leverage show a significantly positive skewness (1.11 and 1.13, respectively). Kurtosis results demonstrate a flatter than normal distribution for all variables.

There are several important findings with respect to correlation analysis. Firstly, when we observe three metrics related to ESG practice, we can see that the correlation is strong and positive in all pairs, circulating around the value of 0.70 (Table 5). This might imply a holistic approach to ESG business practice, wherein the social component, represented through the community investments indicator, cannot be detached from the overall approach. Community investments also exhibit an almost perfect positive correlation with net income, demonstrating the importance of the relationship between the industry's profitability and CSR, which is consistent with the findings of Taliento, Favino and Netti (2019), and Buallay (2018). Conversely, there is a strong negative relationship

between community investments and cost-to-income ratio, which implies an important cost-management and efficiency approach. Secondly, there is a substantial difference in comparing two profitability metrics with the ESG indicators. ROE, as the main proxy for the banks' profitability, shows no significant association with the chosen ESG indicators, whereas net income has the opposite results.

Table 5. Correlation matrix - pairwise

Variables	ROE	ln_Net Income	Cost/ Income ratio	NPL	Leverage	CET 1 ratio	ln_Comm Invest	ln_tCO2 red.	ln_Env. Loans
ROE	1	0.066	-0.034	0.098	-0.270	0.003	-0.158	-0.269	-0.179
ln_Net Income	0.066	1	-0.821	-0.453	0.745	0.024	0.935	0.611	0.717
Cost/Income ratio	-0.034	-0.821	1	0.466	-0.344	-0.257	-0.825	-0.281	-0.530
NPL	0.098	-0.453	0.466	1	-0.368	-0.516	-0.462	-0.399	-0.649
Leverage	-0.270	0.745	-0.344	-0.368	1	-0.166	0.764	0.763	0.673
CET 1 ratio	0.003	0.024	-0.257	-0.516	-0.166	1	0.068	-0.180	0.153
ln_Comm Invest	-0.158	0.935	-0.825	-0.462	0.764	0.068	1	0.687	0.699
ln_tCO2 red.	-0.269	0.611	-0.281	-0.399	0.763	-0.180	0.687	1	0.694
ln_Env. Loans	-0.179	0.717	-0.530	-0.649	0.673	0.153	0.699	0.694	1

Values in bold are different from 0 with a significance level $\alpha=0.05$;
source: Authors' calculations

Given the fact that interest income is, by far, the largest contributor to the banks' overall profits, the need to properly address the credit risk of the institution is great. In order to encourage institutions to offer a greater number of environmental loans, offering financial incentives and governmental subsidies in different formats is a widespread practice (Jin, Ding & Yang, 2022; Mazzucato & Semieniuk, 2018; Polzin, Migendt, Täube & Flotow, 2015), and this practice exemplifies a more secure credit portfolio and mitigation of default risk. Therefore, a negative relationship exists between the size of the environmental portfolio and non-performing loans, confirming the risk reduction practice.

The significance of NPL, as a credit risk metric, can be confirmed through the results of the regression analysis as well, wherein the environmental loans indicator was taken as a dependent variable (Table 6). Furthermore, the other two ESG indicators also show statistical significance (Table 7), with p-values less than 0.05. The overall model fits the data, with a high F-value and a high coefficient of determination. Other financial metrics do not exhibit any statistical significance.

Table 6. Model summary and ANOVA results for environmental loans as dependent variable

Multiple R	0.93124809				
R square	0.86722301				
Adjusted R square	0.81131691				
Standard Error	0.20420385				
Observations	28				
<i>ANOVA</i>	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	5.17475065	0.64684383	15.5121351	8.0129E-07
Residual	19	0.79228505	0.04169921		
Total	27	5.9670357			

Table 7. Coefficients for environmental loans as dependent variable

	Coefficients	Standard Error	t stat	P-value	Lower 95%	Upper 95%
Intercept	5.4515	1.6563	3.2913	0.0038	1.9848	8.9183
ROE	-0.0084	0.0226	-0.3711	0.7146	-0.0556	0.0389
ln Net Income	0.0109	0.2660	0.0408	0.9679	-0.5459	0.5676
Cost/Income ratio	0.0163	0.0203	0.7995	0.4339	-0.0263	0.0588
NPL	-0.0870	0.0275	-3.1642	0.0051*	-0.1446	-0.0295
Leverage	0.0317	0.0531	0.5971	0.5575	-0.0795	0.1430
CET 1 ratio	-0.0068	0.0404	-0.1679	0.8684	-0.0913	0.0777
ln Comm Invest	0.4154	0.1907	2.1788	0.0421*	0.0163	0.8144
ln tCO2 Red.	-0.8259	0.1743	-4.7381	0.0001*	-1.1907	-0.4611

*95% confidence interval; source: authors' calculations

The second and third model include profitability metrics – net income and ROE respectively – as dependent variables. Despite being very robust and fitting (with the adjusted R square value of almost 95%, as shown in Table 8), regression with net income as a dependent variable does not show the statistical significance of any of the three ESG-related indicators, as their p-values are much higher than 0.05. On the other hand, financial metrics like leverage, ROE, and cost-to-income ratio show statistical significance (Table 9).

Table 8. Model summary and ANOVA results for net income as dependent variable

Multiple R	0.98182182				
R square	0.96397409				
Adjusted R square	0.94880528				
Standard Error	0.17510273				
Observations	28				
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	8	15.5879777	1.94849721	63.5497662	4.419E-12
Residual	19	0.58255835	0.03066097		
Total	27	16.170536			

Table 9. Coefficients for net income as dependent variable

	Coefficients	Standard Error	t stat	P-value	Lower 95%	Upper 95%
Intercept	3.33247932	0.99805026	3.33898947	0.00344849	1.24353611	5.42142252
ROE	0.06301683	0.01387687	4.54114117	0.00022334*	0.0339722	0.09206145
Cost/Income ratio	-0.0572011	0.0201427	-2.8397922	0.0104735*	-0.0993603	-0.0150419
NPL	0.0266149	0.02860656	0.9303773	0.36384702	-0.0332593	0.08648912
Leverage	0.13060267	0.03929813	3.3233815	0.00357206*	0.04835075	0.2128546
CET 1 ratio	-0.010652	0.03711722	-0.2869827	0.77723184	-0.0883392	0.06703523
ln Comm Invest	0.08362766	0.19498499	0.42889279	0.67282475	-0.3244806	0.49173592
ln tCO2 Red.	0.0625777	0.13180929	0.47475937	0.64036987	-0.2133023	0.33845772
ln_Env. Loans	0.17882884	0.13799026	1.29595265	0.21051431	-0.1099881	0.46764577

*95% confidence interval; source: authors' calculation

This model is even less fitting when it comes to using ROE as a dependent variable, with the adjusted R^2 equalling only 0.40, and the F-statistics equalling 3.26. Akin to the previous model, none of the ESG indicators show a statistical significance, with p-values much higher than the threshold.

Table 10. Model summary and ANOVA results for ROE as dependent variable

Multiple R	0.76065803				
R square	0.57860063				
Adjusted R square	0.40116932				
Standard Error	2.00462618				
Observations	28				
	df	SS	MS	F	Significance F
Regression	8	104.834789	13.1043486	3.2609838	0.01638272
Residual	19	76.3519966	4.01852614		
Total	27	181.186786			

Table 11. Coefficients for ROE as dependent variable

	Coefficients	Standard Error	t stat	P-value	Lower 95%	Upper 95%
Intercept	-16.02276	13.9156943	-1.1514165	0.2638448	-45.148643	13.1031227
ln Net Income	8.25919066	1.81874783	4.54114117	0.00022334*	4.4525077	12.0658736
Cost/Income ratio	0.38102191	0.2609701	1.46002131	0.16062229	-0.1651948	0.92723862
NPL	-0.2136782	0.33126559	-0.6450359	0.52661674	-0.9070251	0.47966864
Leverage	-1.0827899	0.50829154	-2.1302536	0.04643859*	-2.1466563	-0.0189235
CET 1 ratio	0.00112267	0.42584844	0.00263631	0.99792401	-0.8901884	0.8924337
ln Comm Invest	-1.3068011	2.22289785	-0.5878818	0.56353446	-5.9593798	3.34577756
ln tCO2 Red.	-0.5846779	1.51197651	-0.3866978	0.70327678	-3.7492811	2.57992528
ln_Env. Loans	-1.5875649	1.60734693	-0.9876928	0.33571515	-4.9517807	1.77665084

CONCLUSION

Given the Fintech Revolution and the diffusion process taking place, financial intermediation through traditional and newly created channels will become increasingly important for all the participants in modern financial systems. As one of the founding pillars of global financial infrastructure, international banks and the investment industry are expected to lead by example and be proactive initiators of changes in business paradigms. Therefore, it is crucial to incorporate ESG practice and various subject-related indicators into a holistic and sustainable model, which would be beneficial for all (in-)direct stakeholders. The adoption of ESG practice and working towards the sustainability of business have become the most prioritised tasks among regulators and legislative bodies; they represent unavoidable considerations in the process of making financing and investing decisions. For example, in 2020, in his annual letter to chief executives, Larry Fink, the CEO of BlackRock, stated that the investment firm would intensify its consideration of climate change during its investment considerations, because it was reshaping the world's financial system by removing companies that generate more than 25% of their revenues from coal production from its actively managed portfolio (Fink, 2020).

The topic of this research is relevant, especially if one bears in mind the fact that the Serbian financial market is bank-centric. The major banking players (on group level: Banca Intesa, UniCredit, Raiffeisen and ProCredit) are committed to digitainability. At the same time, they are profitable and their business performances influence the environmental, and social and good-practice governmental issues. All banking groups state, in a transparent manner, that their annual reports, consolidated financial reports, and consolidated non-financial reports are part of the integral reporting package.

The objective of this research was to analyse different ESG-related metrics in relation to the banking players dominant in the Serbian econo-

my, as well as to show the association between ESG metrics and the banks' financial performance. Several findings obtained through correlation analysis proved that the sustainability of the banks' businesses is significantly inter-connected with ESG constituents, and with some of the selected financial metrics. The results of the regression analysis showed the statistical significance of ESG metrics for environmental loans; however, similar findings are absent when it comes to the association between financial performance (in terms of profitability) and ESG practice. The main limitation of this study is the small research sample. The size of the research sample is a consequence of the heterogeneous regulatory framework, a lack of relevant data and reports for banking entities operating solely in Serbia (which is why we used data on the group level), and the inability to standardize the ESG metrics for quantitative analysis. However, this represents the first study of its kind in the Serbian financial industry. With a faster and broader introduction of ESG practice into national legislature and business practice, more research opportunities are expected to open up in this subject field, with more relevant data available across the industry, and with an improved and more transparent reporting practice.

REFERENCES

- Alexander, K. (2014). *Stability and Sustainability in Banking Reform: are Environmental Risks Missing in Basel III?* CISI & UNEPFI, Cambridge & Geneva.
- Aracil, E., Najera-Sanchez, J.J., & Forcadell F.J. (2021). Sustainable banking: A literature review and integrative framework, *Finance Research Letters*, 42(1), 101932. doi:10.1016/j.frl.2021.101932
- ASB. *Serbian Banking in 2020; Banking—Special Issue*; ASB: Belgrade, Serbia (2021).
- Bahl, S. (2012). Green banking: The new strategic imperative, *Asian J.Res.Bus.Econ. Manag.* 2(2), 176-185.
- Beck, T., Demirgüç-Kunt, A., & Levine, R. (2010). Financial institutions and markets across countries and over time: the updated financial development and structure database. *World Bank Econ Rev* 24 (1), 77–92.
- Birindelli, G., Forretti, P., Intonti, M., & Iannuzzi, A.P. (2015). On the drivers of corporate social responsibility in banks: evidence from an ethical rating model, *J.Manag.Govern.* 19(2), 303-340. doi:10.1007/s10997-013-9262-9
- Bouma, J.J., Jeucken, M., & Klinkers, L.(2001). *Sustainable Banking: The Greening of Finance (1st ed.)*. Routledge. doi:10.4324/9781351282406
- Bruno, M., & Lagasio, V. (2021). An Overview of the European Policies on ESG in the Banking Sector, *Sustainability*, 2021, 13, 12641, 1-10. doi:10.3390/su132212641.
- Buallay, A. (2019). Is sustainability reporting (ESG) associated with performance? Evidence from the European banking sector", *Management of Environmental Quality*, 30 (1), 98-115. doi:10.1108/MEQ-12-2017-0149
- CFA Society United Kingdom, *ESG Investing Official Training Manual – Certificate in ESG investing*, Edition 3 (2021).
- Fink, L. (2020). *A Fundamental Reshaping of Finance*, BlackRock. Available at: www.blackrock.com/corporate/investor-relations/2020-larry-fink-ceo-letter
- Hu, Y., & Zheng, J. (2021). Is Green Credit a Good Tool to Achieve “Double Carbon” Goal? Based on Coupling Coordination Model and PVAR Mode, *Sustainability* 2021, 13, 14074, 1-21. doi:10.3390/su132414074.

- Jin, W., Ding, W., & Yang, J. (2022). Impact of financial incentives on green manufacturing: Loan guarantee vs. interest subsidy, *European Journal of Operational Research*, 300 (3), 1067-1080, doi:10.1016/j.ejor.2021.09.011.
- Jucken, M. (2010). *Sustainable Finance and banking: The financial Sector and the Future of the Planet*. Routledge
- Jucken, M. (2004). *Sustainability in finance: Banking On the Planet*, Eburon Academic Publishers.
- Lichtenthaler, U. (2021). Digitainability: The Combined Effects of the Megatrends Digitalization and Sustainability. *JIM*, 9(2), 64–80. doi:10.24840/2183-0606_009.002_0006
- Mattila, A.S., Hanks, L., & Kim, E.E.K. (2010). The impact of company type and corporate social responsibility messaging on consumer perceptions. *J. Financ. Serv. Market.* 15 (2), 126–135. doi:10.1057/fsm.2010.10
- Mazzucato, M., & Semieniuk, G. (2018). Financing renewable energy: Who is financing what and why it matters, *Technological Forecasting and Social Change*, 127, 8-22. doi:10.1016/j.techfore.2017.05.021.
- Mijokovic, M., Knezevic, G., & Mizdrakovic, V. (2020). Analyzing the link between CSR reporting and financial performance variables of Belgrade Stock Exchange companies, *TEME*, Year XLVI, No 4, 1369-1389. doi:10.22190/TEME190513081M
- NBS. *Bankarski Sektor u Srbiji: Izveštaj za II tromesečje 2020. godine*. Available online: <http://www.nbs.rs/internet/cirilica/55/index.html> (accessed on 3/31/22).
- Polzin, F., Migendt, M., Täube, F., & Von Flotow, P. (2015). Public policy influence on renewable energy investments—A panel data study across OECD countries, *Energy Policy*, Volume 80, 98-111, doi:10.1016/j.enpol.2015.01.026.
- Ruiz, B., Esteban, A., & Gutierrez, S. (2014). Determinants of reputation of leading Spanish financial institutions among their customers in a context of economic crisis. *BRQ Bus. Res. Q.* 17 (4), 259–278.
- Sa, M.J., Santos, A.I., Serpa, S., & Ferreira, C.M. (2021). Digitainability- Digital Competences Post-COVID-19 for a Sustainable Society. *Sustainability*, 13, 9564. doi:10.3390/su13179564
- San-Jose, I., Retolaza, J.I., & Gutierrez-Goria, J. (2011). *Are ethical banks different? A comparative analysis using the radical affinity index*, Routledge
- Schwab, K. (2017). *The fourth industrial revolution*. Crown Business, New York.
- Stefanovic, N., Barjaktarovic, L., & Bataev, A. (2021). Digitainability and Financial Performance: Evidence from Serbian Banking Sector, *Sustainability*, 13, 1346, 1-15, doi:10.3390/su132313461
- Stojkovic, D., Jovanovic-Kranjec, M., & Lukovic, M. (2021). Significance of green bonds on contemporary financial market, *TEME*, Year XLV, April – June 2021, 621-637. doi:10.22190/TEME200525036S
- Taliento M., Favino, C., & Netti, A. (2019). Impact of Environmental, Social, and Governance Information on Economic Performance: Evidence of a Corporate “Sustainability Advantage” from Europe, *Sustainability*, 11, 1738, 1-26 doi:10.3390/su11061738
- UNGC. *Sustainable finance* (2022).
- UNGC. *Network Serbia*. Available online: <https://www.unglobalcompact.org/engage-locally/europe/serbia> (accessed on 19 June 2021).
- UNEP FI. *A legal framework for the integration of environmental, social and governance issues into institutional investment – produced for the Asset Management Working Group of the UNEP Finance Initiative* (2005)
- UN. *Addis Ababa Action Agenda of the Third International Conference on Financing for Development*. UN (2015).

- UN Department of Public Information. *Who Cares Wins – Connecting Markets to a Changing World: The Global Compact* (2004)
- UN. *SDG*. Available online: <https://www.un.org/sustainabledevelopment/sustainable-development-goals> (accessed on 19 June 2021)
- Zhang, X., Wang, Z., Zhong, X., Yang, S., & Siddik, A.B. (2022). Do Green Banking Activities Improve the Banks' Environmental Performance? The Mediating Effect of Green Financing, *Sustainability*, 14, 989, 1-18. doi:10.3390/su14020989.

ОДРЖИВО БАНКАРСТВО И ЊЕГОВЕ ОСНОВНЕ ДЕТЕРМИНАНТЕ НА ПРИМЕРУ БАНКАРСКОГ СЕКТОРА У СРБИЈИ

Никола Стакић, Лидија Барјактаровић

Универзитет Сингидунум, Пословни факултет у Београду, Београд, Србија

Резиме

Одрживо пословање подразумева холистички приступ обављању привредне делатности који, поред основних финансијских циљева и параметара, подразумева и уважавање ЕСГ принципа и фактора насталих као последица субоптималних ефеката привређивања на друштвену и природну заједницу. Имајући у виду важност финансијских институција у савременој економији, неопходно је анализирати и концепт одрживости пословања представника исте. Финансијски систем Србије је у највећој мери детерминисан пословањем комерцијалних банака, претежно чланица међународних банкарских групација. Као такве, банке имају посебан значај у усвајању одрживог банкарског пословања, заснованог на еколошким и друштвеним принципима. Интермедијарна улога банкарског сектора има свој шири друштвено-економски утицај, који се огледа и у значају еколошке одрживости.

Банкарски сектор у Србији је високо капитализован, ликвидан и са ниским степеном кредитног ризика. Међутим, и поред повољних финансијских резултата, концепт одрживог банкарства је у нашој земљи на самом зачетку. Таква позиција се манифестује, пре свега, у одсуству стандардизованог регулаторног оквира у погледу нефинансијског извештавања, као и при недостатку довољног броја квантитавних индикатора одрживог пословања. Поред чињенице да банке у Србији наглашавају свеобухватни приступ у извештавању, који подразумева годишњи извештај о пословању, те консолидоване финансијске и нефинансијске извештаје, постоји значајна разлика у категоризацији активности и формату њиховог презентовања. Имајући то у виду, свега четири банке које послују у Србији имају три заједничка ЕСГ параметра које је могуће користити у даљој анализи.

Квантитативна анализа је обухватила период између 2015. и 2021. године, као и податке четири банкарске групације које послују у Србији: Банка Интеза, Уникредит, Рајфајзен и Прокредит. Поред стандардних финансијских индикатора профитабилности, солвентности, оперативне ефикасности и мере ризика, у истраживању су коришћена три ЕСГ индикатора: обим еколошких („зелених“) кредита, друштвено прихватљива улагања, и обим смањења емисије угљен-диоксида. Регресиона анализа није утврдила статистичку значајност ЕСГ фактора за мере профитабилности, док је, с друге стране, уочена међусобна повезаност ових фактора, што демонстрира интегративни приступ свим чиниоцима одрживог банкарства.

THE IMPACT OF ECONOMIC TRENDS ON BANK PROFITABILITY – THE CASE OF SERBIA AND CROATIA

Ahmedin Lekpek*, Zenaida Šabotić

State University of Novi Pazar, Department of Economic Sciences,
Novi Pazar, Serbia

Abstract

This paper analyses the direction and intensity of the impact of economic trends on the profitability of banks in Serbia and Croatia in the period between the years 2006 and 2021. This paper aims to determine which indicators of economic trends have the most substantial impact on the profitability of banks in the selected countries. As key indicators of economic trends, GDP per capita, the GDP growth rate, inflation rate, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, trade, and unemployment are selected as independent variables. At the same time, bank profitability was measured with bank return on equity, in percentages (ROE), and bank return on assets, in percentages (ROA) – two indicators which represent the dependent variables selected for this research. Descriptive analysis, mean difference, correlation, and univariate and multivariate regression were used in the research. Research results show that changes in real interest rates and unemployment have a significant impact on the profitability of banks in both of the selected countries, while changes in GDP per capita growth have a statistically significant effect only in Serbia, and general government final consumption expenditure has a statistically significant impact only in Croatia. The influence of other indicators of economic trends is not statistically significant.

Key words: bank profitability, economic trends' indicators, Serbia, Croatia, regression analysis.

УТИЦАЈ ПРИВРЕДНИХ КРЕТАЊА НА ПРОФИТАБИЛНОСТ БАНАКА – СЛУЧАЈ СРБИЈЕ И ХРВАТСКЕ

Апстракт

У овом раду анализирани су смер и интензитет утицаја привредних кретања на профитабилност банака у Србији и Хрватској у периоду између 2006. и 2021. године. Циљ рада је да се утврди који индикатори привредних кретања имају нај-

* Corresponding author: Ahmedin Lekpek, State University of Novi Pazar, Department of Economic Sciences, Novi Pazar, Serbia, alekpek@np.ac.rs

снажнији uticaj na profitaбилност банака u oдабраним земљама. Као кључни индикатори привредних кретања одабрани су стопа раста БДП-а, БДП per capita, стопа инфлације, реална каматна стопа, стопа раста новчане масе, државни издаци за крајњу потрошњу, биланс текућег рачуна, бруто штедња, обим трговине и стопа незапослености, као независне варијабле. Профитабилност банака мерена је показатељима ROE и ROA, који представљају зависне варијабле. У истраживању су коришћене методе дескриптивне анализе, тестирања хипотеза о разлици аритметичких средина, корелација, и униваријантна и мултиваријантна линеарна регресиона анализа. Резултати истраживања показују да значајан uticaj na profitaбилност банака у обе одабране земље има промена реалне каматне стопе и стопе незапослености, док промена стопе раста БДП-а има статистички значајан ефекат само у Србији, а државни издаци имају статистички значајан ефекат само у Хрватској. Утицај осталих индикатора привредних кретања није статистички значајан.

Кључне речи: банкарска профитабилност, индикатори привредних кретања, Србија, Хрватска, регресиона анализа

INTRODUCTION

The profitability of banks is one of the key indicators of their business success. Achieving adequate profitability allows banks to maintain their capital at the required level, to protect and improve their market position, and to expand the range of their services. Only profitable banks can play the role of the core of the financial system, as is generally the case, especially in developing countries. Successful banks can make a significant contribution to positive economic trends at the national and global levels, but at the same time, they themselves are not immune to the impact of macroeconomic developments.

Starting from the interdependence of banks' business success and economic trends, the subject of this research is the impact of economic trends on the profitability of banks in Serbia and Croatia. The aim of the research is to determine which indicators of economic trends have the strongest impact on banks' profitability in the selected countries. The research is motivated by the importance of understanding the external factors that affect the profitability of banks and, consequently, the financial stability of the banking sector in Serbia and Croatia. The research covers the 2006-2021 period. The changes in GDP growth rate, GDP per capita, inflation rate, real interest rate, broad money growth, government spending, fiscal health index, monetary freedom index, and financial freedom index were used as indicators of economic trends. On the other hand, the ROE and ROA indicators were used as measures of bank profitability.

Our two research hypotheses are defined as follows: H1) movements of macroeconomic indicators, presented through changes in return on equity, do not have a significant impact on changes in the profitability of banks in Serbia and Croatia; and H2) movements of macroeconomic indicators, presented through changes in return on assets, do not have a

significant impact on changes in the profitability of banks in Serbia and Croatia.

This study is structured as follows: section one provides a brief overview of the literature concerning the determinants of bank profitability; section two contains a description of the data and variables on which the analysis is based; in section three, there is a brief review of the econometric method used, and an analysis of the estimation results; and section four summarises the results, and draws a number of relevant conclusions for future actions.

LITERATURE REVIEW

The banking sector has a very strong influence on economic trends both nationally and globally, but at the same time, economic trends significantly determine the success of banking operations (Choudhry, 2018, p. 6). A favourable economic environment creates exceptional opportunities for the successful business of economic entities, whose main financiers are mainly banks, resulting in an increase in the volume and profitability of banking operations (Gardener, Molyneux & Williams, 2003, p. 146). On the other hand, economic instability, caused by wrong fiscal and monetary policies, and/or political conflicts prevents normal business operations and diminishes the role of the market (Hermes, Lensink & Murinde, 2003, p. 525). In such circumstances, the efficiency and sustainability of banking operations are endangered due to the decline in asset quality, the growth of loans losses, and, finally, a significant decline in profitability (Albertazzi & Gambacorta, 2009, p. 393).

On the other hand, banks encourage economic activities by performing the function of a financial intermediary by investing money collected from depositors in the business ventures of borrowers (Sufian & Habibullah, 2009, p. 207). Efficient financial intermediation of banks leads to the growth of the volume of mobilised and invested financial resources, improved quality of banking services, and the growth of their profitability (Saona Hoffmann, 2011, p. 255). It seems that the public becomes aware of the importance of banks for the normal functioning of the economy only after the emergence of banking crises, which quickly spill over into the real sector and paralyse economic life (Sayilgan & Yildirim, 2009, p. 207).

One of the most important indicators of banking success is profitability. Profitability enables banks to meet the financial requirements of shareholders and employees, and the requirements of clients for better services (Pond, 2017, p. 73). Also, profitability leads to the strengthening of the stability and the resilience of banking operations to disturbances in the financial and economic system, due to the growth of available internal sources of financing and the improvement of capital structure (Sayilgan

& Yildirim, 2009, p. 207). For these reasons, profitability is taken as a key indicator of banking performance in situations where it is not possible to use the market price of bank shares for this purpose, as in the case of small banks whose shares are not actively traded (Rose & Hudgins, 2010, p. 171), or banks operating in underdeveloped financial markets. There are numerous indicators of banks' profitability, of which return on assets (ROA), as a measure of bank management efficiency, and return on equity (ROE), which shows the return achieved by the bank's shareholders, stand out in terms of importance and representation (Rose & Hudgins, 2010, p. 172).

The impact of economic trends on bank profitability has been addressed by numerous authors, who based their analysis on the research of the mentioned phenomenon in individual countries or groups of countries. Dealing with the issue of the dynamics of profitability of American banks, Chronopoulos et al. (2015) found that GDP growth has a positive effect on bank profitability. Anbar and Alper (2011) showed that the impact of the real GDP growth rate and inflation rate on the profitability of Turkish banks is negligible. On the other hand, Sayilgan and Yildirim (2009) concluded that the reduction in the inflation rate stimulates the growth of the profitability of Turkish banks, while the growth of the real sector, according to Acaravci and Calim (2013), stimulates the Turkish banks' growth. According to Saeed (2014), GDP and inflation negatively affect the profitability of British banks, while the interest rate impact is positive. Alexiou and Sofoklis (2009) concluded that the impact of GDP on the profitability of Greek banks is insignificant, while the impact of inflation is positive, but insignificant in degree. Athanasoglou, Brissimis and Delis (2008), on the other hand, concluded that inflation and cyclical output have a pronounced impact on the profitability of Greek banks. Osuagwu (2014) indicates a negligible impact of the inflation rate and exchange rate on the profitability of Nigerian banks. Tan (2016) states that inflation and GDP have a positive and pronounced impact on the profitability of Chinese banks, emphasising that inflation primarily affects return on assets, net interest margin, and profit before tax on assets, while GDP has an impact on the net interest margin and profit before tax on assets. García-Herrero, Gavilá and Santabárbara (2009) indicate that the profitability of Chinese banks is driven by the growth of real interest rates on loans and inflation, but that interest rate volatility threatens it. Liu and Wilson (2010) found that GDP growth has a negative impact on the profitability of Japanese banks. According to Trujillo-Ponce (2013), the profitability of banks in Spain is significantly influenced by the economic cycle, inflation rate, and interest rate. Sufian and Habibullah (2009) concluded that inflation negatively affects banks' profitability in Bangladesh, while the impact of other indicators of economic trends is insignificant. The profitability of banks in the Philippines is negatively affected by the inflation rate, but it is not conditioned by economic growth and money supply growth (Sufian & Chong, 2008). Knezevic

and Dobromirov (2016) found that macroeconomic factors do not affect the profitability of banks in Serbia. When it comes to banks in Croatia, their profitability is positively affected by GDP growth, while the impact of inflation is negative (Pervan, Pelivan & Arnerić, 2015).

Numerous authors have conducted a cross-country analysis of the impact of economic trends on bank profitability. Based on the analysis of the profitability of banks operating in 23 selected countries, divided into developed and developing countries, Le and Ngo (2020) found that the factors that had a pronounced impact on bank profitability include economic growth and the global financial crisis. Djalič and Piesse (2016) addressed this phenomenon in transition countries, dividing them into early-transition and late-transition countries. They found that GDP and inflation have no impact on bank profitability, that government spending has a strong negative impact on bank profitability in late-transition countries, that fiscal freedom only significantly affects bank profitability in late-transition countries, and that the impact of monetary freedom is strong and negative in the case of the profitability of banks operating in late-transition countries. Athanasoglou, Delis and Staikouras (2006) focused their research on the countries of Southeast Europe. They conclude that inflation has a strong positive impact on banks' profitability in these countries, while the impact of GDP is negligible. Kalaš et al. (2020) state that GDP and inflation have a significant impact on banking profitability in Central and Southeast Europe countries, in contrast to the real interest rate, whose impact is negligible. In their study, Petria, Capraru and Ihnatov (2015) took into account the 27 member states of the European Union, and found that GDP growth had a positive effect on banking profitability in these countries, while inflation was unaffected. Staikouras and Wood (2004), on the other hand, surveyed a sample of 13 EU member states, and concluded that interest rates had a positive effect on bank profitability in the observed countries, while GDP growth and interest rate volatility had a negative impact.

METHODOLOGICAL FRAMEWORK

The main goal of this research is to determine if there is a correlation between economic trends and bank profitability in Serbia and Croatia for the 2006-2021 period¹. This study focuses on analysing the influence of economic trends on bank profitability in Serbia and Croatia via the use of annual time series internal and external data for the period between 2006 and 2021. The authors selected the following indicators of economic trends as independent variables²:

¹ For most of the selected variables, data is available for this period.

² The variables used in the analysis were primarily selected as the most important economic trend indicators that provide insight into the level of economic development of those two countries;

- Gross domestic product (GDP) per capita, PPP (current international \$) (x_1 , The World Bank Group);
- GDP per capita growth (annual %) (x_2 , The World Bank Group);
- Inflation, consumer prices (annual %) (x_3 , The World Bank Group);
- Real interest rate (%) (x_4 , The World Bank Group);
- Broad money growth (annual %) (x_5 , The World Bank Group)³;
- General government final consumption expenditure (x_6 , The World Bank Group)⁴;
- Current account balance (% of GDP) (x_7 , The World Bank Data Group)⁵;
- Gross savings (% of GDP) (x_8 , The World Bank Data Group)⁶;
- Trade (% of GDP) (x_9 , The World Bank Data)⁷; and
- Unemployment, total (% of total labour force) (national estimate) (x_{10} , The World Bank Data).

The authors selected the following indicators of bank profitability as dependent variables:

- *Bank return on equity*, in percentages – pre-tax income to yearly average equity (ROE, The Global Economy); and
- *Bank return on assets*, in percentages – pre-tax income to yearly average total assets (ROA, The Global Economy).

Given the above-mentioned variables, two models were developed. The first model serves to examine the impact of economic trends on ROE, and the second model serves to identify the link between economic trends and ROA:

Model 1:

$$\text{ROE} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \varepsilon_i \quad (1)$$

Model 2:

$$\text{ROA} = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 + \beta_7 x_7 + \beta_8 x_8 + \beta_9 x_9 + \beta_{10} x_{10} + \varepsilon_i \quad (2)$$

³ “Broad money is the sum of currency outside banks; demand deposits other than those of the central government; the time, savings, and foreign currency deposits of resident sectors other than the central government; bank and traveller’s checks; and other securities such as certificates of deposit and commercial paper”. (The World Bank Group);

⁴ “General government final consumption expenditure (formerly general government consumption) includes all government current expenditures for purchases of goods and services (including compensation of employees). It also includes most expenditures on national defence and security, but excludes government military expenditures that are part of government capital formation” (The World Bank);

⁵ “Current account balance is the sum of net exports of goods and services, net primary income, and net secondary income” (The World Bank);

⁶ “Gross savings are calculated as gross national income less total consumption, plus net transfers” (The World Bank Data);

⁷ “Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product” (The World Bank Data).

DATA AND ANALYSIS

The essence of the analysis is to identify those variables that prove to be the most important factors of bank performance presented through the level of ROE and ROA for each country separately, and then to compare the chosen indicators of economic trends between Serbia and Croatia. First, the trends of chosen variables in the selected period will be presented. The results are shown below, in Figure 1.

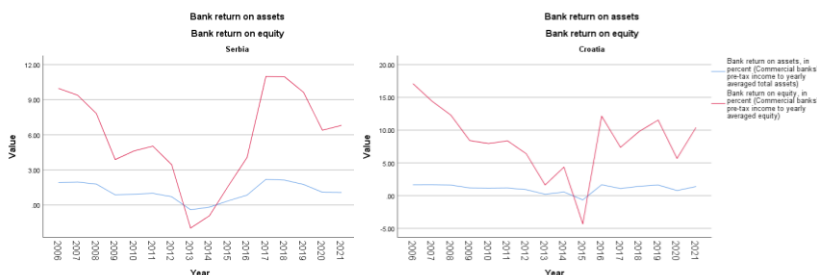


Figure 1. Bank return on assets and Bank return on equity, in percentages, in Serbia and Croatia during the 2006-2021 period

Considering the profitability level of the banking sector, indicators were above average in Serbia for ROA, with a mean value of 1.1188 and a standard deviation of 0.78849. For ROE, the mean value was 5.7281, with a standard deviation of 4.01007. In Croatia, the mean value of ROA was 1.0756, with a standard deviation of 0.63102, and the mean value for ROE was 8.3388, with a standard deviation of 5.11652. According to the values for standard deviation, significantly higher volatility is observed for ROE in both countries during the observed period. Notably, the values for ROE in Croatia were much higher than in Serbia during the observed time. On the other hand, the mean values for ROA were similar in both countries.

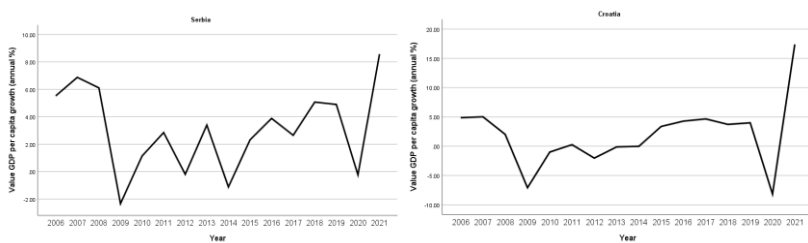


Figure 2. GDP per capita growth (annual %) in Serbia and Croatia during the 2006-2021 period

Figure 2 analyses the economic trends of GDP growth rate, and shows much greater oscillations in Serbia after the global financial crisis

in 2008 (both countries experienced a drastic decline in GDP growth rate in 2020 as well, as a consequence of the COVID pandemic). In Serbia, the values of this indicator were in the range of 10.91 (from *max* 8.57 to *min* -2.34). In Croatia, the *max* value of the GDP growth rate was 17.38, and the *min* value was -8.18 (the range was 25.56).

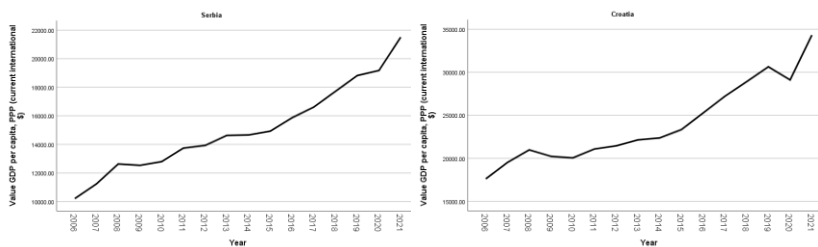


Figure 3. GDP per capita, PPP, in Serbia and Croatia during the 2006-2021 period

Figure 3 reflects the trends in GDP per capita PPP (current international \$), which were similar in both countries. But, when concrete values are considered, a big difference is noticeable. The mean value of this indicator in Serbia was 15061.7389, with a standard deviation of 3072.57195. In Croatia, the mean value was 24013.2946, with a standard deviation of 4717.43314 (the mean value in Serbia is around 63% of the Croatian GDP per capita mean value).

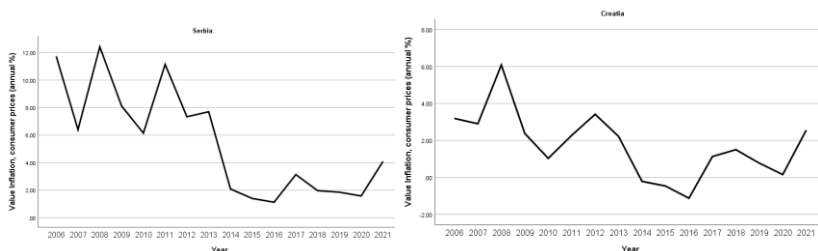


Figure 4. Inflation, consumer price (annual %) in Serbia and Croatia during the 2006-2021 period

Figure 4 analyses the inflation rate in both countries. There were much greater oscillations of value in Serbia during the period. The mean value of the inflation rate in Serbia was 5.5091, with a standard deviation of 3.92508, and the mean value in Croatia was 1.7364, with a standard deviation of 1.78713. The previous indicator shows a greater economic and monetary stability in Croatia.

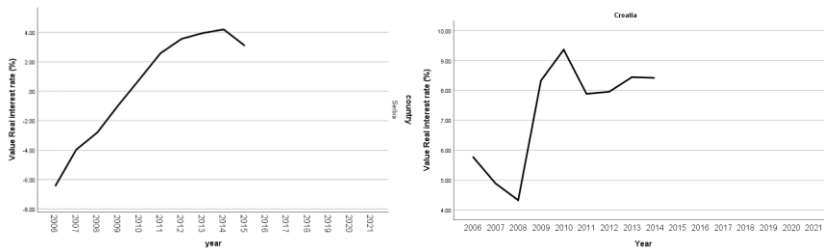


Figure 5. Real interest rate (%) in Serbia and Croatia during the 2006-2015 period⁸

Figure 5 reflects the trends in real interest rates between the years 2006 and 2015. In Serbia, a constant growth is noticeable until 2014 (the mean value was 0.4066, with a standard deviation of 3.76008), with the most outstanding value of 4.20 recorded in 2014. In Croatia, the mean value of the real interest rate was 7.2686, and the standard deviation was 1.78521, with the most outstanding value of 9.37 in 2010.

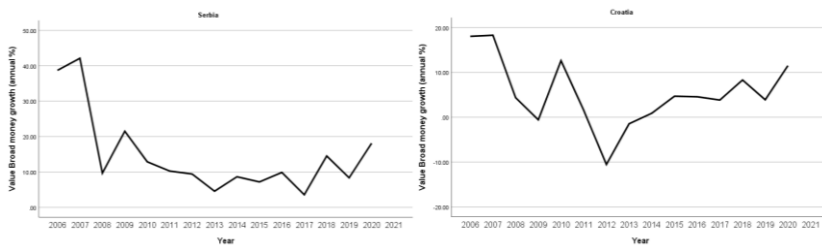


Figure 6. Broad money growth (annual %) in Serbia and Croatia during the 2006-2020 period

Figure 6 shows the trends in broad money growth in both countries. The mean value in Serbia was much higher than in Croatia – 14.6250 (with a standard deviation of 11.47627) relative to 5.3340 (with a standard deviation of 7.57580). Besides the difference in mean value, there was a significant deviation of this indicator in both countries. A higher value of broad money growth in Serbia was related to the higher value of the inflation rate, which was realised in the observed period.

⁸ Data is available only for this period on World Bank Data.

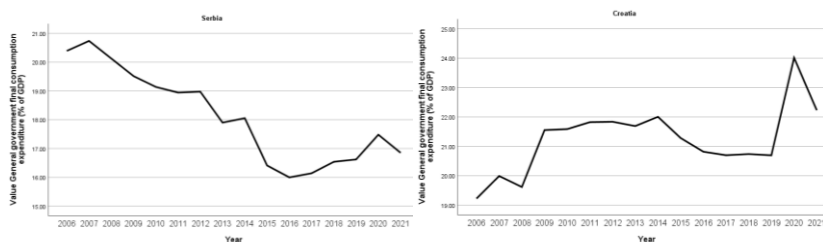


Figure 7. General government final consumption expenditure (% of GDP) in Serbia and Croatia during the 2009-2021 period

Figure 7 represents the markedly different trends in general government final consumption expenditure (% of GDP) in Serbia and Croatia during the observed period. The mean value for Serbia was 18.1132, with a standard deviation of 1.60333, and the mean value for Croatia was 21.2367, with a standard deviation of 1.14580. Those values do not suggest a big difference in government spending, but the graphs show the different dynamics during the time.

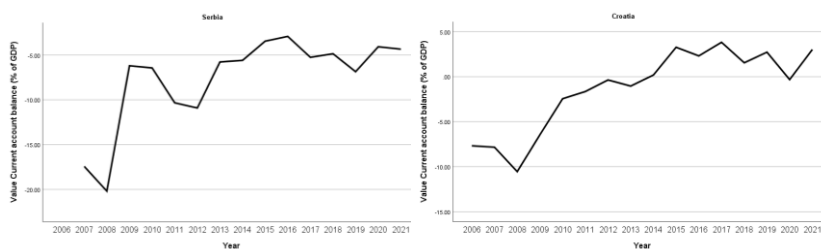


Figure 8. Current account balance (% of GDP) in Serbia and Croatia during the 2007-2021 period

Keeping in mind the mean values, the current account balance (% of GDP) was not similar in these two countries during the observed period. The mean value of the current account balance in Serbia was -7.6434 (with a standard deviation of 5.06883), and -1.3406 (with a standard deviation of 4.50341) in Croatia. After 2014, values were positive in Croatia (in 2020, the value is negative (-0.32)), while the values of the current account balance were negative in Serbia throughout the selected period.

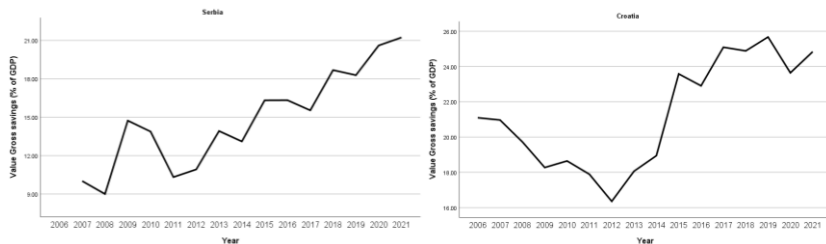


Figure 9. Gross savings (% of GDP) for Serbia and Croatia during the 2006-2021 period

When we analysed gross savings (% of GDP), both countries' results showed similar values. The mean value of gross savings in Serbia was 14.8590 (with a standard deviation of 3.81100), and the mean value of this indicator in Croatia was 21.2843 (with a standard deviation of 3.08829).

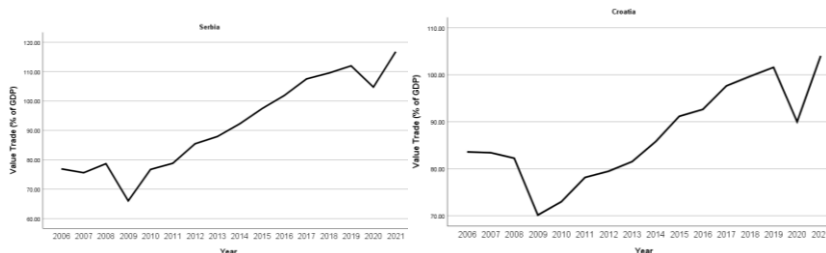


Figure 10. Trade (% of GDP) in Serbia and Croatia during the 2006-2021 period

When analysing the available set of data for trade (% of GDP), it can be noticed that the values for both countries are quite similar. The mean value in Serbia was 91.7557, with a standard deviation of 15.62270. In Croatia, the mean value was 87.1214, with a standard deviation of 10.09777.

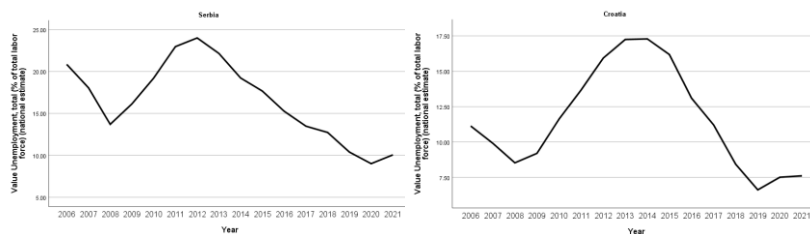


Figure 11. Unemployment in Serbia and Croatia during the 2006-2021 period

Trends in unemployment are similar in both countries; the values were lower in Croatia throughout the selected period, but an intensive

decrease in Serbia started two years earlier than in Croatia (in 2012). The mean value for unemployment in Serbia during the selected period was 16.5562, with a standard deviation of 4.72742, and the mean value in Croatia was 11.5750, with a standard deviation of 3.61941.

EMPIRICAL RESULTS

This paper uses descriptive analysis, mean differences between selected variables, and univariate and multivariate regression analysis to show which indicator of economic trends has the greatest impact on bank profitability in both of the observed countries respectively. All analyses were performed using the SPSS program (version 26). At first, it was necessary to test the normality of the distribution of the selected variables. Since the chosen period spans 16 years, the p-value was obtained via the Shapiro-Wilk test of normality basis. The results are presented in Table 1.

Table 1. Descriptive statistics and test of normality for Serbia and Croatia

Variable	Serbia				Croatia			
	mean	SD	range	p	mean	SD	range	p
ROE	5.7281	4.01007	12.96	0.417	8.3387	5.11652	21.38	0.689
ROA	1.1188	0.78849	2.60	0.272	1.0756	0.63102	2.32	0.011
x ₁	15061.74	3072.572	11294.17	0.832	24013.29	4717.43	16699.50	0.156
x ₂	3.0837	3.06684	10.91	0.977	1.9453	5.76431	25.57	0.050
x ₃	5.5091	3.92508	11.29	0.051	1.7364	1.78713	7.20	0.666
x ₄	0.4066	3.76008	10.65	0.171	7.2643	1.78887	5.04	0.088
x ₅	14.6250	11.47627	38.54	0.002	5.3340	7.57580	28.84	0.507
x ₆	18.1132	1.60333	4.74	0.207	21.2367	1.14580	4.80	0.479
x ₇	-7.6434	5.06883	17.26	0.002	-1.3406	4.50341	14.37	0.062
x ₈	14.8590	3.81100	12.22	0.720	21.2843	3.08829	9.32	0.150
x ₉	91.7557	15.62270	50.74	0.359	87.1214	10.09777	33.90	0.775
x ₁₀	16.5562	4.72742	14.99	0.676	11.5750	3.61941	10.67	0.176

Source: Authors' calculations

Due to the p-value for ROA, broad money growth, and current account balance, the Mann Whitney U test was used to test the mean difference between Serbia and Croatia. The Independent Sample t-test was used for all other variables. Statistical analysis shows that the differences in the mean values of GDP per capita PPP, inflation, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, and unemployment between Serbia and Croatia are statistically significant (Table 2).

Table 2. Differences of mean values for selected indicators between Serbia and Croatia

Variables	ROE	ROA	x ₁	x ₂	x ₃	x ₅	x ₅	x ₆	x ₇	x ₈	x ₉	x ₁₀
p-value	0.119	0.880	0.000	0.491	0.001	0.000	0.010	0.000	0.003	0.000	0.328	0.002

Source: Authors' calculations

After presenting descriptive statistic data for the chosen variables, univariate and multivariate regression analyses were used. Regression analysis is used to determine the intensity of the changes in the dependent variable (in our case, bank return on equity and bank return on assets) associated with changes in the independent variable. It is possible to quantify the relationship or association between the dependent and independent variables using the regression model in such a way that it can determine to what extent the change of the dependent variable is caused by the change of the independent variable (Marinković, Šabotić, & Banković, 2018). Before using regression analysis, a homoscedasticity test between the dependent and independent variables was conducted, and it showed that there was no problem with homoscedasticity because the p-value was greater than 0.05 (0.645 for Serbia and 0.668 for Croatia).

First, we will present the results for the dependent variable **ROE** in Serbia and Croatia respectively, as obtained through univariate and multivariate regression analysis. After that, we will present results obtained using a general linear model for both countries as fixed factors. Covariates are all the independent variables that we used in the analysis to confirm previous results.

Univariate linear regression for Serbia showed that bank performance presented through **ROE** is statistically significantly related to GDP per capita growth (p=0.037). The coefficient B is 0.685, which means that any increase in GDP per capita growth by one percent increases ROE by 0.685. As F equals 5.298 (p=0.037), this linear model significantly predicts the values of the dependent variable ROE. R² is 0.275, which means that the model explains 27.5% of the ROE variance. The model for ROE is:

$$ROE = 3.615 + 0.685x_2 \tag{3}$$

Similarly, Table 3 interprets the relationship of the variable ROE and real interest rate.

Table 3. Univariate linear regression analysis for Serbia, when the dependent variable is ROE

	R ²	F	p	Const	B	Model
Real interest rate	0.803	32.606	0.000	4.674	-0.960	ROE = 4.674 - 0.960x ₄
Unemployment	0.247	4.597	0.050 ⁹	12.711	-0.422	ROE = 12.711 - 0.422x ₁₀

Source: Authors' calculations

After the univariate regression analysis, a **multivariate regression analysis** was conducted. Using the stepwise method, the multivariate regression analysis showed that only the real interest rate was entered into the model ($p < 0.0005$). The coefficient B is -0.960, meaning that any increase in the real interest rate decreases ROE by 0.960. As F equals 32.606 ($p < 0.0005$), this linear model significantly predicts the values of the dependent variable ROE. R² is 0.803, which means that the model explains 80.3% of the ROE variance. The model for ROE is:

$$\text{ROE} = 4.674 - 0.960x_4 \quad (4)$$

Univariate linear regression for Croatia also confirmed that bank performance presented through ROE is statistically significantly related to the real interest rate ($p = 0.016$). The coefficient B is -2.092, which means that any increase in the real interest rate by one percent decreases ROE by 2.072. As F equals 10.076 ($p = 0.016$), this linear model significantly predicts the values of the dependent variable ROE. R² is 0.590, which means that the model explains 59% of the ROE variance. The model for ROE is:

$$\text{ROE} = 24.180 - 2.092x_4 \quad (5)$$

There is a statistically significant impact of change in general government final consumption expenditure (% of GDP) and unemployment. Table 4 interprets the relationship of the variable ROE with these variables.

Table 4. Univariate linear regression analysis for Croatia, when the dependent variable is ROE

	R ²	F	p	Const	B	Model
General government final consumption expenditure	0.558	6.110	0.027	60.610	-2.461	ROE = 60.610 - 2.461x ₆
Unemployment	0.354	7.675	0.015	18.076	-0.841	ROE = 18.076 - 0.841x ₁₀

Source: Authors' calculations

⁹ P-value is at the limit level but shows that unemployment may have a statistically significant impact on the ROE of banks in Serbia.

Regardless of the existence of only three variables that significantly affect the dependent variable, according to univariate regression analysis, a **multivariate regression analysis** was conducted. Using the step-wise method, the multivariate regression analysis showed that only general government final consumption expenditure was entered into the model ($p=0.002$). The coefficient B is -3.933, which means that any increase in general government final consumption expenditure decreases ROE by 3.933. As F equals 25.169 ($p=0.002$), this linear model significantly predicts the values of the dependent variable ROE. R^2 is 0.782, which means that the model explains 78.2% of the ROE variance. The model for ROE is:

$$\text{ROE} = 91.722 - 3.933x_6 \quad (6)$$

Using the two countries as the fixed effect model, and all independent variables as covariates, the results of the general linear model showed that variances are homogenous, according to Levene's test of equality of error variances ($p=0.186$). In the Tests table of between-subjects effects, only real interest rate has a statistically significant effect on the dependent variable ROE ($p=0.003$). Also, the Parameter table estimates show that the values for the dependent variable are statistically significantly higher in Croatia than in Serbia ($p=0.015$, $B=1.161$).

We will now present the results for another dependent variable, **ROA**, in Serbia and Croatia respectively, obtained through univariate and multivariate regression analyses. After that, the results of a general linear model for both countries as fixed factors will be presented. Covariates are all the independent variables that we used in the analysis to confirm previous results.

Univariate linear regression for Serbia confirmed that bank performance presented through ROA is statistically significantly related to GDP per capita growth (annual %), and the real interest rate. The results are shown in Table 5.

Table 5. Univariate linear regression analysis for Serbia, when the dependent variable is ROA

	R^2	F	p	Const	B	Model
GDP per capita, growth (annual %)	0.251	4.682	0.048	0.722	0.129	$\text{ROA} = 0.722 + 0.129x_2$
Real interest rate	0.795	30.948	0.001	0.966	-0.196	$\text{ROA} = 0.966 - 0.196x_4$

Source: Authors' calculations

Multivariate regression analysis for the dependent variable ROA yielded the same results as the multivariate regression analysis for ROE: only the real interest rate was entered in the model ($p<0.0005$). The coefficient B is -0.196, which means that any increase in government spending decreases ROA by 0.196. As F equals 30.948 ($p<0.0005$), this linear

model significantly predicts the values of the dependent variable ROA. R^2 is 0.795, which means that the model explains 79.5% of the ROA variance. The model for ROA is:

$$\text{ROA} = 0.966 - 0.196x_4 \quad (7)$$

When the **univariate regression analysis for Croatia** for the dependent variable ROA was conducted, the statistically significant impact of change in the real interest rate was confirmed. Still, there was a statistically significant impact of change in unemployment on the change in the dependent variable (Table 6).

Table 6. Univariate linear regression analysis for Croatia, when the dependent variable is ROA

	R^2	F	p	Const	B	Model
Real interest rate	0.547	8.439	0.023	2.624	-0.209	$\text{ROA}=2.624-0.209x_4$
Unemployment	0.428	10.474	0.006	2.396	-0.114	$\text{ROA}=2.396-0.114x_{10}$

Source: Authors' calculations

Using the stepwise method, the **multivariate regression analysis** showed that only unemployment was entered into the model ($p=0.003$). The coefficient B is -0.127, meaning that any increase in unemployment decreases ROA by 0.127. As F equals 20.880 ($p=0.003$), this linear model significantly predicts the values of the dependent variable ROA. R^2 is 0.749, which means that the model explains 74.9% of the ROA variance. The model for ROA is:

$$\text{ROA} = 2.728 - 0.127x_{10} \quad (8)$$

Using the two countries as the fixed effect model, and all independent variables as covariates, the results of the general linear model showed that variances are homogenous, according to Levene's test of equality of error variances ($p=0.229$). In the Test table of between-subjects effects, only GDP per capita PPP, has a statistically significant effect on the dependent variable ROA ($p=0.007$). Also, the Parameter table estimates show that values for the dependent variable are statistically significantly higher in Croatia than in Serbia ($p=0.003$, $B=61.620$).

By analysing the impact of the chosen indicators of economic trends on bank performance, represented by bank return equity for Serbia and Croatia during a period of 16 years, a statistically significant difference in some indicators of economic trends (GDP per capita PPP, inflation, real interest rate, broad money growth, general government final consumption expenditure, current account balance, gross savings, and unemployment) was noticed between Serbia and Croatia.

The subsequently conducted univariate analysis indicated that bank return to equity and bank return to assets were significantly affected in

both countries by changes in real interest rates and unemployment. For Serbia, multivariate regression analysis showed that changes in real interest rates had a statistically significant impact on changes in both dependent variables. But results of the multivariate regression analysis for Croatia are quite different. The general government's final consumption expenditure has a statistically significant impact on changes in ROE, and unemployment has a statistically significant impact on changes in ROA.

CONCLUSION

The effective financial intermediation of banks provides a key impetus to economic development. At the same time, an important precondition for the efficiency of bank operations is a favourable economic environment, with many attractive investment opportunities and low participation of non-performing loans. The research conducted in this paper aimed to examine the impact of economic trends on the profitability of banks in Serbia and Croatia in the period between 2006 and 2021. In the observed period, Croatian banks achieved a higher level of profitability measured by the ROE indicator, while the value of ROA was uniform.

When it comes to indicators of economic trends, the following results were recorded: in Serbia, the GDP growth rate fluctuated far more than in Croatia; GDP per capita followed a similar trend in both of the observed countries, but the Croatian GDP was significantly higher; the inflation rate fluctuated significantly in Serbia as compared to Croatia; higher real interest rate amounts were recorded in Croatia; higher broad money growth was achieved in Serbia; a similar level of general government final consumption expenditure was observed in both countries, with different dynamics; current account balance had negative values in Serbia throughout the observed period, while positive values in Croatia were recorded after 2014; and gross savings and trade had similar values in both countries. Trends in unemployment are similar in both countries: the values were lower in Croatia throughout the observed period, but an intensive decrease in Serbia started two years earlier than in Croatia (in 2012).

The results of this research show that changes in real interest rates and unemployment had a significant impact on bank profitability in both of the observed countries. In contrast, changes in general government final consumption expenditure impacted the profitability of banks in Croatia, while changes in GDP per capita growth impacted the profitability of banks in Serbia. The influence of other indicators of economic trends was not statistically significant.

The results show noticeable differences in the economic development of the two observed countries, which caused the different effects of

the selected indicators on the return on capital and the return on the bank's assets.

The results of this research can be an important guideline for economic and monetary policymakers in the observed countries, especially in the process of creating government spending and interest rate policies. For the analysis of the bank profitability factors to be complete, it is necessary to further this research by observing a greater number of countries and profitability factors. Accordingly, the recommendation for future research is to extend the coverage of the observed countries to the countries of the Western Balkans, and to consider internal factors of bank profitability, which can be a significant factor in banks' resilience to macroeconomic fluctuations.

REFERENCES

- Acaravci, S. K., & Calim, A. E. (2013). Turkish banking sector's profitability factors. *International Journal of Economics and Financial Issues*, 3(1), 27-41.
- Albertazzi, U., & Gambacorta, L. (2009). Bank profitability and the business cycle. *Journal of Financial Stability*, 5(4), 393-409. doi: 10.1016/j.jfs.2008.10.002
- Anbar, A., & Alper, D. (2011). Bank specific and macroeconomic determinants of commercial bank profitability: Empirical evidence from Turkey. *Business and economics research journal*, 2(2), 139-152.
- Alexiou, C., & Sofoklis, V. (2009). Determinants of bank profitability: Evidence from the Greek banking sector. *Economic annals*, 54(182), 93-118. doi: 10.2298/eka0982093a
- Athanasoglou, P., Delis, M., & Staikouras, C. (2006). Determinants of bank profitability in the South Eastern European region. *MPRA Paper No. 10274*. Retrieved from <https://mpr.ub.uni-muenchen.de/10274/>
- Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of international financial Markets, Institutions and Money*, 18(2), 121-136. doi: 10.1016/j.intfin.2006.07.001
- Choudhry, M. (2018). *Past, Present, and Future Principles of Banking and Finance*. John Wiley & Sons Singapore Pte. Ltd.
- Chronopoulos, D. K., Liu, H., McMillan, F. J., & Wilson, J. O. (2015). The dynamics of US bank profitability. *The European Journal of Finance*, 21(5), 426-443.
- Djalilov, K., & Piesse, J. (2016). Determinants of bank profitability in transition countries: What matters most?. *Research in International Business and Finance*, 38, 69-82. doi: 10.1016/j.ribaf.2016.03.015
- García-Herrero, A., Gavilá, S., & Santabárbara, D. (2009). What explains the low profitability of Chinese banks?. *Journal of Banking & Finance*, 33(11), 2080-2092. doi: 10.1016/j.jbankfin.2009.05.005
- Gardener, E. P., Molyneux, P., & Williams, J. (2003). Competitive banking in the EU and Euroland. In: Mullineux, A. W., & Murinde, V. (Eds.): *Handbook of international banking* (130-155). Northampton: Edward Elgar Publishing, Inc.
- Hermes, N., Lensink, R., & Murinde, V. (2003). Capital flight: the key issues. In: Mullineux, A. W., & Murinde, V. (Eds.): *Handbook of international banking* (516-545). Northampton: Edward Elgar Publishing, Inc.

- Kalaš, B. M., Mirović, V., Milenković, N., & Andrašić, J. (2020). The impact of macroeconomic determinants on commercial bank profitability in Central and Southeastern European countries. *Teme*, 44 (4), 1391-1409. doi: 10.22190/TEME190515082K
- Knezevic, A., & Dobromirov, D. (2016). The determinants of Serbian banking industry profitability. *Economic research – Ekonomika istraživanja*, 29(1), 459-474. doi: 10.1080/1331677X.2016.1174390
- Le, T. D., & Ngo, T. (2020). The determinants of bank profitability: A cross-country analysis. *Central Bank Review*, 20(2), 65-73. doi: 10.1016/j.cbrev.2020.04.001
- Liu, H., & Wilson, J. O. (2010). The profitability of banks in Japan. *Applied Financial Economics*, 20(24), 1851-1866. doi: 10.1080/09603107.2010.526577
- Marinković, S., Šabotić, Z., & Banković, D. (2018). EU enlargement: Does economics of regional integration matter?. *Zbornik radova Ekonomskog fakulteta u Rijeci: časopis za ekonomsku teoriju i praksu*, 36(2), 881-904. doi: 10.18045/zbefri.2018.2.881
- Osuagwu, E. (2014). Determinants of bank profitability in Nigeria. *International Journal of Economics and Finance*, 6(12), 46-63. doi: 10.5539/ijef.v6n12p46
- Pervan, M., Pelivan, I., & Arnerić, J. (2015). Profit persistence and determinants of bank profitability in Croatia. *Economic research-Ekonomika istraživanja*, 28(1), 284-298. doi: 10.1080/1331677X.2015.1041778
- Petria, N., Capraru, B., & Ihnatov, I. (2015). Determinants of banks' profitability: evidence from EU 27 banking systems. *Procedia economics and finance*, 20, 518-524. doi: 10.1016/S2212-5671(15)00104-5
- Pond, K. (2017). *Retail banking*. Reading, UK: Gosbrook Professional Publishing Ltd.
- Rose, P. S., & Hudgins, S. C. (2010). *Bank management and financial services*. McGraw-Hill Irwin.
- Saeed, M. S. (2014). Bank-related, industry-related and macroeconomic factors affecting bank profitability: A case of the United Kingdom. *Research journal of finance and accounting*, 5(2), 42-50.
- Saona Hoffmann, P. R. (2011). Determinants of the Profitability of the US Banking Industry. *International Journal of Business and Social Science*, 2(22), 255-269.
- Sayilgan, G., & Yildirim, O. (2009). Determinants of profitability in Turkish banking sector: 2002-2007. *International Research Journal of Finance and Economics*, 28, 207-214.
- Staikouras, C. K., & Wood, G. E. (2004). The determinants of European bank profitability. *International Business & Economics Research Journal (IBER)*, 3(6), 57-68.
- Sufian, F., & Chong, R. R. (2008). Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from the Philippines. *Asian Academy of Management Journal of Accounting & Finance*, 4(2), 91-112.
- Sufian, F., & Habibullah, M. S. (2009). Determinants of bank profitability in a developing economy: Empirical evidence from Bangladesh. *Journal of business economics and management*, 10(3), 207-217. doi: 10.3846/1611-1699.2009.10.207-217
- Tan, Y. (2016). The impacts of risk and competition on bank profitability in China. *Journal of International Financial Markets, Institutions and Money*, 40, 85-110. doi: 10.1016/j.intfin.2015.09.003
- The Global Economy. (2021). Business and Economic Data for 200 Countries. Retrieved from <https://www.theglobaleconomy.com/>
- The Heritage Foundation. (2019). Index of Economic Freedom Methodology. Retrieved from <https://www.heritage.org/index/pdf/2019/book/methodology.pdf>

- The World Bank Group. (2021). *Data Bank, World Development Indicators*. Retrieved from <https://databank.worldbank.org/source/world-development-indicators>
- Trujillo-Ponce, A. (2013). What determines the profitability of banks? Evidence from Spain. *Accounting & Finance*, 53(2), 561-586. doi: 10.1111/j.1467-629X.2011.00466.x

УТИЦАЈ ПРИВРЕДНИХ КРЕТАЊА НА ПРОФИТАБИЛНОСТ БАНАКА – СЛУЧАЈ СРБИЈЕ И ХРВАТСКЕ

Ахмедин Лекпек, Зенаида Шаботић

Државни универзитет у Новом Пазару, Департман за економске науке,
Нови Пазар, Србија

Резиме

Ефикасно финансијско посредовање банака даје кључни замах привредном развоју. Истовремено, важан предуслов ефикасности банкарског пословања је повољно привредно окружење, са великим бројем атрактивних инвестиционих могућности и малим учешћем неперформансних кредита. У овом раду анализирани су смер и интензитет утицаја привредних кретања на профитабилност банака у Србији и Хрватској у периоду између 2006. и 2021. године. Циљ рада је да се утврди који индикатори привредних кретања имају најснажнији утицај на профитабилност банака у одабраним земљама. Као кључни индикатори привредних кретања одабрани су стопа раста БДП-а, БДП *per capita*, стопа инфлације, реална каматна стопа, стопа раста новчане масе, државна потрошња, државни издаци за крајњу потрошњу, биланс текућег рачуна, бруто штедња, обим трговине и стопа незапослености као независне варијабле. Профитабилност банака је мерена показатељима ROE и ROA, који представљају зависне варијабле. У истраживању су коришћени дескриптивна анализа, тестирање разлике просечних вредности, корелације, и униваријантна и мултиваријантна регресија. Истраживање је показало да је стопа раста БДП-а далеко више флукуирала у Србији него у Хрватској, да је тренд промене БДП-а *per capita* био сличан у посматраним земљама, али да је његова апсолутна вредност била значајно већа у Хрватској, да је стопа инфлације значајније флукуирала у Србији, да је реална каматна стопа била већа у Хрватској, да је у Србији остварен већи раст новчане масе, да је државна потрошња у обе земље била на сличном нивоу мада се кретала различитом динамиком, да је биланс текућег рачуна у току целог периода имао негативне вредности док су у Хрватској након 2014. године забележене његове позитивне вредности, и да су бруто штедња и обим трговине били на сличном нивоу у обе земље. Стопа незапослености је била нижа у Хрватској, али је у Србији раније, почев од 2012. године, забележен значајнији пад. Резултати истраживања показују да значајан утицај на профитабилност банака у обе одабране земље има промена реалне каматне стопе и стопе незапослености. Промена стопе раста БДП-а има статистички значајан ефекат само у Србији, а државни издаци имају статистички значајан ефекат само у Хрватској. Утицај осталих индикатора привредних кретања није статистички значајан. Резултати показују да постоје приметне разлике у привредном развоју посматраних земаља, што је условило и другачије ефекте одабраних индикатора на принос на капитал и принос на имовину банке.

THE MECHANISM AND THE DIRECTION OF ORGANISATIONAL CULTURE'S IMPACT ON CORPORATE ENTREPRENEURSHIP

Nebojša Janićijević^{1*}, Ljiljana Kontić²

¹University of Belgrade, Faculty of Economics, Belgrade, Serbia

²University of MB, Faculty of Business and Law, Belgrade, Serbia

Abstract

The paper analyses the mechanism, that is, the way in which organisational culture impacts corporate entrepreneurship. Additionally, the paper analyses the direction of this impact, that is, the assumptions, values, and norms through which culture creates a positive context for corporate entrepreneurship. Corporate entrepreneurship, broadly defined as entrepreneurship within organisations, becomes a prerequisite for the organisations' survival and development in the era of globalisation, and radical technology and market changes. Organisational culture as a system of assumptions, values, and norms shared by employees and managers significantly determines their opinions and behaviour. The paper demonstrates that organisational culture impacts corporate entrepreneurship by shaping the employees and managers' interpretative schemes through its assumptions and values. Thus, organisational culture impacts employees and managers' behaviour in everyday work, and thereby the extent to which this behaviour will be entrepreneurial. We applied the fragmented and integrated approaches in identifying the cultural assumptions, values, and norms through which organisational culture positively impacts corporate entrepreneurship. The fragmented approach showed that organisational culture positively impacts corporate entrepreneurship if it highly values innovations and changes, people development, open and intensive interactions and communications, the autonomy of employees and loose control, identification with the company, focus on work, and openness towards the environment. The integrated approach showed that the following culture types positively impact corporate entrepreneurship: adhocracy culture in Quinn and Cameron's classification, and constructive culture in Human Synergetics' classification.

Key words: corporate entrepreneurship, organisational culture, organisation, cultural assumptions, cultural values.

* Corresponding author: Nebojša Janićijević, Faculty of Economics, 6 Kamenička Street, 11000 Belgrade, Serbia, jnebojsa@eunet.rs

МЕХАНИЗАМ И ПРАВАЦ УТИЦАЈА ОРГАНИЗАЦИОНЕ КУЛТУРЕ НА КОРПОРАТИВНО ПРЕДУЗЕТНИШТВО

Апстракт

У раду су анализирани механизам, односно начин на који организациона култура утиче на корпоративно предузетништво, и правац тог утицаја, односно претпоставке, вредности и норме којима култура креира позитиван контекст за корпоративно предузетништво. Корпоративно предузетништво, широко дефинисано као предузетништво унутар организација, постаје услов опстанка и развоја организација у ери глобализације и радикалних технолошких и тржишних промена. Организациона култура као систем претпоставки, вредности, норми и ставова које деле запослени и менаџери битно одређује њихово мишљење и понашање. Показано је да организациона култура утиче на корпоративно предузетништво тако што својим претпоставкама и вредностима обликује интерпретативне шеме запослених и менаџера, и на тај начин детерминише њихово понашање у свакодневном раду, а самим тим и у којој мери ће то понашање бити предузетничко. У идентификовању културних претпоставки, вредности, норми и ставова којим организациона култура позитивно делује на корпоративно предузетништво примењени су фрагментисани и интегрисани приступи. Фрагментисаним приступом је показано да организациона култура позитивно утиче на корпоративно предузетништво ако се високо вреднују: иновације и промене, развој људи, отворене и интензивне интеракције и комуникација, аутономија запослених и лабава контрола, идентификација са компанијом, фокусираност на посао, и отвореност према окружењу. Интегрисаним приступом је показано је да на корпоративно предузетништво позитивно утичу следећи типови културе: култура адхократије у Квиновој (Quinn) и Камероновој (Cameron's) класификацији, и конструктивна култура у класификацији Хјуман Синерџетикс (Human Synergetics).

Кључне речи: корпоративно предузетништво, организациона култура, организација, културне претпоставке, културне вредности

INTRODUCTION

In the modern business environment, organisations must possess entrepreneurial capabilities in order to survive in a competitive environment. They must create changes, innovate, and learn. One of the key processes within an organisation that creates its ability to constantly renew, innovate, and recreate is corporate entrepreneurship (CE). Broadly defined as entrepreneurship within an existing business, CE is increasingly being viewed as a tool that allows businesses to rejuvenate and revitalise, and to create new value through innovation, business development, and renewal (Heinonen & Toivonen, 2008). Being innovative, risk-taking, and ready to pioneer has been proven to contribute well to the financial performance and strategic value of a company (Lumpkin and Dess, 2001). Therefore, CE has become critical to a firm's success. This is why it is very important for companies to build such an internal environment which would facilitate entrepreneurial thinking and behaviour. Companies must create a context in which entrepreneurship is expected, wel-

comed, and rewarded. Many authors have sought to identify the factors that create a favourable environment in the organisation for the development of internal entrepreneurship (Srivastava & Agrawal, 2010). The most frequently identified factors in corporate entrepreneurship in relevant literature, according to our knowledge, are: 1) management support (Srivastava and Agrawal, 2010), 2) rewards (Alpkan et al., 2010), 3) organisational structure (Venkeer et al., 2008), 4) autonomy/work discretion (Kearney, et al., 2008), 5) time availability (Mokaya, 2012), 6) resource availability (Urban and Nikolov, 2013), and 8) risk-taking and tolerance for failure (Alpkan et al., 2010).

Organisational culture is indeed recognised, but rarely researched, as a factor that facilitates and nurtures the entrepreneurial activities of managers and employees (Turró et al., 2014). As a system of assumptions, values, and norms shared by employees and managers, organisational culture has a comprehensive impact on their thinking and behaviour, and it impacts their every action, interaction, and decision (Schein, 2010). Therefore, organisational culture certainly plays a very important role in creating a context suitable for the development of entrepreneurial activities within organisations. This impact, however, has not been sufficiently explored and recognised in the existing literature. The number of studies and the importance assigned to organisational culture as a factor of CE do not correspond to the impact it actually has. The aim of this paper is to fill this gap. By systemising the existing research and by creating new assumptions, we will examine the role that organisational culture plays in building corporate entrepreneurship more closely. This will be done by answering two questions: the question of the way in which organisational culture impacts CE, that is, the nature of the mechanism of its impact; and the question of the direction of this impact, that is, the assumptions, values, and norms through which culture incites CE.

ORGANISATIONAL CULTURE

Organisational culture is understood as a system of assumptions, values, and norms (Schein, 2010) manifested through symbols (Rafaeli, Worline, 2000), which members of an organisation have developed and adopted through mutual experience (Schein, 2010), and which help them determine the meaning of the world around them and how to behave in it (Smircich, 1983). Organisational culture emerges in the process of the social construction of reality within organisations (Geertz, 1973). All organisations face the same problems – specifically, external adaptation and internal integration (Schein, 2010). As explained by Berger and Luckmann (1966), solutions to these problems are found through the process of social interaction between the organisations' members, in which members construct the reality inside and outside the organisation by assigning spe-

cific meanings to things, occurrences, and events. Organisational culture emerges when specific meanings shared by the majority of an organisation's members are created and established, and then used to reach a consensus on how to resolve the problems of external adaptation and internal integration.

Organisational culture has its cognitive and symbolic components. The cognitive component consists of the elements of the managers and employees' interpretative schemes, which the organisational culture imposes, and through which it influences not only how they behave but also how they understand the world around them (Janićijević, 2022). The most often cited and described cognitive components of organisational culture are assumptions, values, and norms. Basic assumptions are the deepest layer of organisational culture, and they are descriptive in character because they explain to the organisation's members the world as it is (Schein, 2010). Values are defined as a "stable belief that a certain way of behavior or existential state is personally or socially more desirable than the opposite behavior or existential state" (Rokeach, 1973, p. 5). Norms are rules of behaviour, most often informal, in the form of social expectations, which emerge from values and represent instructions for the everyday behaviour of the organisation's members (Hofstede et al., 1990). Symbols are the 'visible' part of culture. Symbolic components of organisational culture manifest the cognitive elements of organisational culture, and they include everything that can be seen, heard, and felt in the organisation (Rafaeli, Worline, 2000). Symbols can be very diverse, depending on how the cognitive components of a culture are manifested: behavioural (behaviour), semantic (language), and material (things).

The importance of organisational culture emerges from the fact that, by imposing a set of assumptions and values, it creates a frame of reference for the perceptions, interpretations, and actions of the organisation's members (Schein, 2010). In this way, it influences most of the hard and soft components of management and organisation. Extensive empirical research has documented that organisational culture affects strategy (Klein 2011), performance control (Deem et al. 2010), organisational structure (Ranson, Hinings & Greenwood 1980), compensation systems (Chen, 2010), performance appraisal (Henri, 2006), organisational learning (Alavi, Kayworth & Leidner 2005;), leadership (Giberson et al. 2009), job satisfaction (Lund 2003), and organisational performance (Wilderom, Glunk & Maslowski 2000).

Due to its comprehensive impact on almost all aspects of organisation and management, it may be assumed that organisational culture is an important factor of CE. Some researchers have so far identified some important elements of the organisational context which impact CE, and have classified organisational culture as one of them.

CORPORATE ENTREPRENEURSHIP

Entrepreneurship is defined as an individual act, and we may say that “everyone is an entrepreneur only when he actually carries out new combinations” (Schumpeter, 1934, p. 78). However, CE refers to entrepreneurship within existing companies. Therefore, we are dealing with the entrepreneurial behaviour not of an independent individual, but of a member of an organisation, which significantly alters the issue. The importance of external, systematic factors for entrepreneurship within organisations is far greater than for the entrepreneurship of a self-employed person.

Research on CE has so far dealt mainly with defining the phenomenon (Sharma and Chrisman, 1999), its impact on performance (Fis, & Cetindamar, 2021), the factors that encourage CE and the characteristics of the organisation that nurtures it (Srivastava & Agrawal, 2010), the role of managers as facilitators (Burges, 2013), the measurement of CE (Kuratko, Montagno & Hornsby, 1990), and the influence of other variables that have an indirect or mediatory influence on CE (Lumpkin & Dess, 2001).

Corporate entrepreneurship is usually defined as the process of introducing something new to an organisation, or creating a different combination of the existing resources within an organisation, or creating new business opportunities within the existing organisation, and its strategic renewal (Abolghasem, Ahmad & Hamed, 2014). Many definitions emphasise the aspect of innovation and novelty in CE. One of the widely accepted definitions of CE suggests that it is the process of discovering and developing new opportunities to create value through innovation, regardless of the available resources or the job positions of the entrepreneurs (Antoncic & Hisrich, 2001).

On the other hand, many definitions of CE explain it as part of the process of radical change that revitalises the company. Kuratko, Ireland, Covin and Hornsby (2005) define CE as the process within an established company whereby an individual, or a group of individuals create a new business, or instigate a renewal or an innovation within the current business. Under this definition, strategic renewal (organisational renewal involving major strategic and/or structural changes), innovation (introducing something new to the market place), and corporate venturing (corporate entrepreneurial efforts that lead to creation of new business organisations within the corporate organisation) are all important and legitimate parts of the corporate entrepreneurial process (Srivastava, Srivastava & Jain, 2011).

Major activities related to CE include perceiving opportunities, generating ideas, designing a new product or another recombination of resources, internal coalition building, persuading management, planning, organising, and resource acquiring. Kuratko et al. (2005) outlined the fol-

lowing essential activities: endorsing, refining and navigating entrepreneurial opportunities through organisational bureaucracies and individual networks, and identifying, acquiring and deploying the resources needed to pursue these opportunities. Belousova, Gailly and Basso (2009) introduced one more activity as a separate category – legitimation/enrolment, which includes the process of spreading an idea, translating it for organisational members, and enrolling them into the network of the project.

Factors determining CE have been researched at two levels: individual and organisational. Authors dealing with the individual level of CE usually seek to discover the personal characteristics of individuals who exhibit entrepreneurial behaviour (Milanović, Talić & Jovanović Vujačević, 2021; Douglas & Fitzsimmons, 2013). Authors dealing with the organisational factors seek to discover the characteristics of an organisational context that is favourable and that stimulates CE (Kuratko, Hornsby & Covin, 2014).

THE MECHANISM OF THE IMPACT OF ORGANISATIONAL CULTURE ON CORPORATE ENTREPRENEURSHIP

The first question to be answered when exploring the impact of organisational culture on CE is the question of how a culture performs this impact. The answer to this question explains the mechanism of organisational culture's impact on CE. Organisational culture directly impacts the entrepreneurial behaviour of employees and managers by shaping their interpretative schemes, and, consequently, their behaviour in the company. Organisational culture shapes the actions, interactions, and decisions of all the members of an organisation because it is, essentially, a collective system of meanings (Smirchich, 1983). One of the basic assumptions of contemporary social sciences is the interpretative character of social reality and the behaviour of the people within it (Geertz, 1973). People do not react to the reality which surrounds them based on what it is, but based on their own interpretation of the aforementioned reality. They interpret reality by assigning meanings to occurrences, events, people, and decisions. In the process of interpretation, in which meanings are assigned to things, occurrences and events in reality, people use interpretative or mental schemes as “cognitive structures which represent organized knowledge on a particular type of stimuli” (Fiske & Taylor, 1984, p. 140). Organisational culture, as a system of assumptions, beliefs, values, and norms which the members of an organisation share, determines a significant part of their interpretative schemes (Martin, 2002). To the extent to which they start from the same assumptions, values, and norms, people will interpret the reality which surrounds them in the same or similar way, and they will behave the same within it (Schein, 2010; Martin, 2002). Consequently, the interpretative schemes of the majority of the organisa-

tion members will contain the same elements emerging from the shared cultural content. Thereby, due to organisational culture, most members of an organisation assign the same meanings to things, occurrences, and events inside and outside of the organisation, and they also interpret, understand, and deal with them in the same or similar way.

The impact of organisational culture on an organisation is comprehensive: it affects every decision, action or interaction between people in organisations. The reason for this is that each individual action, interaction or decision of each member of the organisation is conditioned by the meanings created in the interpretative schemes of these members of the organisation which, as we have already explained, in good part emerge from organisational culture. Culture's impact on the opinions and behaviours of the organisation members is operationalized through the impact that the assumptions, values, and norms, as elements of cultural content, have on each of their decisions, actions, or interactions. As a descriptive cognitive component of organisational culture deep in the subconsciousness of people, assumptions serve to explain to people the reality in which they are, whereby context is being created and their behaviour is being governed (Schein, 2010). As a prescriptive component of culture, values show us what we should strive for, what goals should be attained, and how we should behave to attain these goals (Rokeach, 1973). As unspoken collective rules of conduct and collective expectations, norms immediately direct the behaviour of the organisation members (Cooke & Szumal, 2000). Therefore, assumptions, values, and norms together define the behaviour of people in an organisation and determine the extent to which this behaviour will be entrepreneurial.

Since CE implies a certain profile of attitudes and behaviours of the employees and managers, it is clear that one of the factors determining whether this profile will be present in the organisation is precisely organisational culture. Depending on the assumptions, values, and norms it contains, the culture will either direct or it will not direct the employees and managers towards entrepreneurial thinking and acting. CE implies that a large number of the employees and managers expresses a positive attitude and a proactive relationship with changes, innovations, risk, and adding value for the consumers. Whether they will have this attitude and nurture this behaviour depends on the cultural assumptions, values, and norms they share. If the culture highly values the entrepreneurial behaviour of employees and managers through its content, they will indeed show such behaviour. Therefore, culture determines CE by shaping the interpretative schemes and behaviours of the employees and managers. When we know that, what remains to be precisely determined are the assumptions, values, and norms that support and encourage entrepreneurial behaviour in organisations.

THE DIRECTION OF THE IMPACT OF ORGANISATIONAL CULTURE ON CORPORATE ENTREPRENEURSHIP

The exploration of the content of organisational culture positively affecting CE may be approached in two ways: through fragmented research, and through integrated research. The fragmented research aims to identify the individual assumptions, values, and norms through which a culture supports the entrepreneurial behaviour of employees. The integrated approach aims to identify the organisational culture types as systems of consistent assumptions, values, and norms that create a favourable ambience for CE development. In the scarce research conducted so far, the fragmented approach is the dominant one, but we hold the opinion that the integrated approach can also provide valuable results.

The Fragmented Approach

The fragmented research of entrepreneurial culture starts from the practices and behaviours distinctive of CE, in order to use them as the basis of the research, and then apply the induction method to identify the assumptions, values, and norms that imply such practices and behaviours (Arz, 2017; Basso et al., 2007; Detert, Schroeder & Mauriel, 2000; Kanter, 1985; Paunovic & Dima, 2014; Shepherd, Patzelt & Haynie, 2010; Zahra, Hayton & Salvato, 2004;). Seven (7) groups of assumptions, values, and norms that compose the content of entrepreneurial organisational culture were identified by synthesising the existing research. They relate to the following: 1) innovations and changes, 2) people development, 3) interactions and communications, 4) autonomy and loose control, 5) relationship with the company, 6) environment, and 7) work.

Innovation and changes. The central activities of CE are, certainly, the creation of innovations and the process of conducting changes within the company via the implementation of these innovations. Thereby, a certain uncertainty with respect to the outcomes of innovations and changes is undoubtedly created, and it is also accompanied by the assumption of a certain risk. Therefore, the organisational culture that creates a positive context for CE development must have assumptions, values, and norms which highly value innovations and innovating (Arz, 2017; Detert, et al., 2000; Paunović & Dima, 2014; Zahra, et al., 2004). Also, this culture must contain a positive attitude towards changes, that is, it must contain the assumption that changes are something good for the company. Entrepreneurial culture must contain the assumptions, values, and norms which highly value the ability to work in conditions of uncertainty, and the inclination toward taking a reasonable risk when necessary.

People development. The carriers of CE are people – employees and managers. In order for them to develop the behaviours and practices we call entrepreneurial, they must learn, develop their potentials, and

strive towards achievements. This is why the corporate culture which incites CE should contain assumptions, values, and norms through which it would create a favourable context for the learning and development of the employees and managers' potentials (Paunovic & Dima, 2014). Acquiring and using new knowledge, learning, and personal development must be highly valued. Additionally, the employees expressing entrepreneurship also have a high level of ambition and need for achievement, so the culture supporting CE must also highly value these needs.

Interactions and communications. Many research studies emphasise the importance of a specific profile of interactions and interpersonal relations within the company for CE. Open, two-way, and intensive communication – both horizontal between colleagues and vertical between employees and managers – is critical for successful CE development (Arz, 2017; Shepherd, et al., 2010). With its assumptions, values, and norms, the culture must incite this kind of communication, and prevent both turf defence behaviour and the use of information for gaining power (Kanter, 1985).

Autonomy and loose control. The autonomy of employees is a very important prerequisite for CE development. It is also a mediating variable connecting work climate and employees' competence (Randelović & Stojiljković, 2015). Without some degree of autonomy and the possibility of independent decision-making, there is no entrepreneurial behaviour of employees (Arz, 2017; Basso et al, 2007). Also, for this to be possible, the control within the organisation should be loose, and not tight. With its assumptions, values, and norms, the culture should support and make the autonomy of employees, loose control and independent decision-making desirable in the organisation. It should create an ambience of confidence in employees, which is necessary for them to achieve independence, as a prerequisite for entrepreneurship. Organisational culture should also emphasise the value of individual achievements and give an individual freedom, while it should, on the other hand, also value teamwork, without which it is not possible to realise innovations.

Relationship with the company. A number of research studies emphasise the need for the employees of a company developing CE to have a high level of identification with their organisation, as well as a high sense of mission (Paunovic & Dima, 2014; Shepherd, et al., 2010; Basso et al., 2007). Since the goal of CE is the development or renewal of the company, employees will not develop entrepreneurial behaviour if they do not identify themselves with their company, and if they do not share its mission. Organisational culture might be of help in this, since a strong culture is an excellent means for employees' identification with the company, and since the company's mission is actually a part of its organisational culture. Therefore, organisational culture should provide employees with the basis for identifying with the company and its mission.

Environment. Some research studies emphasise the necessity for the employees and managers of companies with developed CE to share the values of openness towards the environment (Arz, 2017). The reason for this is simple: the main purpose of innovations and changes is adjusting to the environment and satisfying consumer needs. Therefore, in order for CE to make sense, it is necessary for employees and managers to turn to the environment and the consumers, and to constantly seek new ways to satisfy consumer needs, and add value to their products and services. Another factor in favour of the assumptions, values, and norms of openness and external orientation is the fact that the goal of CE is the renewal of the company. If the company is experiencing a crisis, the only way to overcome it is to adapt to the changes in the environment, and this requires external orientation and openness.

Work. CE does not merely imply the generation of ideas and innovations – it also implies their realisation. The carriers of entrepreneurial ideas and endeavours must ‘sell’ the idea to their colleagues and management, that is, they must plan, organise, and manage the innovations realisation project. This requires them to be efficient and pragmatic. This is the reason why work, systematic efforts, focus, pragmatism, and results must be appreciated in a company with a developed CE (Arz, 2017; Paunovic & Dima, 2014). This is precisely what discerns CE from day-dreaming.

The Integrated Approach

The integrated approach to identifying the direction of organisational culture’s impact on CE implies identifying the types of organisational cultures which represent a favourable context for the expression and development of CE. Unlike the fragmented approach, wherein individual assumptions, values, and norms implying CE are identified, the integrated approach identifies the types of organisational cultures as the systems of mutually consistent assumptions, values, and norms that make a favourable framework for CE development. In this segment of the paper, we will present the two most important classifications of organisational culture types and explain their supposed impact on CE.

Cameron and Quinn’s classification of organisational cultures, called the competing values framework, differentiates culture types according to two criteria which it intertwines and, thus, forms a matrix of four (4) organisational culture types (Cameron & Quinn, 2006). According to this classification, organisational cultures are differentiated on the basis of two fundamental criteria: 1) flexibility, changes, and dynamism *versus* stability, order, and predictability; and 2) internal orientation, integration, and harmony *versus* external orientation, differentiation, and competition. Based on these two dimensions of organisational cultures, a four-field matrix (Table 1) may be constructed, in which each of the four

fields contains one of the four basic types of cultures: clan culture, hierarchy culture, market culture, and adhocracy culture.

Table 1. Organisational culture types according to the Competing Values Framework

	Flexibility and autonomy	Stability and control
Internal focus and integration	Clan culture	Hierarchy culture
External focus and differentiation	<i>Adhocracy culture</i>	Market culture

Source: Cameron, K. S. & Quinn, R. E. 2006. *Diagnosing and changing organizational culture: The competing values framework*. 2nd ed. San Francisco: Jossey-Bass.

CE implies external orientation, and openness to market and consumer needs. On the other hand, CE likewise implies an inclination to changes and risk, flexibility, and autonomy. Thus, it is obvious that adhocracy culture is completely compatible with the values and behaviours that produce CE, and that this organisational culture type is certainly the most favourable context for developing and expressing CE. The only thing that could stand in the way of CE development in this culture type is the competition and differentiation it implies, since they jeopardise the team spirit and the conducting of innovations. But, this is certainly less important than the orientation to changes and innovations present in this culture, which even uses innovations as the main measurement of success.

The second classification of organisational culture types that can be used for identifying cultures compatible with CE is the work of the consulting company Human Synergetics (Cooke & Szumal, 2000). This classification is the result of the application of a research instrument the company developed – Organizational Culture Inventory (OCI). OCI identifies cultural dimensions and classifies cultures into three types, depending on their position with respect to these dimensions. Classifications of culture types are done according to the norms of behaviour since, according to the authors, these norms are concrete, observable, and can be easily linked with organisational performance. OCI starts with two cognitive dimensions: 1) people orientation vs. task orientation, and 2) orientation to satisfying higher-level satisfaction needs vs. orientation to lower-level safety needs. Based on these two dimensions, OCI identifies twelve (12) behavioural norms and styles which constitute the main dimensions of every organisational culture. Depending on the organisational culture's position on each of these 12 scales measuring the norms of behaviour, a specific culture will be classified into one of the following three types of cultures: constructive, aggressive-defensive, or passive-defensive. Each of the three main organisational culture types, obtained by combining four (4) norms of behaviour, implies people orientation or task orientation, as well as a predominant orientation towards satisfying higher-level or lower-level needs.

Table 2. Organisational culture types according to Human Synergetics

People's needs and orientation	Type of culture	Behavioural norms and styles
Satisfaction needs through orientation to people and tasks	<i>Constructive culture</i>	<i>Achievement</i> <i>Self-actualisation</i> <i>Humanism, encouragement</i> <i>Affiliation</i>
Safety needs through orientation to tasks	Aggressive-defensive culture	Opposing Power Competition Perfectionism
Safety needs through orientation to people	Passive-defensive culture	Approval Convention Dependence Avoidance

Source: Adapted according to: Cooke R.A. & Szumal J., 2000. Using the organizational culture inventory to understand the operating cultures of organizations; Ashkanasy, N., Wilderom, C. & Peterson M. Eds, *Handbook of Organizational Culture & Climate*. Thousand Oaks: Sage, pp. 147–162

Empirical research has shown that the constructive type of culture leads to better results on an individual level (higher motivation, job satisfaction), group level (team work, better quality of interpersonal relations), and organisational level (better quality and customer relations) (Cooke & Szumal, 2000). This also applies to CE. It is clear that all the norms implied by a constructive culture type are ‘entrepreneurial friendly’, and that they are suitable for the development of entrepreneurial behaviour in employees. Unlike the previous classification, entrepreneurial culture in this classification contains not only the norms oriented to changes, achievement, innovations, and development but also norms oriented towards team cooperation. The aggressive-defensive culture type is unfavourable for CE because it creates an ambience in which the employees want to secure their own safety above all else, which they accomplish through an aggressive approach to their colleagues. If securing your own safety is your primary goal, then you do not take risks with entrepreneurial ideas and innovations. The passive-defensive culture type is also unfavourable for entrepreneurship, because safety is provided through following the rules. There is no participation, and people are not expected to show any initiative, but are required to just follow orders. People are afraid of mistakes, because mistakes are punished and success is not rewarded. The synthesis of the research results is shown in Figure 1.

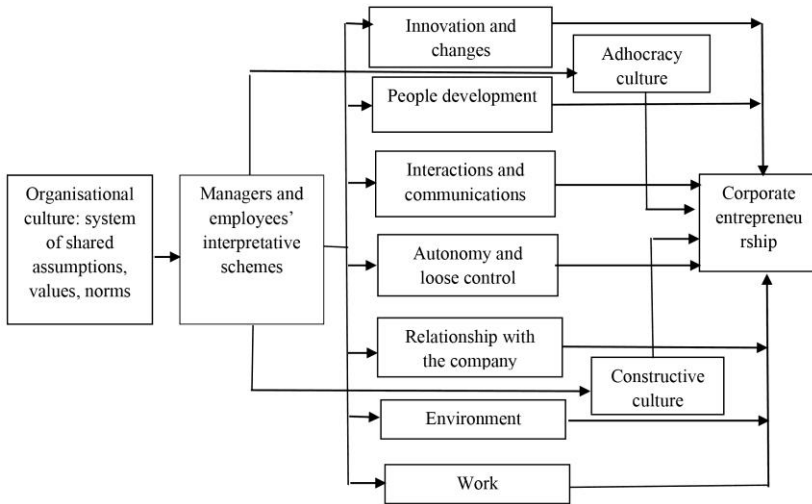


Figure 1. The mechanism and the direction of the impact of organisational culture on corporate entrepreneurship

CONCLUSION

Defined as an entrepreneurial effort on behalf of the employees of a company with the aim of introducing changes and innovations which renew the company's business models, CE is often emphasised as a necessary element of the company's ability to keep up with the continuous changes in the environment. CE implies an entrepreneurial state of mind, as well as employees and managers' entrepreneurial behaviour. As a system of assumptions, values, and norms manifested through symbols which employees and managers share, and which significantly determine how they understand the world around them and the way they behave in it, organisational culture has been identified as one of the elements of the context positive for CE.

Organisational culture impacts CE by shaping the interpretative schemes of the employees and managers, via which they build their interpretations of reality and the ways they behave in it on the assumptions, values, and norms of the organisational culture. In order for the employees and managers to express entrepreneurial orientation and behaviour in everyday work, they must start with the assumptions, values, and norms that such an attitude and such behaviour are justified and required. This means that whether the employees and managers will express any entrepreneurial tendencies at all also depends on the organisational culture's content,

The direction of the organisational culture's impact on CE is explored through identifying the cultural contents which positively impact, incite, or enable CE. There are two possible approaches to exploring this issue: the fragmented approach, and the integrated approach. In the fragmented approach, the research conducted thus far, and the analysis of behaviours implied by CE show that the elements of entrepreneurial culture are those assumptions, values, and norms which incite the following: innovations and changes, people development, open and intensive interactions and communications, autonomy of employees and loose control, identification with the company, focus on work and professionalism, and openness towards the environment. Through the integrated approach, it was revealed that adhocracy culture in Quinn and Cameron's classification, and constructive culture in Human Synergetics' classification create a positive context for the development of CE.

This paper has significant theoretical and practical implications. The first theoretical implication are the conclusions that organisational culture is a very important factor of CE, and that it should not be left out of the classifications of organisational factors of CE. Second, the paper suggests that a lot more empirical research is necessary in order to explore the cultural assumptions and values, and the organisational culture types that positively impact CE in more detail. Finally, the paper indicates that it is necessary to research the possible indirect impact of organisational culture on CE, specifically through the impact of culture on other CE factors such as management policy and style, rewards, organisational structure, and work autonomy. The practical implication of the paper lies in the notion that managers should pay attention to the importance that culture has in the process of building CE. Additionally, the paper provides managers with the knowledge about what the entrepreneurial culture that should be built looks like.

The limitations of this paper are also significant, and they are mirrored in its theoretical and exploratory character, and in the fact that the paper does not explore the impact of some mediatory factors that could influence the relations between organisational culture and CE, such as, among others, leadership style, and the organisation's age and size.

REFERENCES

- Abolghasem, O. K., Ahmad, K., & Hamed, A. (2014). Corporate entrepreneurship and firm performance important role of small and medium enterprise. *International Journal of Academic Research in Business and Social Sciences*, 4 (6), 8–25. DOI: 10.6007/IJARBS/v4-i6/916
- Alavi, M., Kayworth, T.R., & Leidner, D.E. (2005). An empirical examination of the influence of organizational culture on knowledge management practices. *Journal of Management Information Systems*, 22 (3), 191–224. DOI:10.2753/MIS0742-1222220307

- Antoncic, B. & Hisrich, R.D. (2001). Intrapreneurship: Construct refinement and cross-cultural validation. *Journal of Business Venturing*, 16(5), 495–527. DOI: 10.1016/S0883-9026(99)00054-3
- Alpkan, L., Bulut, C., Gunday, G., Ulusoy, G. & Kilic, K. (2010). Organizational support for intrapreneurship and its interaction with human capital to enhance innovative performance. *Management Decision*, 48, (5), 732–755 DOI: 10.1108/00251741011043902
- Arz, C. (2017) Mechanisms of organizational culture for fostering corporate entrepreneurship: A systematic, review and research agenda. *Journal of Enterprising Culture*, 25(4), 361–409. DOI: 10.1142/S0218495817500145
- Basso, O., Bouchard, V., Fayolle, A., & Legrain, T. (2007). Understanding the impact of culture on a firm's entrepreneurial orientation and behavior: A conceptual framework." *RENT XXI – Research in Entrepreneurship and Small Business*, Cardiff, November 22-23, 2007.
- Belousova, O., Gailly, B., & Basso, O. (2009). An Integrative model of corporate entrepreneurial behavior. *Rent XXIII – Research In Entrepreneurship and Small Business*, Corvinus University, Budapest, Hungary, November, 19–20, 2009.
- Berger, P. L. & Luckmann, T. (1966) *The Social construction of reality: a treatise in the sociology of knowledge*. Harmondsworth: Penguin.
- Burges, K. (2013). Factors influencing middle managers' ability to contribute to corporate entrepreneurship. *International Journal of Hospitality Management*, 32, 193–201. DOI: 10.1016/j.ijhm.2012.05.009
- Cameron, K.S. & Quinn, R.E. (2006). *Diagnosing and changing organizational culture: The competing vales framework*. 2nd ed. San Francisco: Jossey-Bass.
- Chen, A. (2010). Culture and compensation — unpicking the intricate relationship between reward and organizational culture". *Thunderbird International Business Review*, 52 (3), 189-202. DOI: 10.1002/tie.20324
- Cooke R.A., & Szumal J., 2000. Using the organizational culture inventory to understand the operating cultures of organizations. In N. Ashkanasy, C. Wilderom & M. Peterson *Handbook of Organizational Culture & Climate*. (147-162). Thousand Oaks: Sage.
- Deem, J. M., Barnes, B., Segal, S. & Preziosi R. (2010). The relationship of organizational culture to balanced scorecard effectiveness. *SAM Advanced Management Journal*, 75(4), 31-39.
- Detert, J. R., Schroeder, R. G. & Mauriel, J. J. (2000). A framework for linking culture and improvement initiatives in organizations. *Academy of Management Review*, 25, 850–863. DOI: 10.2307/259210
- Douglas, E.J. & Fitzsimmons, J.R. (2013). Intrapreneurial intentions versus entrepreneurial intentions: Distinct constructs with different antecedents". *Small Business Economics*, 41, 115–132. DOI: 10.1007/s11187-012-9419-y
- Fis, A. M. & Cetindamar, D. (2021). Unlocking the relationship between corporate entrepreneurship and firm performance. *Entrepreneurship Research Journal*, 11(1), 1–22. DOI: 10.1515/erj-2018-0213
- Fiske, S.T. & Taylor, S.E. (1991). *Social Cognition*. 2nd ed. New York: McGraw Hill
- Geertz, C. (1973). *The interpretation of cultures*. New York: Basic Books.
- Giberson, T. R., Resick, C. J., Dickson, M. W., Mitchelson, J. K., Randall, K. R. & Clark M. A. (2009). Leadership and organizational culture: Linking CEO characteristics to cultural values. *Journal of Business Psychology*, 24, 123–137. DOI: 10.1007/s10869-009-9109-1

- Henri, J.F. (2006). Organizational culture and performance measurement systems.” *Accounting, Organizations and Society*, 31, 77–103. DOI: 10.1016/j.aos.2004.10.003
- Heinonen, J. & Toivonen, J. (2008). Corporate entrepreneurs or silent followers? *Leadership and Organizational Development Journal*, 29(7), 583–599. DOI: 10.1108/01437730810906335
- Hofstede, G., Neuijen B., Ohayiv D.D. & Sanders G., 1990. Measuring organizational culture: a qualitative and quantitative study across twenty cases. *Administrative Science Quarterly*, 35, 286–316. DOI: 10.2307/2393392
- Janičijević, N (2022) Culture, power and structure of organization: an integrative research framework. *Teme*, XLVI (1), 159–174. DOI: 10.22190/TEME201002009J
- Kanter, R.M. (1985). Supporting innovation and venture development in established companies. *Journal of Business Venturing*, 1(1), 47–60. DOI: 10.1016/0883-9026(85)90006-0
- Kearney, C., Hisrich, R. & Roche, F. (2008). A conceptual model of public sector corporate entrepreneurship. *International Entrepreneurship and Management Journal*, 4(3), 295–313. DOI: 10.1007/s11365-007-0048-x
- Klein, A. (2011). Corporate culture: Its value as a resource for competitive advantage. *Journal of Business Strategy*, 32(2), 21–28. DOI: 10.1108/02756661111109743
- Kuratko, F. D., Hornsby, S. J., & Covin, G. J. (2014). Diagnosing a firm’s internal environment for corporate entrepreneurship. *Business Horizons*, 57(1), 37–47. DOI: 10.1016/j.bushor.2013.08.009
- Kuratko, D. F., Ireland, R. D., Covin, J. G. & Hornsby, J. S. (2005). A model of middle-level managers' entrepreneurial behavior. *Entrepreneurship Theory and Practice*, 29(6), 699–716. DOI: 10.1111/j.1540-6520.2005.00104.x
- Kuratko, D.F, Montagno, R.V. & Hornsby, J.S. (1990). Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment. *Strategic Management Journal*, 11, 49–58.
- Lumpkin, G.T. & Dess, G.G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: the moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16 (5), 429–451. DOI: 10.1016/S0883-9026(00)00048-3
- Lund, D. B. (2003). Organizational culture and job satisfaction.” *Journal of Business & Industrial Marketing*, 18 (3), 219–236. DOI: 10.1108/0885862031047313
- Martin, J. (2002). *Organizational culture: Mapping the terrain*. Thousand Oaks, CA: Sage.
- Milanović, S., Talić, M. & Jovanović Vujatović, M. (2021) Influence of personality traits on students' social entrepreneurial intentions in the conditions of the covid-19 pandemic. *Teme*, XLV (4), 1163–1179. DOI: 10.22190/TEME210810069M
- Mokaya, S.O. (2012). Corporate entrepreneurship and organizational performance: Theoretical perspectives, approaches and outcomes. *International Journal of Arts and Commerce*, 1 (4), 133–143.
- Paunovic, S, & Dima, I.C. (2014). Organizational culture and corporate entrepreneurship. *Annals of the University of Petroșani, Economics*, 14(1), 269–276
- Rafaeli, A. and Worline, M., 2000. Symbols in organizational culture. In N.M. Ashkanasy, C. P.M Wilderom., and M.F. Peterson eds. 2000. *Handbook of organizational culture & climate*, (71–85). Thousand Oaks: Sage.
- Randelović, K. & Stojiljković, S. (2015) Work climate, basic psychological needs and burnout syndrome of primary school teachers and university professors. *Teme*, XXXIX (3), 823–844.
- Ranson, S., Hinings, B. & Greenwood, R. (1980). The structuring of organizational structure. *Administrative Science Quarterly*, 25, 1–25.
- Rokeach. M. (1973). *The nature of human values*. New York: Free Press.

- Schein, E. (2010). *Organizational culture and leadership*. 4th ed. San Francisco, CA: John Wiley & Sons.
- Schumpeter, J. (1934). *Theory of economic development*. Cambridge, Mass: Harvard University.
- Sharma P. & Chrisman S.J.J. (2007). Toward a reconciliation of the definitional issues in the field of corporate entrepreneurship. In: Á. Cuervo, D. Ribeiro & S. Roig. *Entrepreneurship*. 83–103. Springer, Berlin, Heidelberg.
- Shepherd, D. A., Patzelt, H. & Haynie, J. M. (2010). Entrepreneurial spirals: Deviation amplifying loops of an entrepreneurial mindset and organizational culture.” *Entrepreneurship: Theory & Practice*, 34, 59–82. DOI: 10.1111/j.1540-6520.2009.00313.x
- Smircich, L. (1983). Organizations as shared meanings. In: L. Pondy, P. Frost, G. Morgan & T. Dandridge, *Organizational symbolism*, (55–65). Greenwich, CT: JAI.
- Srivastava, N., Srivastava, S. & Jain, S. (2011). Moderating effect of leadership on culture-intrapreneurship relationship. *Journal of Business Studies*, IV, 87–96.
- Srivastava, N. & Agrawal, A. (2010). Factors supporting corporate entrepreneurship: An exploratory study.” *VISION-The Journal of Business Perspective*, 14 (3), 163–171. DOI: 10.1177/097226291001400302
- Turró, A., Urbano, D. & Peris-Ortiz, M. (2014). Culture and innovation: The moderating effect of cultural values on corporate entrepreneurship. *Technological Forecasting and Social Change*, 88, 360–369. DOI: 10.1016/j.techfore.2013.10.004
- Urban, B. & Nikolov, K. (2013). Sustainable corporate entrepreneurship initiatives: A risk and reward analysis. *Technological and Economic Development of Economy*, 19(1), 383–408. DOI: 10.3846/20294913.2013.879749
- Veenker, S., Van der Sijde, P., During, V., & Nijhof, A. (2008). Organizational conditions for corporate entrepreneurship in Dutch organizations. *Journal of Entrepreneurship*, 17(1), 49–58. DOI: 10.1177/097135570701700104
- Wilderom C., Glunk, U. & Maslowski, R. (2000). Organizational culture as a predictor of organizational performance. In: N.M. Ashkanasy, C. P.M Wilderom., & M.F. Peterson *Handbook of Organizational Culture & Climate*, (193–211). Thousand Oaks: Sage.
- Zahra, S. A., Hayton, J. C. & Salvato, C. (2004). Entrepreneurship in family vs. nonfamily firms: A resource-based analysis of the effect of organizational culture. *Entrepreneurship: Theory & Practice*, 28, 363–381. DOI: 10.1111/j.1540-6520.2004.00051.x

МЕХАНИЗАМ И ПРАВАЦ УТИЦАЈА ОРГАНИЗАЦИОНЕ КУЛТУРЕ НА КОРПОРАТИВНО ПРЕДУЗЕТНИШТВО

Небојша Јанићијевић¹, Љиљана Контић²

¹Универзитет у Београду, Економски факултет, Београд, Србија

²Универзитет МБ, Пословни и правни факултет, Београд, Србија

Резиме

Дефинисан као предузетнички напор у име запослених у компанији са циљем увођења промена и иновација које обнављају пословне моделе компаније, корпоративно предузетништво се често истиче као неопходан елемент способности компаније да прати континуиране промене у окружењу. Корпоративно предузетништво

подразумева предузетничко стање духа, као и предузетничко понашање запослених и менаџера. Такво понашање укључује стално тражење нових начина пословања, као и континуирано тражење и имплементацију промена и стварање иновација, те вођење предузетничких подухвата унутар компаније. Предузетнички начин размишљања, као и предузетничко понашање запослених и менаџера биће присутни у компанији у оној мери у којој за то постоје услови. Истраживачи већ годинама идентификују бројне аспекте амбијента који је повољан за, и који олакшава корпоративно предузетништво. Као систем претпоставки, вредности, норми и ставова који се манифестују кроз симболе које запослени и менаџери деле, а који значајно одређују начин на који разумеју свет око себе и начин на који се у њему понашају, организациона култура је идентификована као један од организационих фактора корпоративног предузетништва.

Организациона култура утиче на корпоративно предузетништво тако што обликује интерпретативне шеме запослених и менаџера, услед чега они своје перцепције стварности и начине на које се у њој понашају граде на основу претпоставки, вредности, норми и ставова организационе културе. Да би запослени и менаџери у свакодневном раду исказали предузетничку оријентацију и понашање, морају поћи од претпоставки, вредности и норми које такав став и такво понашање оправдавају и захтевају. То значи да од садржаја организационе културе зависи и питање да ли ће запослени и менаџери уопште испољавати предузетничке склоности.

Правац утицаја организационе културе на корпоративно предузетништво истражује се кроз идентификацију културних садржаја који позитивно утичу на, подстичу или омогућавају корпоративно предузетништво. Постоје два могућа приступа истраживању овог питања: фрагментисани и интегрисани. Фрагментисани приступ подразумева идентификацију индивидуалних културних претпоставки, вредности, норми или ставова који имају позитиван утицај на корпоративно предузетништво. Досадашња истраживања и анализа начина понашања које подразумева корпоративно предузетништво показали су да су елементи предузетничке културе оне претпоставке, вредности, норме и ставови који подстичу следеће: иновације и промене, развој људи, отворене и интензивне интеракције и комуникацију, аутономију запослених и лабаву контролу, идентификацију са компанијом, фокусираност на посао и професионалност, те отвореност према окружењу. Интегрисани приступ у откривању правца утицаја организационе културе на корпоративно предузетништво подразумева идентификацију типова организационих култура које га подстичу и олакшавају. То се постиже анализом критеријума на основу којих се разликују типови организационе културе и анализом садржаја ових типова организационе културе. На тај начин је откривено да култура адхократије у Квиновој (Quinn) и Камероновој (Cameron's) класификацији, и конструктивна култура у класификацији креираној од стране компаније Хјуман Синерџетикс (Human Synergetics) стварају позитиван контекст за развој корпоративног предузетништва.

PARENTS' ATTITUDES TOWARDS COOPERATION WITH TEACHERS UNDER THE CIRCUMSTANCES CAUSED BY THE PANDEMIC

Nedeljko Milanović^{1*}, Marina Matejević²

¹University of Kragujevac, Faculty of Education in Jagodina, Serbia

²University of Niš, Faculty of Philosophy, Niš, Serbia

Abstract

The aim of this article was to determine and consider the attitudes of parents towards cooperation with teachers during the *SARS-CoV2* pandemic. The sample included 110 parents of primary school students from the territory of the Republic of Serbia. We used a descriptive-analytical method. We also used surveying and scaling techniques, and we created a special instrument based on tangential literature for the purposes of this research. The research was conducted electronically, and the data was processed in the SPSS program. The obtained results show that mothers cooperated with teachers more often than fathers, and that the most common forms of cooperation were telephone conversations, and messaging via mobile applications. Unlike fathers, mothers believe that frequent cooperation is very important during the process of children's formal education. The obstacles to cooperation during the pandemic cited by parents are: the impossibility of visiting schools and teachers; the lack of face-to-face communication, as well as the lack of advisory conversations with the teacher; the lack of adequate technological equipment and appropriate applications mediating the communication between parents and teachers; and insufficiently developed technological skills. The findings of this empirical research can motivate scholars to embark on future research that could more thoroughly consider the different forms of cooperation and communication between parents and teachers during unstable circumstances and conditions.

Key words: parents, teachers, primary school, cooperation, pandemic.

* Corresponding author: Nedeljko Milanović, University of Kragujevac, Faculty of Education in Jagodina, Milana Mijalkovića 14, 35000 Jagodina, Serbia, nedeljko996@gmail.com

СТАВОВИ РОДИТЕЉА ПРЕМА САРАДЊИ СА НАСТАВНИЦИМА У ОКОЛНОСТИМА УЗРОКОВАНИМ ПАНДЕМИЈОМ

Апстракт

Циљ рада је да се утврде и сагледају ставови родитеља према сарадњи са наставницима током пандемије *SARS-CoV2*. Узорак је обухватио 110 родитеља ученика нижих разреда основних школа на територији Републике Србије. Користили смо дескриптивно-аналитичку методу. Такође, користили смо технике анкетирања и скалирања, а на основу тангентне литературе смо креирали инструмент за потребе овог истраживања. Истраживање је спроведено електронским путем и подаци су обрађени у програму SPSS. Добијени резултати показују да су мајке чешће сарађивале са наставницима од очева, и да су најзаступљенији облици сарадње били телефонски позиви и размена порука путем мобилних апликација. За разлику од очева, мајке сматрају да је учестала сарадња веома важна током формалног образовања деце. Родитељи као препреке сарадњи током пандемије наводе: немогућност да се посете школе и наставници; недостатак комуникације лицем у лице, као и недостатак саветодавних разговора са наставником; недовољну опремљеност савременом технологијом и одговарајућим апликацијама за контакт са наставницима; и недовољно развијене вештине за коришћење технологије. Налази овог емпиријског истраживања могу мотивисати истраживаче да у будућности темељније размотре и сагледају различите облике сарадње и комуникације између родитеља и наставника током неустаљених околности и услова.

Кључне речи: родитељи, наставници, основна школа, сарадња, пандемија.

INTRODUCTION

The changes in the social context caused by the pandemic were reflected in a negative social climate and people's growing concerns; consequently, parents' involvement in the process of institutional upbringing and education through cooperation and communication between teachers and parents was one of the challenges emerging from this climate. During the pandemic "in Serbia, a combination of classroom education and distance education has taken place" (Stojković & Jelić, 2021, p. 240). Contemporary parents encountered another novelty – participation in children's distance learning. It was necessary to harmonise professional obligations and requirements, i.e. staying at work or working from home, and an active involvement in children's education and online learning. Distance learning implies that students learn at home (Randjelović et al., 2022), where in addition to performing daily duties, parents also have to provide their children assistance in learning and, to a certain extent, take on the role of a teacher at home (Slovaček & Čosić, 2020). Thus, the education of children during the pandemic required additional parental involvement in home learning, and the process of learning and performing children's school assignments. The pandemic further aggravated and burdened parents with additional demands and tasks stemming from school

activities. Throughout history, families have encountered many problems and obstacles, and each family has differed in the way in which it overcame current obstacles and problems (Vaux & Asay, 2019). Thus, the family was faced with the global problem known as the *SARS-CoV2* virus pandemic and, on their own, parents sought to reconcile all commitments during the pandemic with the need to dedicate themselves to learning and their children. In order to help contain the spread of the virus, many countries closed educational institutions (Olić Ninković & Adamov, 2022). Due to the danger posed by the virus, all school activities, including the cooperation of parents and teachers, became remote. A systemic review of the cooperation between the family and the school implies and requires that the contributions of all the participants in the process (teachers, parents and students), alongside their attitudes and thoughts, be considered with focus on a two-way, functional and successful mutual relationship (Polovina, 2007). Many authors state that the cooperation of the family and the school, as well as the involvement of parents, leads to the positive progress of the child (Epstein, 2008; Matejević & Jovanović, 2017; Sušan Gregović, 2018; Milanović, 2021a), which is why it is necessary for the cooperation and communication of parents and teachers to be frequent even in sudden and unforeseen circumstances. The reason for this is the parents' first encounter with this way of working, which focused on the students' learning from home. This, in turn, made the role of parents more and more complex and demanding, and the support teachers and schools provide to parents and families in this context is indispensable:

In the period of the pandemic and the changed work in schools, parents were a factor that largely determined the success of children's attendance, and the general involvement of children in school life. The impression is that the relationship between parents and teachers has never been in focus as it was during the pandemic.

(Popović-Čitić et al., 2021, p. 11)

Thus, parents were key actors and facilitators in engaging children in the processes of distance learning, and mastering materials and content. The cooperation process allows the work, commitment, motivation and development of the child to be monitored through assistance and guidance (Ilić, 2010). The family and the school are very important systems for a child, and it is very important that a quality relationship and a commitment to building partnerships exist between them (Matejević & Jovanović, 2017). Therefore, the parent and the teacher must be partners who agree and work together to overcome obstacles and achieve the desired results with the child. In order for the cooperation between parents and teachers to be successful, it must be based on the principles of openness, trust, gradualness, two-way communication, and diversity (Pavlović

Breneselović & Krnjaja, 2017). These principles are the basis of good cooperation, and effective communication is essential for the development of that process:

The model of partnership between family and school puts the student in the center of interest. Cooperation enables us to always know what and how a student works, when and why he needs help and how far the results of his work reach.

(Čatić & Karajbić, 2010, p. 180)

As the authors point out, the cooperation of parents and teachers empowers the child by putting him in the focus of interest, which provides them help and attention. In this way, the child feels safe and care-free, as well as motivated to learn, acquire new knowledge, improve skills and become better in the school and extracurricular environment.

The results of the research conducted by Garbe et al. (2020) showed that parents agreed with the closure of schools during the pandemic, and that they were very satisfied with the schools' help and support, but that there were certain obstacles that parents face in the distance learning process. The results obtained by the research conducted by Badea and Tudorache (2021) showed that teachers tried to maintain good cooperation with families, but that some of the obstacles were a lack of proper technical equipment and poor digital competencies, as well as parents' reluctance. The results of the research conducted by Bocoş and Marin (2022) showed that teachers and parents were satisfied with the quality of the cooperation and communication during the pandemic. Also, the results of the research conducted by Jones and Forster (2021) showed the schools' great efforts in maintaining cooperation and good communication with the families of students during the pandemic and the period of schools' closure. Research conducted by Soltero-González and Gillanders (2021) found that low-income parents collaborated with teachers and supported children in learning at home.

Based on all that has been read above, cooperation between teachers and parents is the key to student success in both the unchanged social context and the social context shaped by the *SARS-CoV2* pandemic. Therefore, the aim of this research is to examine parents' attitudes towards the quality of their cooperation with teachers during the pandemic.

METHODOLOGY

Considering the many difficulties that education was faced with during the pandemic, as well as the enormous importance of the impact of cooperation and communication between parents and teachers on children's development, the problem of this research is the manner in which parents assess the quality of their cooperation with teacher in the social

context changed by the pandemic. Considering the numerous research papers that focus on online teaching during the pandemic, it is necessary to consider both the parents' satisfaction with and attitudes towards the quality of their cooperation with the teacher during this unusual and unexpected situation which left its mark worldwide.

The subject of this research is the cooperation between parents and teachers during the pandemic. The aim of this paper is to determine and consider parents' attitudes towards cooperation with teachers during the *SARS-CoV2* pandemic.

The research tasks are as follows:

- Determine the attitudes of parents towards the relevance of cooperation with teachers in the social context changed by the pandemic;
- Examine forms of cooperation with the teacher during the pandemic;
- Determine how often parents came into contact with the teacher during distance learning;
- Analyse how parents evaluate communication with teachers during a pandemic;
- Examine whether parents perceive the existence of an obstacle in cooperation with teachers.
- Investigate whether there are statistically significant differences in terms of obstacles in the process of cooperation with teachers during the pandemic, in relation to gender, and the parents' level of education and place of residence;
- Examine the obstacles parents have noticed during cooperation with teachers.

Although the distance education process is accompanied by numerous obstacles, we started with the assumption that parents' attitudes towards cooperation with teachers are positively oriented. In this research, we applied a descriptive-analytical method. The technique of surveying and scaling was also used. A survey questionnaire with a Likert-type assessment scale was the applied research instrument. Based on tangential literature, an instrument was created for the purposes of this research. The questions in the instrument were formulated in the form of closed, combined and open questions. The questions were clearly formulated and directed towards the set research aim. The instrument included questions related to the sociodemographic characteristics of parents (gender, level of education, number of children in the family, and place of residence), and questions directed at parents' attitudes towards cooperation with teachers during the pandemic crisis. This empirical research was realised by filling in the electronic form of the online survey questionnaire. We processed the obtained data in the statistical package SPSS. We applied the determination of frequencies (*f*) and percentages (%), and the

calculation of arithmetic mean (M) and standard deviation (SD), and calculated the chi-square test (χ^2).

The sample of our research consists of 110 parents of children in the lower grades of primary schools in the Republic of Serbia. Out of the total number of parents who participated in the study, 70 were mothers and 40 were fathers.

Table 1. Structure of respondents

Variables		f	%
Gender	Male	40	36.4
	Female	70	63.6
Level of education	Primary school	15	13.6
	High school	59	53.7
	Faculty	36	32.7
Number of children in the family	One child	30	27.3
	Two children	44	40
	Three children	17	15.4
	More than three children	19	17.3
Place of residence	City	52	47.3
	Suburb	25	22.7
	Village	33	30

RESULTS AND DISCUSSION

Considering the great importance of cooperation between parents and teachers, the first research task was to determine parents' attitudes towards the relevance of cooperation with teachers in the social context changed by the pandemic. Parents were offered a five-point Likert-type assessment scale.

Table 2. Parents' agreement with claims about the importance of cooperation between parents and teachers in a changed social context

	M	SD
Frequent cooperation with the teacher is very important during formal education.	4.32	0.986
During the pandemic, I realized that the job of a teacher is very complex and demanding.	4.85	0.354
During the pandemic, I became aware of the importance of the partnership between parents and teachers for the positive development of the child.	4.55	0.699

When we look at the results presented in Table 2, we can see that parents are very appreciative of the claims aimed at the importance of cooperation between parents and teachers. Parents notice the great contribu-

tion that cooperation with the teacher has in the process of formal education. Also, mothers stated that they fully agreed and agreed with the mentioned item more often than fathers. Furthermore, the parents showed high agreement with the item stating that, during the pandemic, they became more aware of the importance of cooperating with the teacher, and they estimate that the job of a teacher is very complex and demanding. The results of the research conducted by Demir & Demir (2021) show that parents' awareness of children's education has increased, and that they better understand the value of primary school teachers.

The next research task we were guided by was to examine the forms of cooperation with the teacher during the pandemic. Parents' responses were as follows: 55.5% of the parents cited telephone calls as the most common form of communication with teachers during the pandemic; 31.8% of the parents stated that the exchange of messages via mobile applications was their most common form of communication with teachers (Viber, Whatsapp); 9.1% of the parents cited communication via email as the most common; and only 3.6% of the parents cited online meetings. According to the above answers, we can conclude that the most present form of cooperation between parents and teachers during the pandemic were phone calls and messaging via mobile applications. Exchanging emails and holding online meetings were not commonly present forms of cooperation. Thus, we can observe that teachers and parents adhered to certain recommended protection measures and maintained remote contact. Phone calls, text messages, and emails are important factors in building and maintaining partnerships (Epstein et al., 2018). The results of the research conducted by Pek and Mee (2020) show that the communication between teachers and parents was realised through social networks, phone calls and message. The benefits of modern information and communication technologies have been crucial for students, parents and teachers in this changed context.

In addition to the most common forms of cooperation, we tried to determine how often parents came into contact with teachers during distance education. We received the following answers: 20% of the parents said that they received information from teachers every day; 34.5% of the parents said that they communicated with teachers two to three times during the week; 18.2% of the parents said that they were in contact with teachers once a month; and 27.3% of the parents said that they were in contact with teachers several times a month. The presented answers show that about a third of the parents stated that they contacted the teacher two to three times during the week. The parents explained this choice of answer by saying that they had positive feedback from the teacher whenever there was need to contact them, and that daily contact with the teacher was not always necessary because the information provided was clear.

We asked the parents if they cooperated with teachers more often during the pandemic. To calculate whether there is a statistical significance in terms of more frequent cooperation with the teacher during the pandemic in relation to the parents' gender, we used the parameter chi-square test.

Table 3. Statistical significance in terms of more frequent cooperation with teachers during the pandemic with regard to the gender of parents

χ^2	df	p
22.068	4	0.000

Table 3 shows the calculated value of the chi-square and, based on the presented values, we can notice that there are statistically significant differences between parents of different genders. Mothers believe that cooperation with teachers during the pandemic was more frequent to a greater extent than fathers. Parents state that they had numerous questions about distance learning and teaching, ways of implementing classes, and materials that they did not know how to explain to the child and that they ultimately addressed teachers with. For these reasons, parents believe that cooperation was more frequent. A situation that affected teachers, students and parents required many answers. Teachers are actors with whom parents most often interact, so it was expected that they would ask them a number of questions when faced with the uncertainty of the pandemic. From the attached findings, we see that teachers were willing and ready to cooperate, which is an extremely important condition for building trust and partnership with parents. The involvement of teachers in providing information, guidelines and instructions is of great help to parents attempting to manoeuvre the entire situation, and correctly respond to all requests and tasks.

Communication is an extremely important factor in successful cooperation, so our next research task was to analyse how parents evaluated communication with teachers during the pandemic. Parents claimed that teachers responded regularly to messages and calls ($M = 4.56$; $SD = 0.796$), that teachers had understanding and patience for many questions posed by parents ($M = 4.65$; $SD = 0.783$), that teachers provided parents assistance in explaining certain lessons to children and in overcoming certain barriers in accessing the various educational platforms used during distance learning ($M = 4.69$; $SD = 0.502$), and that communication was high quality, two-way and direct ($M = 4.90$; $SD = 0.301$). Parents' attitudes are positively oriented towards the quality of communication with teachers during the pandemic, which confirms our hypothesis. The results of the research conducted by Komnenović & Milanović (2021) show that students praise teachers for their patience, calmness, and desire to explain

the material during online classes, which points towards the fact that the teachers' work is highly evaluated by both parents and students.

Education faced many problems during the pandemic, so we wanted to examine whether parents perceived any obstacles in the process of cooperation with teachers. Of the total number of participants, 74.5% of the parents said that they believe that there were obstacles in the process of cooperation, while 25.5% of the parents reported that there were no obstacles. These findings show that a large number of parents encountered obstacles, created by the pandemic, in the process of establishing and maintaining cooperation during educational work. We also wanted to investigate whether there are statistically significant differences regarding obstacles in the process of cooperation with teachers during the pandemic, in relation to the parents' gender, level of education and place of residence.

Table 4. Statistical significance regarding the existence of obstacles in the process of cooperation with teachers during the pandemic, with regard to gender, level of education and place of residence of parents

	χ^2	df	p
Were there any obstacles in the process of cooperation with the teacher during the pandemic, considering the gender of the parents.	9.625	1	0.002
Were there any obstacles in the process of cooperation with the teacher during the pandemic, given the level of education of the parents.	14.744	2	0.001
Were there any obstacles in the process of cooperation with the teacher during the pandemic, considering the place of residence of the parents.	2.926	2	0.232

The results of chi-square, presented in Table 4, show that there are statistically significant differences between parents of different genders. Mothers estimated that obstacles existed more often than fathers, which can be explained by the fact that mothers are more often involved in the process of cooperation with teachers. Also, there is a statistically significant difference between parents with different levels of education. Most parents with a high school degree reported that there were obstacles in cooperation. The calculated chi-square showed that there are no statistically significant differences regarding the existence of obstacles in the process of cooperation with the teacher in relation to the parents' place of residence. When asked what obstacles they noticed, the parents reported the following: the impossibility of visiting schools and teachers; a lack face-to-face communication, as well as a lack of counselling conversations with the school teacher; and a lack of proper technical equipment and appropriate applications for contact with teachers, as well as insuffi-

ciently developed technical skills. So, these are just some of the problems parents encountered and were not prepared for. Therefore, it was not at all easy to adapt to the innovations brought about by the pandemic. We noticed that a large percentage of parents reported that there were obstacles in the process of cooperation with teachers. Certainly, this socially unfavourable situation brought the parents into a state of confusion. Face-to-face contact and communication are compensated by collaboration through modern technology. Parents missed interacting with the teacher in a real environment. Counselling conversations are of great importance for the cooperation between parents and the school. If the relationship with the teacher is positively built and filled with trust, parents are presented with a greater number of opportunities to ask for help and share their problems with the teacher:

Counseling does not mean giving ready-made advice to solve a specific problem, but establishing a positive emotional climate and such interpersonal relationships that help the user of counseling in personal maturation and progress.

(Zuković, 2016, p. 111)

Therefore, the counselling process is very sensitive and requires a degree of professionalism from teachers working with parents. Some of the mentioned obstacles were aimed at the parents' lack of proper technical equipment and digital competences, which resulted in the inability to get in touch with the teacher and follow current events and teaching activities to a satisfying degree. The study conducted by Anwar et al. (2020) shows that students also encounter barriers in terms of technical equipment and computer literacy, while the results of the study conducted by Jovanović and Dimitrijević (2021) show that teachers perceive the following obstacles in conducting distance learning: evaluation obstacles, organisational-administrative obstacles, and material-technical obstacles. The results of the research conducted by Maksimović et al. (2021) show that the disadvantages of online teaching mentioned by teachers are: modest technical capabilities, difficulties that follow the verification of students' knowledge, teachers' lack of friendship and teamwork, students' lack of motivation to perform school duties, and students copying, or cheating, during tests. Distance education can be an obstacle for students with developmental disabilities, so the results of the study conducted by Milanović (2021b) indicate that the parents of students with intellectual disabilities reported that they had problems helping their children complete their school duties at home, but that cooperation with teachers was exceptionally good, and that they provided a lot of help and support. We noticed that teachers, students and parents all faced obstacles during the education process at the time of the pandemic. The support of teachers

and the school, and the active participation of parents are factors necessary for one to be able to overcome the aforementioned obstacles and look for the most favourable solutions in the given situation.

CONCLUSION

With this empirical work, we wanted to look at parents' attitudes towards cooperation with teachers in the social context changed by the *SARS-CoV2* pandemic. The results of our research show the quite positive attitudes of parents towards cooperation with teachers. The parents reported that the teachers were very willing to cooperate, and that the communication was of high quality. As schools were closed and all school activities were carried out online, it was expected that the most common forms of cooperation would prove to be phone calls and messaging via mobile applications (Viber and Whatsapp), while communication via email would prove to be very rare. The obtained findings show that holding online parent meetings was not a frequent form of cooperation at all, because attention was mainly focused on individual conversations with parents. In addition to being dedicated to parents and regularly providing them with necessary information and support, teachers needed to organise occasional online parent meetings. These meetings would help parents share their problems, discuss the barriers they encountered, exchange experiences, and help each other in a difficult new situation. Certainly, the entire process of distance education was a challenge for all parents, and joint meetings could help them feel that they are not alone in difficult situations, and that other parents also encountered obstacles in different segments of online education and upbringing. The parents believe that teachers were very dedicated during the pandemic, and that communication was very good, two-way and immediate. These findings point towards the teachers' great commitment to their vocation, and their exceptional professional approach to working with both students and parents. As obstacles, parents cited the inability to visit the school, the lack of face-to-face communication with the teacher, the lack of counselling sessions, and the lack of proper technical equipment and digital skills necessary to actively access all applications that required parental involvement in school activities. As far as physical visits to the school and face-to-face communication are concerned, they were not feasible due to the spread of the virus and the preventive measures put in place. Accordingly, the advantages of this research are reflected in the consideration of cooperation between parents and teachers in a social context new to all actors in the educational process. To this we can add that the strengths of this work are reflected in the choice of respondents, which included parents of children in the lower grades of primary school, because the research sample comprehensively shows the evaluation of cooperation during the pandemic.

The shortcoming of this research can be said to be the small sample of respondents - future research could focus on a sample with a larger number of respondents, which would include both parents of children in lower grades and parents of children in higher grades of elementary school. In this way, the difference in the views and attitudes of the parents of children belonging to these two groups could be observed, and potential improvements could be made in the segment of cooperation and partnership between the family and the school. The conducted research can motivate researchers to direct future research towards the examination of the quality of communication between parents and teachers during the pandemic, as well as the examination of teachers' views on the quality of cooperation with parents during the pandemic crisis. Additionally, future research could focus on encouraging and motivating parents to apply contemporary information and communication technologies for the purpose of exchanging ideas and building a partnership with the school.

REFERENCES

- Anwar, M., Khan, A., & Sultan, K. (2020). The barriers and challenges faced by students in online education during COVID-19 pandemic in Pakistan. *Gomal University Journal of Research*, 36(1), 52-62. <http://www.gujr.com.pk/index.php/GUJR/article/view/1206/1021>
- Badea, M., & Tudorache, G. F. (2021). *Blockages of the School-Family Relationship During the Covid-19 Pandemic*. In: Iulian Boldea (ed.) *Identities in Globalisation. Intercultural Perspectives*, (pp.106-115): The Alpha Institute for Multicultural Studies. https://ibn.idsi.md/sites/default/files/imag_file/GIDNI-08-Comm_a_2021.pdf#page=107
- Bocoș, M. D., & Marin, D. C. (2022). *Characteristics of Parent-Teacher Communication in Romanian Primary Education During the COVID-19 Pandemic: An Analysis of the Parent and Teacher Opinions*. In *Basic Communication and Assessment Prerequisites for the New Normal of Education* (pp. 171-189): IGI Global.
- Demir, E., & Demir, C. G. (2021). Investigation of parents' opinions about distance education during the COVID-19 pandemic. *Turkish Online Journal of Distance Education*, 22(2), 42-57. <https://dergipark.org.tr/en/download/article-file/1673224>
- Epstein, J. L. (2008). Improving Family and Community Involvement in Secondary Schools. *The Education Digest*, 73(6), 9-12. <http://homeschoolconnect.pbworks.com/f/Improving+Family+and+Community+Involvement.pdf>
- Epstein, J. L., Sanders, M. G., Sheldon, S. B., Simon, B. S., Salinas, K. C., Jansorn, N. R., ... & Williams, K. J. (2018). *School, family, and community partnerships: Your handbook for action*. Corwin Press.
- Garbe, A., Ogurlu, U., Logan, N., & Cook, P. (2020). COVID-19 and remote learning: Experiences of parents with children during the pandemic. *American Journal of Qualitative Research*, 4(3), 45-65. <https://doi.org/10.29333/ajqr/8471>
- Ilić, M. (2010). *Porodična pedagogija [Family pedagogy]*. Banja Luka: Grafid.
- Jones, C., & Forster, C. (2021). Family-school partnerships in the age of Covid-19: reasons for optimism amidst a global pandemic. *Contemporary Issues in Practitioner Education*, 3(2), 135-145. <https://doi.org/10.1080/25783858.2021.1927159>

- Jovanović, M., & Dimitrijević, D. (2021). Barriers to implementation of distance learning during the COVID-19 outbreak: Teacher perspective. *Zbornik Instituta za pedagoška istraživanja*, 53(1), 7-66. <https://doi.org/10.2298/ZIPI2101007J>
- Kommenović, M., & Milanović, N. (2021). Mišljenje učenika osnovnih škola o kvalitetu onlajn- nastave tokom pandemije kovida 19. [Opinion of Elementary School Students about Online Teaching During the Covid-19 Pandemic]. *Uzdanica*, 51-66. <https://doi.org/10.46793/Uzdanica18.II.051K>
- Maksimović, J., Milanović, N., & Osmanović Zajić, J. (2021). (Samo)procena nastavnika o kvalitetu onlajn nastave tokom pandemije Kovid-19 [Teachers (self) assessment on the quality of online teaching during the Covid-19 Pandemic]. U: Marinković, S. (prir. i ur.), *Nauka, nastava, učenje u izmenjenom društvenom kontekstu*, (str. 231-244). Užice: Pedagoški fakultet. <https://doi.org/10.46793/NNU21.231M>
- Milanović, N. (2021a). Involvement of Parents in School Obligations of Children of Younger School Age. *European Journal of Education and Pedagogy*, 2(6), 95-99. <https://www.ej-edu.org/index.php/ejedu/article/view/245>
- Milanović, N. (2021b). Distance education of Students with intellectual disabilities due to the Covid 19 pandemic: A parent's perspective. U: Jablan, B. (ured.), *11. Međunarodni naučni skup specijalna edukacija i rehabilitacija danas* (str. 91). Beograd: Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju.
- Matejević, M. & Jovanović, M. (2017). Uključenost roditelja u školske aktivnosti [Parent Involvement in School Activities]. *Godišnjak za pedagogiju*, 9-20. <https://doi.org/10.46630/gped.1.2017.01>
- Olić Ninković, S., & Adamov, J. (2022). Distance teaching of Chemistry during the COVID-19 pandemic: Challenges and solutions. *Teme: časopis za društvene nauke*, 46(1). <https://doi.org/10.22190/TEME201210002O>
- Pavlović Breneselović, D., & Krnjaja, Ž. (2017). *Kaleidoskop: Osnove diversifikovanih programa predškolskog vaspitanja i obrazovanja*. [Kaleidoscope: Basics of Diversified programs of preschool upbringing and education]. Beograd: IPA. <https://www.unicef.org/serbia/media/2796/file/Kaleidoskop.pdf>
- Pek, L. S., & Mee, R. W. M. (2020). Parental involvement on child's education at home during school lockdown. *JHSS (Journal of Humanities and Social Studies)*, 4(2), 192-196. <https://doi.org/10.33751/jhss.v4i2.2502>
- Polovina, N. (2007). Sistemska analiza saradnje škole i porodice [Systemic analysis of school and family cooperation], U: Polovina, N., i Bogunović, B. (ur.) *Saradnja škole i porodice* (str. 91-113). Beograd: Institut za pedagoška istraživanja.
- Popović-Čitić, B., Bukvić-Branković, L., Kovačević-Lepojević, M., Paraušić, A., Stojanović, M. (2021). *Potrebe osnovnih škola u Srbiji tokom pandemije Covid-19 u kontekstu prevencije rizičnih ponašanja učenika: perspektiva nastavnika* [The needs of elementary schools in Serbia during the Covid-19 pandemic in the context of the prevention of students' risky behaviors: a teacher's perspective]. Beograd: Centar za pozitivan razvoj dece i omladine. <http://ipir.ipir.org.rs/handle/123456789/718>
- Randjelović, B., Karalić, E., Djukić, D., Aleksić, K. (2022). Distance learning in Serbia – The experience in primary education during the COVID-19 crisis. *Teme: časopis za društvene nauke*, 46(2), 377-397. <https://doi.org/10.22190/TEME210609024R>
- Slovaček, K. A., & Čosić, G. (2020). The Role of Parents during the COVID19 Pandemic in Croatia. *Studies in Educational Management*, 8(8), 9-17. <https://www.eurokd.com/SEM/doi/10.32038/sem.2020.08.02.pdf>
- Soltero-González, L., Gillanders, C. (2021). Rethinking Home-School Partnerships: Lessons Learned from Latinx Parents of Young Children During the COVID-19

- Era. *Early Childhood Educ J* 49, 965–976. <https://doi.org/10.1007/s10643-021-01210-4>
- Stojković, I., & Jelić, M. (2021). Stavovi učenika prema nastavi na daljinu tokom pandemije covid-19 [Pupils' attitudes toward distance education during the covid-19 pandemic]. *Zbornik Instituta za pedagoška istraživanja*, 53(2), 239-259. https://ipir.ipisr.org.rs/bitstream/handle/123456789/747/bitstream_2270.pdf?sequence= &isAllowed=y
- Sušanj Gregorović, K. (2018). Dobrobiti roditeljske uključenosti u obrazovanje djeteta. *Napredak: časopis za interdisciplinarna istraživanja u odgoju i obrazovanju*, 159(1-2), 101-113. <https://hrcak.srce.hr/202777>
- Vaux, D. E., & Asay, S. M. (2019). Supporting families in crisis: awareness and use of third places. *Family and Consumer Sciences Research Journal*, 48(1), 22-36. <https://doi.org/10.1111/fcsr.12325>
- Ćatić, R. & Karajbić, S. (2010). Dopusna saradnja porodice i škole [Corresponding of Family and School]. *Zbornik radova Islamskog pedagoškog fakulteta u Bihaću*, 3(3), 175–206. <https://doi.org/10.52535/27441695.2010.3.175-206>.
- Zuković, S. (2016). Karakteristike i ključni faktori efikasnog savetodavnog rada [Characteristics and Key Factors of the Efficient Counselling Work]. *Zbornik Odseka za pedagogiju*, (25), 99-113. <https://doi.org/10.19090/zop.2016.25.99-113>

СТАВОВИ РОДИТЕЉА ПРЕМА САРАДЊИ СА НАСТАВНИЦИМА У ОКОЛНОСТИМА УЗРОКОВАНИМ ПАНДЕМИЈОМ

Недељко Милановић¹, Марина Матејевић²

¹Универзитет у Крагујевцу, Факултет педагошких наука у Јагодини, Србија

²Универзитет у Нишу, Филозофски факултет, Ниш, Србија

Резиме

Непредвиђене околности проузроковане пандемијом SARS-CoV2 поставиле су наставнике и родитеље у нове улоге, и у складу са тим циљ овог истраживања био је да се утврде и сагледају ставови родитеља према сарадњи са наставницима током пандемије SARS-CoV2. Коришћени су дескриптивно-аналитичка метода, као и технике анкетања и скалирања. Анкетни упитник са скалом процене креиран је за потребе овог истраживања на основу тангентне литературе. Истраживање је реализовано електронским путем. Добијени подаци обрађени су у статистичком пакету SPSS. Узорак истраживања обухватио је 110 родитеља ученика нижих разреда основне школе. У истраживању је учествовало 70 мајки и 40 очева. Резултати истраживања показују да су родитељи током пандемије постали свеснији значаја сарадње са наставником, те процењују и да је посао наставника веома комплексан и захтеван. Процес комуникације и сарадње одвијао се путем савремене технологије и мобилних апликација. Најучесталији облици сарадње били су телефонски позиви и размена порука путем мобилних апликација. Добијени резултати показују да више мајки него очева сматра да је сарадња са наставником током пандемије била учесталија. Родитељи наводе да су имали бројна питања за наставнике, па из тих разлога сматрају да је због новонастале ситуације сарадња била учесталија. Такође, родитељи процењују да је комуникација са наставницима била веома ефикасна, квалитетна и позитивна, и истучу изузетно ангажовање наставника у целокупном педагошком

раду. Чак 74.5% родитеља сматра да је било препрека сарадњи, при чему су мајке чешће него очеви процењивале да препреке постоје. Резултати овог емпиријског истраживања могу мотивисати истраживаче да у будућности темељније размотре и сагледају различите облике сарадње и комуникације између родитеља и наставника током неустаљених околности и услова, као и да сагледају ставове наставника о квалитету комуникације и сарадње са родитељима у овим измењеним околностима.

FACTORS OF A SENSE OF SCHOOL BELONGING: BRONFENBRENNER'S THEORETICAL MODEL AS A STARTING FRAMEWORK FOR INTERPRETATION

Marija Trajković^{1*}, Branislava Popović-Čitić², Luka Mijatović²

¹Institute for Educational Research, Belgrade, Serbia

²University of Belgrade, Faculty of Special Education and Rehabilitation,
Belgrade, Serbia

Abstract

A sense of school belonging is considered a protective and promotive factor for a wide range of academic and developmental outcomes of students. However, previous research efforts were overly focused on examining the factors and processes that underlie it, and the available literature identifies a lack of a clear model of action that school actors should apply in order to improve it and, consequently, enjoy its benefits. The main goal of this paper is the analysis of relevant literature, with the aim of identifying the factors that contribute to the development of a sense of school belonging among students. In accordance with the basic principles of the adapted Bronfenbrenner's bio-psycho-socio-ecological model of school belonging, the findings of the conducted review indicate that the sense of school belonging is of a systemic nature, and that its development and intensity are determined by multiple experiences, interactions and factors that usually exist on the individual, school-relational and contextual level. Although the paper provides preliminary insights into the factors that contribute to the development of a sense of school belonging, further research into these factors, which will examine their predictive effect, provide the possibility of defining a clear model of action, and represent a starting point for designing adequate interventions, is necessary.

Key words: school belonging, individual factors, school factors, bio-psycho-socio-ecological model.

* Corresponding author: Marija Trajković, Institute for Educational Research, Dobrinjska 11/III, 11000 Belgrade, Serbia, marija.stojanovic@ipi.ac.rs

ФАКТОРИ ОСЕЋАЈА ПРИПАДНОСТИ ШКОЛИ: БРОНФЕНБРЕНЕРОВ ТЕОРИЈСКИ МОДЕЛ КАО ПОЛАЗНИ ОКВИР ТУМАЧЕЊА

Апстракт

Осећај припадности школи сматра се протективним и промотивним фактором који утиче на широк спектар академских и развојних исхода код ученика. Међутим, досадашња истраживачка настојања нису била претерано фокусирана на испитивање фактора и процеса који се налазе у његовој основи, те се у литератури идентификује недостатак јасног модела деловања који школски актери треба да примене зарад његовог унапређивања и, последично, уживања његових бенефита. Основни циљ рада је анализа релевантне литературе ради идентификовања фактора који доприносе развоју осећаја припадности школи код ученика. У складу са основним поставкама адаптираног Бронфенбренеровог био-психо-социо-еколошког модела припадности школи, резултати спроведеног прегледа указују на то да је осећај припадности школи системске природе, те да су његов развој и интензитет детерминисани вишеструким искуствима, интеракцијама и факторима који уобичајено egzistiraju на индивидуалном, школском релационом и контекстуалном нивоу. Иако рад пружа почетне увиде у факторе који доприносе развоју осећаја припадности школи, неопходна су даља истраживања ових фактора која ће испитати њихово предиктивно дејство, обезбедити могућност дефинисања јасног модела деловања, те представљати полазну основу за конципирање адекватних интервенција.

Кључне речи: припадност школи, индивидуални фактори, школски фактори, био-психо-социо-еколошки модел.

INTRODUCTION

The role of the school is very complex and implies several different meanings, but at the base of each are the intention of socialisation and the shaping of active and purposeful members of society through meeting the emotional and social needs of students, and through indirect influence on general health and well-being. As one of the basic goals of education and upbringing includes ensuring the well-being and support for the overall development of children, students, and adults (Zakon o osnovama sistema obrazovanja i vaspitanja, 2021), the school is increasingly recognised as a place for the promotion and encouragement of positive development, and the prevention of various problems and difficulties (Damon, 2004; Maksić & Đurišić-Bojanović, 2017). Various elements of the school environment are recognised as important for adequate student developmental outcomes, and a sense of belonging is widely recognised as one of them (e.g., Allen et al., 2018a; Rowe & Stewart, 2011). According to the most widely used definition, the sense of school belonging is “the extent to which students feel personally accepted, respected, included and supported by others in the school social environment” (Goodenow, 1993, p. 80).

Researchers in the field of education and public health recognise the sense of school belonging as a significant protective and promotive

factor for all youth (CDC, 2009), and empirical evidence testifies to its association with a wide range of positive developmental outcomes (e.g., Arslan, 2021; Korpershoek et al., 2020; Zhang et al., 2018). However, although there is an intense emphasis on the importance of the sense of school belonging, there are few efforts directed towards analysing ways to encourage it (Allen et al. 2018b). In other words, few efforts are directed at examining the factors and processes that form the basis of the sense of belonging. Given that not knowing the factors that contribute to the development of a sense of school belonging results in the impossibility of creating specific interventions to encourage it, it is not surprising that the available literature identifies the absence of an adequate and clear model, or framework, that schools should follow when encouraging belonging (Allen et al., 2018a).

Therefore, respecting the aspirations of prevention science in the domain of identifying factors that strengthen protective processes, a review of the relevant literature was carried out in order to identify the factors which contribute to the development of a sense of school belonging among students. Encouraged by the efforts of relevant authors in this field (Allen et al., 2016), the adapted Bronfenbrenner's bio-psycho-socio-ecological model of development, described in the following chapter, was used as the initial theoretical framework of the analysis. The following electronic bibliographic databases were searched: Academia.edu, Google Scholar, KoBSON, and ScienceDirect. The key words used to search for papers are: 'school belonging', 'sense of school belonging', 'school belonging factors', 'predictors of school belonging', 'individual factors', 'school factors'. 'Bronfenbrenner' and 'bio-psycho-socio-ecological model' were not among the key words because some authors do not explicitly mention this theory as the starting theoretical framework of their works, although they deal with the factors of the sense of school belonging that can be interpreted via this model. The main criterion for the selection of papers was to address factors whose influence can be observed in the context of subsystems, postulated in Bronfenbrenner's bio-psycho-socio-ecological model. The review included 32 papers, published in Serbian and English in the period between 2000 and 2022, whose results point to the importance of various individual and school factors for the development of the students' sense of school belonging.

INDIVIDUAL AND SCHOOL FACTORS OF THE DEVELOPMENT OF THE STUDENTS' SENSE OF SCHOOL BELONGING

Bronfenbrenner's bio-ecological model (Bronfenbrenner, 1979) represents the most widely used theoretical framework for explaining belonging in an organisational setting, such as a school (Anderson et al., 2014). Therefore, authors relevant in this field (Allen & Kern, 2017) use

this model as a starting point for understanding the factors that influence the sense of school belonging, and further expand it by pointing out the importance of psychological and social factors. Thus, a new model was conceived and called the bio-psycho-socio-ecological model of school belonging. More specifically, 'bio' refers to a student's genetic and biological predispositions; 'psycho' refers to certain psychological aspects of the student, such as attitude, way of thinking, personality, cognitive styles and emotions; 'socio' implies relationships with peers, teachers and others in the school environment (microsystem); and 'ecological' implies the wider school environment and local community, policies and cultural norms – the wider influences that shape the student's experience at school (mesosystem, macrosystem and exosystem) (Allen & Kern, 2017).

The model implies the existence of systems in society (the microsystem, the mesosystem, the exosystem, and the macrosystem) that have an effect on the individual who is at the centre of multiple levels of influence over time (chronosystem). The individual level includes the students' personal biological and genetic predispositions that affect their relationships with peers, parents, teachers, other school staff members, and people from their immediate environment (Allen et al., 2016). The mesosystem includes school resources, management processes, policies, rules and practices that can affect the students' sense of belonging to the school (Saab, 2009); the exosystem consists of other schools, organisations, external services, extended families, local businesses and community associations that exist outside the school; and the macrosystem includes features such as national or federal government influence on the education system through policies, legislation, and data collection, and takes into account the cultural and historical climate of each school (Allen et al., 2016). A chronosystem identifies interactions between systems over time (Allen et al., 2021). Some authors operationalize the chronosystem as a year of study (Allen et al., 2018a) or as changes in educational policies that occur over time (e.g. additional curriculum) that can affect the sense of school belonging (El Zaatari & Ibrahim, 2021). Each of these levels achieves mutual dynamic interaction and affects the sense of school belonging among students.

In accordance with the basic principles of the adapted model of the development of the sense of school belonging, the summarised research results on the factors that influence the sense of school belonging among students, which exist at the individual and school (relational and contextual) level, that is, at the microsystem and mesosystem level, will be presented below. The decision not to consider the macrosystem and exosystem factors is justified by their low representation in the existing research material, due to the uneconomical nature of their examination, i.e. the need to allocate significant material resources and invest a lot of time (Brown Kirschman & Karaszia 2014).

Individual Factors of the Development of the Students' Sense of School Belonging

The individual characteristics of students are often the subject of research into the predictors and correlates of the sense of school belonging. Although certain factors consistently prove to be significant for improving the sense of school belonging, empirical findings also indicate the existence of numerous inconsistencies. For example, findings on gender differences regarding the sense of school belonging are quite inconsistent, and some research results indicate that the sense of school belonging is more pronounced in female students (Allen & Kern, 2017; Nuttman-Shwartz, 2019). Others present findings in favour of male students (CESE, 2020; Renick & Reich, 2020), or find that differences do not exist (Cemalcilar, 2010). Although the age of students has not been particularly examined in the context of significant factors, there is evidence that the sense of school belonging decreases linearly with age, so that high school students report the lowest level (Anderman, 2003; Renick & Reich, 2020). On the other hand, there are also results which indicate that age differences do not exist (the level of the sense of belonging to the school is stable during primary and secondary education) (Nuttman-Shwartz, 2019). Also, students of lower socio-economic status generally report a weaker sense of school belonging (CESE, 2020).

The results of a recent meta-analysis (Allen & Kern, 2017), which included 45 studies conducted on a total sample of 67,378 students ages 12 through 18, suggest that academic motivation (e.g. writing homework, academic support, goal setting, and aspirations), mental health (e.g. mental illness, anxiety, depression, and suicidal ideation), and personal characteristics (e.g. self-efficacy, self-esteem and self-concept, positive emotions, social awareness, self-awareness, adaptive skills, and emotional regulation) are significantly related to the sense of school belonging, while personal characteristics stand out as one of the most significant correlates of the sense of school belonging.

In considering the individual factors of the development of the sense of belonging to the school, special attention is paid to examining the socioemotional competencies of students (Allen et al., 2018a). In general, the development of the socioemotional competencies of students at school holds a prominent place in the prevention of student behavioural problems (Kovačević-Lepojević et al., 2022). The available literature usually talks about five key socioemotional competencies, namely: responsible decision making, relationships skills, self-management (self-regulation), social awareness, and self-awareness (CASEL, 2018). Research supports the fact that socioemotional competences and a sense of school belonging have significant connections, although the nature and direction of that relationship is not entirely clear, i.e. whether socioemotional competencies strengthen the sense of school belonging or vice ver-

sa is unclear (Allen et al., 2017). There are points of view according to which students' socioemotional competences have a significant impact on the development of a sense of school belonging (Panayiotou et al., 2019) by influencing the quality of relationships with teachers and peers (Eisenberg et al., 2010). The assumption is that students with developed socioemotional competencies probably feel more comfortable in the school environment due to their ability to control their emotions and adapt to school requirements, and that they receive support from teachers and peers on this basis, which has a favourable effect on the development of a sense of belonging (Valiente et al., 2007).

School Factors of the Development of the Students' Sense of School Belonging

As previously stated, relational factors, i.e. microsystem factors of importance for the sense of school belonging concern students' relationships with teachers, other students and other members of the school staff, while contextual, i.e. mesosystem factors refer to school resources (e.g. extracurricular activities, professional development of employees), management processes, policies, rules and practices.

A meta-analysis (Allen & Kern, 2017), which included 45 studies conducted on a total sample of 67,378 students ages 12 through 18, showed that parental support (e.g. care, compassion, encouragement, and positive relationships), peer support (acceptance, encouragement, and support), teacher support (e.g. academic support, social support, likability, and fair treatment), and environmental factors (classroom climate, availability of space and opportunities for play and socialising, classroom seating arrangements, safety processes and factors influencing culture, organisational structure, behaviour management, support structures for staff members, and pleasant environment) are important for the development of a sense of school belonging. Additionally, it was found that satisfaction with social relations (teacher-student relations, relations student-student, and student-school leader relationships) is more predictive for the sense of school belonging than satisfaction with the school environment, i.e. its structural characteristics (physical characteristics, supporting resources, and perception of violence) (Cemalcilar, 2010).

In general, supportive relationships in the school environment form a safe base for students that encourages them to get involved in curricular and extracurricular activities, motivates them to realise their potential, and acts protectively when facing various challenges (Cemalcilar, 2010). Students who perceive the school climate positively also report a greater sense of school belonging (Korpershoek et al., 2020). If the classroom environment allows students to feel comfortable expressing opinions and sharing ideas, the classroom is more likely to be a positive environment where students feel a sense of belonging (Griffiths et al., 2009).

Although the prevailing opinion is that relationships with peers are the most important for adolescents, research shows that relationships with teachers can be more important for adolescents than for younger students (Anderman, 2003). Related to this are the findings that teacher support is the most significant correlate of the students' sense of school belonging (Allen & Kern, 2017). Findings about the significant role of teachers in the development of a sense of school belonging are confirmed by studies with different methodological designs. For example, a meta-analysis (Allen et al., 2018a), which included 14 studies on a sample of 12,433 students, also indicated a large effect ($p = .46$) of teacher support on the students' sense of school belonging. Additionally, in a longitudinal study conducted on a sample of 714 elementary school students, it was shown that students are more likely to see themselves as academically capable and to feel a sense of belonging at school when they perceive their teacher as warm and accepting, supportive and caring, and respectful (Hughes, 2011). Teachers who are rated by students as caring, supportive, competent and with possessing good communication skills create a highly organised environment with high expectations, and thus influence the strengthening of the students' sense of belonging (Kirby & Thomas, 2021).

Student-student relationships are also shown to be a significant factor influencing the sense of school belonging (Allen & Kern, 2017; Cemalcilar, 2010; Uslu & Gizir, 2017). In general, friendship plays an important role in fulfilling the emotional aspect of a sense of school belonging (Law et al., 2013). The importance of peers for the development of a sense of school belonging is also indicated by findings which indicate that peer mentoring programmes play an important role in encouraging it (Ross, 2015). Pittman and Richmond (2007) state that students who feel that they have a supportive peer group are more satisfied with their schoolwork and have positive attitudes about school. A meta-analysis (Allen et al., 2018a), which included 11 studies, conducted on a total sample of 9,167 students, also indicates a large effect ($p = .32$) of peer support on the students' sense of school belonging. The importance of strengthening relational factors is particularly evident in the so-called COVID and post-COVID times, when students may feel isolated and when parents are more concerned about children's social development (Randjelović et al., 2022).

When it comes to the contextual factors of the school environment, the existing literature has less consistent findings about their importance for the sense of school belonging. Those factors that prove to be significant for the sense of school belonging in a certain part of the research will be presented in the following paragraphs.

Clear behavioural rules, their consistent application, and fair treatment are found to be factors that can have a positive effect on the development of a sense of school belonging (Montoro et al., 2020). For exam-

ple, on a sample of 19,833 students from 52 high schools, it was determined that school fairness (equal treatment for all students) is positively correlated with the sense of school belonging (Debnam et al., 2014). Thus, the degree to which the school environment is perceived as fair, just, and inclusive is indicative of the students' sense of school belonging. One explanation for these results is that students who feel they are treated fairly, and who see that rules are clearly stated and consistently enforced may develop more positive relationships with school staff (Konishi et al., 2017).

Also, effectively responding to the occurrence of behavioural problems in the school environment contributes to the creation of a democratic environment that promotes justice and equality, thereby enhancing the sense of school belonging among students (St-Amand et al., 2021). The assumption is that strict school disciplinary practices have a negative impact on the relationship between students and teachers, which consequently affects the sense of school belonging (Tillery et al., 2013).

The sense of school belonging can also be a reflection of safety in the school (Demiroz, 2020) and the absence of bullying (CESE, 2020; Nuttman-Shwartz, 2019). Research conducted on a sample of 1,253 high school students suggests that school belonging is negatively related to the experience of victimisation, regardless of the type of violence (physical, verbal, or relational), with this relationship being strongest with verbal violence (O'Brennan & Furlong, 2010). Certain study findings indicate that close interpersonal relationships, and clear and fair rules of behaviour are potential mechanisms through which the negative relationship between the sense of school belonging and peer violence can be explained (Reaves et al. 2018).

Inequality in the school environment, based on belonging to a certain marginalised group, is associated with a weaker sense of school belonging among students (DeNicolo et al., 2017). When the school represents a context in which a message of respect for all students, regardless of diversity, is sent through interpersonal relations, and the curriculum and educational practices, it is reasonable to assume that students will have a greater sense of belonging. In this sense, the experience of discrimination by adults or peers in the school environment can be considered a factor that negatively affects the development of a sense of school belonging (Gray et al., 2018).

CONCLUSION

A sense of school belonging is considered an important factor for adequate academic and developmental outcomes for young people. Previous research on this construct was predominantly focused on examining its importance in the context of positive development and the prevention of mental health problems, with a certain degree of neglect of the factors and processes underlying it. This approach resulted in the absence of a

clear model of the development of the sense of school belonging, which eliminates the possibility of creating adequate interventions for its improvement, and, consequently, of encouraging positive development and the prevention of student problems.

Based on the findings presented in this review paper, it can be said that the sense of school belonging is a construct whose development is determined by a large number of factors that exist on different levels. In accordance with the basic principles of the adapted Bronfenbrenner's bio-psycho-socio-ecological model of school belonging, the research findings confirm the presence of factors at the individual and school (relational and contextual) level, that is, at the individual, microsystem and mesosystem levels. In addition to pointing out the undoubted importance of individual characteristics of students (gender, age, academic motivation, mental health, and personal characteristics) for the development of a sense of belonging to the school, the available literature abounds with inconsistent findings about the nature and strength of their influence. One gets the impression that the greatest attention is paid to the socioemotional competences of students in the context of the interpretation of personal characteristics as a factor in the development of a sense of school belonging.

Contrary to the situation with individual factors influencing the development of a sense of school belonging, the greatest consistency in research findings is present when studying the influence of school relational factors. The undoubted importance of supportive and warm relationships that students have with teachers and other students in fostering a sense of school belonging can be concluded. When it comes to school contextual factors, it can be said that the results are inconsistent, but certain factors whose importance is often confirmed can be singled out. This, first of all, refers to clear rules, fair and just treatment, safety, the absence of strict school disciplinary practices, peer violence, and discrimination.

Observing the summarised empirical findings, it can be concluded that there is a need for the additional study of the factors of the development of the students' sense of school belonging (especially individual and school contextual factors), which would result in determining their predictive influence, and in defining a conceptual model of action. Such research is important from the practical aspect, because it maps the 'right' places for intervention, and provides clear guidelines in the context of applying universal prevention measures and encouraging the positive development of students. The conceptual model of action would target all factors that prove to be significant for the sense of school belonging, and its implementation would imply the involvement of all actors of school life, and systematic action during curricular and extracurricular activities (e.g. various activities aimed at improving the teacher-student and student-student relationship, fostering gratitude, activity-sharing, value-sharing, defining clear rules and consequences for breaking them, consistent reaction to breaking the rules, etc.).

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REFERENCES

- Allen, K. A., & Kern, M. (2017). *School belonging in adolescents: Theory, research and practice*. Springer Nature.
- Allen, K. A., Fortune, K. C., & Arslan, G. (2021). Testing the social-ecological factors of school belonging in native-born, first-generation, and second-generation Australian students: A comparison study. *Social Psychology of Education, 24*(3), 835-856. <https://doi.org/10.1007/s11218-021-09634-x>
- Allen, K. A., Kern, M. L., Vella-Brodrick, D., Waters, L., & Hattie, J. (2018a). What schools need to know about belonging: A meta-analysis. *Educational Psychology Review, 30*(1), 1-34. <https://doi.org/10.1007/s10648-016-9389-8>
- Allen, K. A., Vella-Brodrick, D., & Waters, L. (2016). Fostering school belonging in secondary schools using a socio-ecological framework. *The Educational and Developmental Psychologist, 33*(1), 97-121. <https://doi.org/10.1017/edp.2016.5>
- Allen, K. A., Vella-Brodrick, D., & Waters, L. (2017). School belonging and the role of social and emotional competencies in fostering an adolescent's sense of connectedness to their school. In E. Frydenberg, A. J. Martin, & R. J. Collie (Eds.), *Social and emotional learning in Australia and the Asia-Pacific: Perspectives, programs and approaches* (pp. 83-100). Springer.
- Allen, K. A., Vella-Brodrick, D., & Waters, L. (2018b). Rethinking school belonging: A socio-ecological framework. In K. A. Allen & C. Boyle (Eds.), *Pathways to belonging: Contemporary research in school belonging* (pp. 191-218). Brill Sense.
- Anderman, L. H. (2003). Academic and social perceptions as predictors of change in middle school students' sense of school belonging. *The Journal of Experimental Education, 72*(1), 5-22. <https://doi.org/10.1080/00220970309600877>
- Anderson, J., Boyle, C., & Duppeler, J. (2014). The ecology of inclusive education: Reconceptualising Bronfenbrenner. In Z. Zhang, P. W. K. Chan & C. Boyle (Eds.), *Equality in education* (pp. 23-34). Brill Sense.
- Arslan, G. (2021). Loneliness, college belongingness, subjective vitality, and psychological adjustment during coronavirus pandemic: Development of the College Belongingness Questionnaire. *Journal of Positive School Psychology, 5*(1), 17-31. <https://doi.org/10.47602/jpsp.v5i1.240>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brown Kirschman, K. J., & Karazsia, B. T. (2014). The role of pediatric psychology in health promotion and injury prevention. In M. C. Roberts, B. Aylward, & Y. Wu (Eds.), *Clinical practice of pediatric psychology*. (pp. 136-138). Guilford Press.
- Cemalcilar, Z. (2010). Schools as socialization contexts: Understanding the impact of school climate factors on students' sense of school belonging. *Applied Psychology: An International Review, 59*(2), 243-272. <https://doi.org/10.1111/j.1464-0597.2009.00389.x>
- Centers for Disease Control and Prevention. (2009). *School connectedness: Strategies for increasing protective factors among youth*. U.S. Department of Health and Human Services.

- Centre for Education Statistics and Evaluation (2020). *Supporting students' sense of belonging synthesis paper*. Retrieved from <https://www.cese.nsw.gov.au/publications-filter/sense-of-belonging-synthesis-paper?tmpl=component&print=1>
- Collaborative for Academic Social, and Emotional Learning (2018). *What is SEL*. CASEL. Retrieved from <https://casel.org/>
- Damon, W. (2004). What is positive youth development? *Annals of the American Academy of Political and Social Science*, 591(1), 13-24. <https://doi.org/10.1177/0002716203260092>
- Debnam, K. J., Johnson, S. L., Waasdorp, T. E., & Bradshaw, C. P. (2014). Equity, connection, and engagement in the school context to promote positive youth development. *Journal of Research on Adolescence*, 24(3), 447-459. <https://doi.org/10.1111/jora.12083>
- Demiroz, S. (2020). The relationship between secondary schools students' perceptions of school climate, their school belonging and their academic achievement. *Education Reform Journal*, 5(2), 60-77.
- DeNicolò, C. P., Yu, M., Crowley, C. B., & Gabel, S. L. (2017). Reimagining critical care and problematizing sense of school belonging as a response to inequality for immigrants and children of immigrants. *Review of Research in Education*, 41(1), 500-530. <https://doi.org/10.3102/0091732X17690498>
- El Zaatari, W., & Ibrahim, A. (2021). What promotes adolescents' sense of school belonging? Students and teachers' convergent and divergent views. *Cogent Education*, 8(1), 1984628. <https://doi.org/10.1080/2331186X.2021.1984628>
- Eisenberg, N., Valiente, C., & Eggum, N. D. (2010). Self-regulation and school readiness. *Early Education & Development*, 21(5), 681-698. <https://doi.org/10.1080/10409289.2010.497451>
- Goodenow, C. (1993). Classroom belonging among early adolescent students: relationships to motivation and achievement. *Journal of Early Adolescence*, 13(1), 21-43. <https://doi.org/10.1177/0272431693013001002>
- Gray, D. L., Hope, E. C., & Matthews, J. S. (2018). Black and belonging at school: a case for interpersonal, instructional, and institutional opportunity structures. *Educational Psychologist*, 53(2), 97-113. <https://doi.org/10.1080/00461520>
- Griffiths, A. J., Sharkey, J. D., & Furlong, M. J. (2009). Student engagement and positive school adaptation. In R. Gilman, E. S. Huebner, M. J. Furlong (Eds.), *Handbook of Positive Psychology in Schools* (pp. 197-212). Routledge.
- Hughes, J. N. (2011). Longitudinal effects of teacher and student perceptions of teacher-student relationship qualities on academic adjustment. *The Elementary School Journal*, 112(1), 38-60. <https://doi.org/10.1086/660686>
- Kirby, L. A., & Thomas, C. L. (2021). High-impact teaching practices foster a greater sense of belonging in the college classroom. *Journal of Further and Higher Education*, 1-14. <https://doi.org/10.1080/0309877X.2021.1950659>
- Konishi, C., Miyazaki, Y., Hymel, S., & Waterhouse, T. (2017). Investigating associations between school climate and bullying in secondary schools: Multilevel contextual effects modeling. *School psychology international*, 38(3), 240-263. <https://doi.org/10.1177/0143034316688730>
- Korpershoek, H., Canrinus, E. T., Fokkens-Bruinsma, M., & de Boer, H. (2020). The relationships between school belonging and students' motivational, social-emotional, behavioural, and academic outcomes in secondary education: A meta-analytic review. *Research Papers in Education*, 35(6), 641-680. <https://doi.org/10.1080/02671522.2019.1615116>
- Kovačević Lepojević, M., Merdović, B., & Živaljević, D. (2022). The systematic review of school-based programs focused on externalising problems in students. *Teme*, 46(2), 361-375. <https://doi.org/10.22190/TEME210329023K>

- Law, P. C., Cuskelly, M., & Carroll, A. (2013). Young people's perceptions of family, peer, and school connectedness and their impact on adjustment. *Australian Journal of Guidance and Counselling*, 23(1), 115-140. <https://doi.org/10.1017/jgc.2012.19>
- Maksić, S., & Đurišić-Bojanović, M. (2017). Doprinos školskog psihologa primeni principa pozitivne psihologije u razvoju škole [The school psychologist's role in implementing the principles of positive psychology in the development of the school]. *Nastava i vaspitanje*, 66(2), 337-350. <https://doi.org/10.5937/nasvas1702337M>
- Montoro, J. P., Kilday, J. E., Rivas-Drake, D., Ryan, A. M., & Umaña-Taylor, A. J. (2020). Coping with discrimination from peers and adults: Implications for adolescents' school belonging. *Journal of youth and adolescence*, 50(1), 126-143. <https://doi.org/10.1007/s10964-020-01360-5>
- Nuttman-Shwartz, O. (2019). The moderating role of resilience resources and sense of belonging to the school among children and adolescents in continuous traumatic stress situations. *Journal of Early Adolescence*, 39(9), 1261-1285. <https://doi.org/10.1177/0272431618812719>
- O'Brennan, L. M., & Furlong, M. J. (2010). Relations between students' perceptions of school connectedness and peer victimization. *Journal of School Violence*, 9(4), 375-391. <https://doi.org/10.1080/15388220.2010.509009>
- Panayiotou, M., Humphrey, N., & Wigelsworth, M. (2019). An empirical basis for linking social and emotional learning to academic performance. *Contemporary Educational Psychology*, 56, 193-204. <https://doi.org/10.1016/j.cedpsych.2019.01.009>
- Pittman, L. D., & Richmond, A. (2007). Academic and Psychological Functioning in Late Adolescence: The Importance of School Belonging. *The Journal of Experimental Education*, 75(4), 270-290. <https://doi.org/10.3200/JEXE.75.4.270-292>
- Randjelović, B., Karalić, E., Djukić, D., & Aleksić, K. (2022). Distance learning in Serbia – the experience in primary education during the COVID-19 crisis. *Teme*, 46(2), 377-397. <https://doi.org/10.22190/TEME210609024R>
- Reaves, S., McMahon, S. D., Duffy, S., & Ruiz, L. (2018). The test of time: A meta-analytic review of the relation between school climate and problem behavior. *Aggression and Violent Behavior*, 39, 100-108. <https://doi.org/10.1016/j.avb.2018.01.006>
- Renick, J., & M Reich, S. (2020). Best friends, bad food, and bullying: How students' school perceptions relate to sense of school belonging. *Journal of community psychology*, 49(2), 447-467. <https://doi.org/10.1002/jcop.22471>
- Ross, M. S. (2015). *Building Peaceful Secondary School Climates: A Comparison of Anti-violence, Equity, Engagement and Community-Building Practices*. University of Toronto.
- Rowe, F., & Stewart, D. (2011). Promoting connectedness through whole-school approaches: Key elements and pathways of influence. *Health Education*, 111(1), 49-65. <https://doi.org/10.1108/09654281111094973>
- Saab, H. (2009). *The school as a setting to promote student health and wellbeing* (Doctoral dissertation, Queen's University). Retrieved from https://central.bac-lac.gc.ca/item?id=NR65302&op=pdf&app=Library&oclc_number=771915206
- St-Amant, J., Smith, J., & Rasmay, A. (2021). Development and Validation of a Model Predicting Students' Sense of School Belonging and Engagement as a Function of School Climate. *International Journal of Learning, Teaching and Educational Research*, 20(12), 64-84. <https://doi.org/10.26803/ijlter.20.12.5>

- Tillery, A. D., Varjas, K., Roach, A. T., Kuperminc, G. P., & Meyers, J. (2013). The importance of adult connections in adolescents' sense of school belonging: Implications for schools and practitioners. *Journal of School Violence, 12*(2), 134-155. <http://dx.doi.org/10.1080/15388220.2012.762518>
- Uslu, F., & Gizir, S. (2017). School belonging of adolescents: The role of teacher-student relationships, peer relationships and family involvement. *Educational Sciences: Theory and Practice, 17*(1), 63-82. <http://dx.doi.org/10.12738/estp.2017.1.0104>
- Valiente, C., Lemery-Chalfant, K., & Castro, K. S. (2007). Children's effortful control and academic competence: Mediation through school liking. *Merrill-Palmer Quarterly, 53*(1), 1-25.
- Wingspread declaration on school connections. (2004). *Journal of School Health, 74*(7), 233-234. <https://doi.org/10.1111/j.1746-1561.2004.tb08279.x>
- Zakon o osnovama sistema obrazovanja i vaspitanja [The law on the fundamentals of education system], Službeni glasnik RS Br. 88/2017, 27/2018 – dr. zakon, 10/2019, 6/2020 i 129/2021 (2021).
- Zhang, M. X., Mou, N. L., Tong, K. K., & Wu, A. (2018). Investigation of the effects of purpose in life, grit, gratitude, and school belonging on mental distress among Chinese emerging adults. *International Journal of Environmental Research and Public Health, 15*(10), 1-12. <https://doi.org/10.3390/ijerph15102147>

ФАКТОРИ ОСЕЋАЈА ПРИПАДНОСТИ ШКОЛИ: БРОНФЕНБРЕНЕРОВ ТЕОРИЈСКИ МОДЕЛ КАО ПОЛАЗНИ ОКВИР ТУМАЧЕЊА

Марија Трајковић¹, Бранислава Поповић-Ћитић², Лука Мијатовић²

¹Институт за педагошка истраживања, Београд, Србија

²Универзитет у Београду, Факултет за специјалну едукацију и рехабилитацију,
Београд, Србија

Резиме

Имајући у виду да један од основних циљева образовања и васпитања подразумева обезбеђивање добробити и подршке целовитом развоју детета, ученика и одраслог, школа се све више препознаје као место промоције и подстицања позитивног развоја и превенције различитих проблема и тешкоћа. Различити елементи школског окружења сматрају се важним за адекватне развојне исходе код ученика, а осећај припадности учестало се препознаје као један њих. Сходно најшире коришћеној дефиницији, осећај припадности школи је мера у којој се ученици осећају лично прихваћеним, поштованим, укљученим и подржаним од стране других у школском окружењу. Овај конструкт сматра се протективним и промотивним фактором који утиче на широк спектар академских и развојних исхода код ученика. Међутим, досадашња истраживачка настојања нису била претерано фокусирана на испитивање фактора и процеса који стоје у његовој основи, те се у литератури идентификује недостатак јасног модела деловања који школски актери треба да примене зарад његовог унапређивања и, последично, уживања његових бенефита. Стога, уважавајући стремљења превенцијске науке у домену идентификовања чинилаца који оснажују протективне процесе, основни циљ рада је анализа релевантне литературе ради идентификовања фактора који доприносе развоју осећаја припадности школи код ученика. Као почетни теоријски оквир анализе коришћен је адаптирани Бронфен-

бренов био-психо-социо-еколошки модел развоја. Извршена је претрага следећих електронских библиографских база: Academia.edu, Google Scholar, KoBSON и ScienceDirect. Налази спроведеног прегледа указују да је осећај припадности школи системске природе, те да су шегов развој и интензитет детерминисани вишеструким искуствима, интеракцијама и факторима који уобичајено егзистирају на индивидуалном, школском релационом и контекстуалном нивоу, односно нивоима појединца, микросистема и мезосистема. Иако рад пружа почетне увиде у факторе који доприносе развоју осећаја припадности школи, неопходна су даља истраживања која ће испитати предиктивно дејство наведених фактора, обезбедити могућност дефинисања јасног модела деловања, те представљати полазну основу за конципирање адекватних интервенција.

THE ACOUSTIC CHARACTERISTICS OF VOICE AND SPEECH IN ADULTS WITH ATAXIC DYSARTHRIA

Ivana Arsenić*, Nadica Jovanović Simić, Mia Šešum, Bojana Drljan

University of Belgrade, Faculty of Special Education and Rehabilitation,
Belgrade, Serbia

Abstract

The aim of this study was to determine the acoustic characteristics of voice and speech in adults with ataxic dysarthria, and to examine the extent to which they differ from those of typical speakers. The sample consisted of 30 patients with ataxic dysarthria, ages 21 through 82 ($M = 56.07$). Using the computer programme for multidimensional voice analysis (MDVP), the individual values of 10 acoustic voice parameters were determined for each sex. Additionally, the programme provided the frequency values of the first two formants for all five vowels of the Serbian language, based on the participants' reading of the Balanced Text. The results of the analysis showed statistically significant differences in the values of the acoustic parameters between the participants with ataxic dysarthria and the reference values valid for typical speakers, which were generated by the MDVP. These differences were observed in parameters indicating voice frequency variability (F_0 , F_{hi} , F_{lo} , STD , $Jitt$, vF_0), voice intensity variability ($Shim$ and vAm), and the presence of voice interruptions (DVB) and voiceless periods (DUV). Furthermore, a statistically significant difference was found between participants with ataxic dysarthria and typical speakers in the second formant (F_2) of the vowels /E/ ($p < 0.01$), /I/ ($p < 0.01$), and /U/ ($p < 0.05$). The significant deviations from the norms applicable to typical speakers indicate the substantial changes present in the voice and speech of individuals with ataxic dysarthria.

Key words: acoustic characteristics, ataxic dysarthria, voice, speech.

АКУСТИЧКЕ КАРАКТЕРИСТИКЕ ГЛАСА И ГОВОРА ОДРАСЛИХ ОСОБА СА АТАКСИЧНОМ ДИЗАРТРИЈОМ

Апстракт

Циљ овог истраживања је био да се утврде акустичке карактеристике гласа и говора испитаника са атаксичном дизартријом и да се испита у којој мери се оне

* Corresponding author: Ivana Arsenić, University of Belgrade, Faculty of Special Education and Rehabilitation, 2 Visokog Stevana Street, 11000 Belgrade, Serbia, ivana.arsenic@yahoo.com

разликују од карактеристика типичних говорника. Узорак је чинило 30 пацијената са атаксичном дизартријом, узраста од 21 до 82 године ($AC=56.07$). Применом компјутерског програма за мултидимензионалну анализу гласа (MDVP) утврђене су вредности 10 акустичких параметара гласа за сваки пол појединачно. Истим програмом, на основу читања Балансираног текста, добијене су фреквенцијске вредности прва два форманта свих пет вокала српског језика. Резултати анализе су показали статистички значајне разлике у вредностима акустичких параметара између испитаника са атаксичном дизартријом и референтних вредности које важе за типичне говорнике, а које је генерисао MDVP. Разлике су утврђене на параметрима који указују на варијабилност фреквенције гласа ($F0$, F_{hi} , F_{lo} , STD , J_{it} , $vF0$), варијабилност интензитета гласа ($Shim$ и vAm), и на присуство прекида у гласу (DVB) и периода без гласа (DUV). Такође, статистички значајна разлика између испитаника са атаксичном дизартријом и типичних говорника постојала је на другом форманту ($F2$) вокала /E/ ($p<0.01$), вокала /И/ ($p<0.01$) и вокала /У/ ($p<0.05$). Значајна одступања од норми које важе за типичне говорнике указују на озбиљне промене које су присутне у гласу и говору особа са атаксичном дизартријом.

Кључне речи: акустичке карактеристике, атаксична дизартрија, глас, говор.

INTRODUCTION

Ataxia is a neurological condition characterised by deficits in motor coordination that affect various aspects of movement, including limb and eye movements, walking, speaking, and swallowing (Sidtis, Ahn, Gomez, & Sidtis, 2011). The abnormalities in muscle strength and movement control associated with ataxia, such as intentional and postural tremors and coordination disorders, also affect the muscles of the vocal tract, leading to speech disorders known as ataxic dysarthria (Mariotti, Fancellu, & Di Donato, 2005). The development of ataxic dysarthria is typically a result of cerebellar damage caused by conditions like strokes, tumours, inflammatory diseases (cerebellitis), and sporadic cerebellar degeneration, or is a manifestation of Friedrich's ataxia. The damage to the cerebellum disrupts the coordination and precision of movements in the muscles involved in speech production, particularly the articulators, leading to non-rhythmic repetitive movements, inadequate control, weakness, and slow movements with reduced muscle tone (hypotonia).

People with ataxic dysarthria exhibit distinct speech characteristics, including the inaccurate articulation of consonants and distortion of vowels. Their speech is often marked by monotony, prolonged speech intervals, stereotypical intonation patterns, and a uniform accent with expression limited to short phrases. Voice quality is also affected, typically presenting as hoarseness, tension, and a muffled voice quality (Schalling, Hammarberg, & Hartelius, 2007). Previous studies examining the acoustic analysis of voice and speech in individuals with ataxic dysarthria have identified several abnormalities. These include disruptions in speech rhythm and prosody (Liss, Spitzer, Caviness, & Adler, 2002), an increased number of inappropriate speech pauses (Rosen, Kent, & Duffy,

2003), ‘scanning’ speech and volatile voice modulation (Ogawa, Yoshihashi, Suzuki, Kamei, & Mizutani, 2010), inadequate syllable stress patterns, and abnormal values of *shimmer* and *jitter* (parameters measuring amplitude and voice frequency perturbations) during continuous vowel phonation (Kent et al., 2000). *Shimmer* and *jitter* are important indicators of speech intelligibility (Teixeira & Gonçalves, 2014). In addition, ‘scanning’ speech in ataxic dysarthria refers to the occurrence of slow speech with interrupted pauses between syllables or words. Some individuals with ataxic dysarthria also exhibit the shortening of the initial portion of vowels in their speech. The assessment of spontaneous speech and reading tasks has revealed longer pauses between syllables, prolonged syllables, and significant pauses between words (White, 2012).

PET scan studies showed reduced activity in specific brain areas associated with speech tasks, indicating a decrease in blood flow in the cerebellar hemispheres of patients with ataxic dysarthria (Sidtis, Strogher, Naoum, Rottenberg, & Gomez, 2010). The authors emphasise that the decrease in blood flow in these individuals leads to changes in the duration of syllable pronunciation, which is one of the characteristics of ataxic dysarthria – syllable timing shifts in the direction of equal syllable duration. In contrast, in typical speakers, there is an increase in blood flow in the cerebellum during syllable repetition tasks.

Ataxic dysarthria is commonly characterised by contradictory speech patterns, as supported by literature (Hartelius, Runmarker, Andersen, & Nord, 2000). It is characterised by a combination of inadequate articulation, marked by imprecise and irregular movements, as well as prosodic outbursts. Furthermore, individuals with ataxic dysarthria may exhibit phonatory and prosodic insufficiency. The presence of these contradictory speech characteristics can be attributed to damage to various sub-systems that contribute to the development of ataxic dysarthria (Spencer & Dawson, 2019). A study conducted in the 1980s by Joannette and Dudley (1980) investigated 22 patients with Friedrich’s ataxia and identified two patterns of speech errors. The first pattern was associated with a general dysarthric factor characterised by imprecise articulation and prolonged phonemes. The second pattern was related to the phonatory stenosis factor, which involved hoarseness in the voice, pitch interruptions, and pitch level irregularities. Ataxic dysarthria is described as being characterised by both instability manifested through excessive variations in poorly modulated volume and pitch and inflexibility in speech, indicated by the abnormal invariance of speech expression with equal emphasis on each syllable (Hartelius et al., 2000; Spencer & France, 2016). It has been observed that individuals with ataxic dysarthria can exhibit both patterns of speech production simultaneously, which is referred to as mixed manifestation. A study conducted by Spencer and France (2016) on 10 patients with ataxic dysarthria of different etiologies found that five participants

demonstrated an unstable pattern in speech production, one exhibited inflexibility, and four displayed a mixed type of speech production. In a more recent study by Spencer and Dawson (2019), which focused on eight participants with ataxic dysarthria caused by hereditary ataxia, five participants showed unstable speech production, two participants exhibited inflexibility, and one subject displayed a mixed pattern of both inflexibility and instability. Based on these findings, it can be concluded that individuals with ataxic dysarthria predominantly exhibit instability in speech, characterised by abnormal articulation, a variable voice volume and pitch, and irregular breathing. Additionally, a mixed pattern of speech difficulties is commonly observed, while inflexibility is less frequent.

Experts can identify voice and speech deficits through perceptual analysis. This method of assessment is essential and highly important, particularly for people with dysarthria, in whom intelligibility of speech production can be significantly impaired. Unsuccessful communication arises when participants encounter difficulties in adequately encoding or decoding messages (Isaković & Kovačević, 2015). However, as a supplement to perceptual assessment, which is a subjective method, the acoustic analysis of voice and speech is becoming more popular as a method for obtaining objective, quantitative data. Computerised devices enable the obtaining of numerical and graphical representations that illustrate the differences in the values of the acoustic parameters of the voices between participants with ataxic dysarthria and typical speakers. The values obtained by acoustic speech analysis may indicate abnormalities in pitch and volume, the presence of noise and tremor in the voice, and the presence of inadequate pauses in speech, subharmonics, and periods without voice. Additionally, these computerised devices that analyse the recorded voice sample provide a spectrographic representation of the position of voice formants. The proper shape, position, and interrelationships of these formants allow for individual voice recognition, which can also determine the overall intelligibility of speech production. Acoustic voice and speech analysis programmes also facilitate the monitoring of a patient's progress during treatment by tracking changes in the values of acoustic parameters over a specific period of time. Additionally, these programmes include tasks that might help patients in enhancing their voice quality and speech intelligibility.

Only a few studies have examined the acoustic characteristics of the voice and speech of individuals with ataxic dysarthria. These studies were conducted on samples of participants who are part of a larger context in which dysarthria is generally viewed as a motor speech disorder, without any emphasis placed on the specific aspects related to a concrete type of dysarthria. Perceptual analysis was previously used to determine the voice and speech characteristics of people with dysarthria (Chenery, Ingram, & Murdoch, 1990; Ozsancak, Parais, & Auzou, 2002; Zyski &

Weisiger, 1987). However, due to advances in computer technology, it is now possible to obtain quantitative data on these people's voice and speech characteristics, as well as on deviations from norms. Additionally, it is important to note that certain characteristics of speech in individuals with ataxic dysarthria may not be readily detected through perceptual assessment alone, so the use of a computer programme in the analysis of voice and speech as an additional method is always considered desirable. Perceptual analysis is not always an objective means of assessing voice changes in individuals with dysarthria because it cannot detect all the parameters that can affect speech intelligibility. On the other hand, the use of computer programmes in voice and speech analysis enables the precise measurement of all acoustic parameters, contributing to the objectivity of the assessment. Computer analysis has been used in previous studies with individuals with ataxic dysarthria, but it was mostly limited to the acoustic analysis of a smaller sample of participants and was devoid of spectral speech analysis (Kent et al., 2000). Additionally, previous studies investigating the acoustic parameters in individuals with ataxic dysarthria primarily focused on parameters related to the fundamental frequency of voice, while other aspects such as voice intensity, voice breaks, and voiceless intervals were not examined (Ackermann & Ziegler, 1994). Furthermore, some studies only examined a limited set of voice acoustic parameters, such as fundamental frequency, jitter and shimmer (Gómez-Coello et al., 2017; White, 2012). Finally, it should be noted that the majority of research on the spectral analysis of speech samples in individuals with dysarthria originates in English-speaking regions, and to our knowledge, no similar research on Serbian speakers has been conducted. Given the articulatory specificities of the Serbian language, spectral analysis of Serbian speakers with dysarthria can significantly contribute to modifying and adapting the rehabilitation strategies used for these individuals in our region.

Based on the findings of previous studies, the objective of this study was to use acoustic analysis to measure the values of specific acoustic voice parameters in people with ataxic dysarthria. Also, using the spectral analysis of speech, we aimed to determine the frequency values of the first two formants of vowels in Serbian speakers with ataxic dysarthria. The goal was to investigate the degree to which these values differ from the norms observed in typical speakers.

METHODS

Sample

The study included 30 patients with ataxic dysarthria ages 21 through 82 (AS = 56.07). Among the total number of participants, 22

were male (73.3%) and 8 were female (26.7%). The participants' native language was Serbian, and none of them had a professional background in vocals. Ataxia in all participants was of cerebrovascular origin. Additionally, they did not have any other associated disorders, or a history of illness that could impact speech and voice characteristics.

Instruments and Procedure

The research was conducted in Belgrade and included participants who were patients at the "St. Sava" Special Hospital for Cerebrovascular Diseases and the "Dr. Miroslav Zotović" Clinic for Rehabilitation. The MDVP (Multi-Dimensional Voice Program) computer programme, specifically the model 4300 from the Kay Elemetrics Corporation, was used to perform the acoustic analysis of the participants' voice and speech. To extract the values of the voices' acoustic parameters, a sample of continuous phonation of the vowel /a/ was obtained, with a duration of 3 to 5 seconds. Additionally, spectral analysis was performed on speech samples obtained by asking the participants to read the Balanced Text (Šešum, 2013). The Balanced Text is a text created specifically for the forensic analysis of voice and speech. Over the years, its unique features have made it a valuable resource for research purposes (Šešum, 2013, 2020, 2021). The term 'text balance' refers to the natural distribution of syllable frequencies within meaningful units of the Serbian language. The text is carefully constructed to include all Serbian language sounds in initial and medial articulatory positions, as well as the 14 most frequently occurring sounds in the final position. Moreover, the text maintains semantic coherence and contains complex statements suitable for speech analysis. With a total of 7 sentences, the text is of optimal length, preventing speakers' fatigue during the analysis.

Voice and speech samples were recorded individually for each participant in a soundproof room. The participants were instructed to use optimal volume and pitch during the recordings. The pattern of continuous vowel /a/ phonation was selected because it is considered to yield a stable performance, enabling the extraction of specific acoustic parameters of the voice. Given that there are sex-related differences in certain acoustic parameters, the acoustic analysis was conducted separately for men and women. However, the determination of vowel formant values for the specific language was based on the pronunciation of those vowels in spontaneous speech, and separate analyses for male and female participants was not necessary, as formant values are not dependent on the pitch of the fundamental laryngeal tone and are consistent across genders. In cases where participants were unable to read the given text, they repeated it after the researcher. The voice and speech samples were analysed at the "Zvezdara" Clinical Hospital Centre in Belgrade

Using the voice analysis programme (MDVP), we obtained the values for the 10 acoustic parameters identified in previous studies as important indicators of speech abnormalities in patients with ataxic dysarthria and other types of dysarthria. Deviations from the norms applicable to typical speakers suggest voice pathology, and potential changes in the vocal cords and other speech organs. The norms are established based on the values of acoustic parameters derived from the MDVP analysis of a sample of typical male and female speakers. The measured parameters include frequency variability indicators such as fundamental frequency (F0), highest (Fhi) and lowest (Flo) frequency values, standard deviation (STD), variation (vF0), and perturbation of fundamental frequencies (Jitt) indicating irregularities in vocal cord vibration rate. Intensity variability (amplitude) is assessed through parameters indicating amplitude perturbations (Shim) and peak-to-peak amplitude variations (vAm). Additionally, the analysis includes parameters related to voice interruptions and irregularities, represented by the degree of voice breaks (DVB) and the degree of voiceless periods (DUV). Both DVB and DUV are presented as percentages, and their reference values for typical speakers are 0, as there should be no interruptions or periods without voice during speaking and continuous phonation.

The position of the first two formants (F1 and F2) for all vowels in the Serbian language was determined using speech samples obtained from participants who read a phonetically balanced text. Formants represent areas of increased sound energy at specific frequencies. The structure of formants is influenced by the length and shape of the vocal tract, as well as the movements of the jaw, tongue, and lips (Shriberg, Kent, & Munson, 2003). While the first three formants are important for the auditory discrimination of voices, this research focused on analysing the first two formants, which carry the most energy. The third formant was not included in the analysis because, although it contributes to voice quality and clarity, its values are similar across all vowels in the Serbian language, and do not significantly affect their discrimination.

Statistical Analysis

The statistical analysis of the data involved descriptive statistics, including frequencies, percentages, arithmetic mean, and standard deviation to summarise the characteristics of the sample. To examine the differences between the sample values and the norms, a one-sample t-test was performed. The significance level was set at $p < 0.05$, indicating a statistically significant difference. The statistical software used for data processing and analysis was SPSS ver. 24 (Statistical Package for the Social Sciences) for Windows.

RESULTS

In previous studies, the most common deviations in the values of acoustic voice parameters were found in parameters related to fundamental frequency variability, such as variation, standard deviation, and perturbation of the fundamental frequency (vF0, STD, and Jitt), as well as in parameters related to voice intensity variability, such as peak-to-peak amplitude variation and amplitude perturbation (vAm and Shim) (Kent et al., 2000). These parameters, specifically Shim and Jitt, have been identified as significant indicators of acoustic voice abnormalities in individuals with ataxic dysarthria, as well as other types of dysarthria (Jannetts & Lowit, 2014; Kent et al., 2000). Furthermore, due to the presence of tremors during speech production, the F0 parameter differs between individuals with ataxic dysarthria and the control group (Gómez-Coello et al., 2017; White, 2012). Besides the mentioned parameters, the highest and lowest values of fundamental frequency (Fhi and Flo) were also determined in this study. Furthermore, considering the frequent and significant pauses in the speech of individuals with ataxic dysarthria, as well as the occurrence of ‘scanning speech’, it was examined whether voice interruptions and periods without voice occur during continuous phonation (DVB and DUV). Tables 1 and 2 present the values of the ten analysed acoustic parameters of the voices of 30 participants with ataxic dysarthria, separated according to gender.

Table 1. Average values of acoustic parameters of voice and differences in relation to norms – men

		N	MDVP norms	Ataxic dysarthria		T	p
			M	M	SD		
F0	(Hz)	22	145.233	144.987	23.461	-0.049	0.961
Fhi	(Hz)	22	150.080	249.327	153.594	3.031	0.006
Flo	(Hz)	22	140.418	109.988	25.944	-5.501	0.000
STD	(Hz)	22	1.349	18.378	27.137	2.943	0.008
Jitt	(%)	22	0.589	2.691	3.085	3.195	0.004
vF0	(%)	22	0.939	10.890	14.744	3.166	0.005
Shim	(%)	22	2.523	10.314	6.429	5.685	0.000
vAm	(%)	22	7.712	27.022	9.413	9.622	0.000
DVB	(%)	22	0.200	1.972	3.561	2.335	0.030
DUV	(%)	22	0.200	19.139	28.555	3.111	0.005

F0 – average fundamental frequency, Fhi – highest fundamental frequency,

Flo – lowest fundamental frequency,

STD – standard deviation of F0, Jitt – absolute Jitter, vF0 – fundamental frequency variation, Shim – Shimmer percent,

vAm – peak-to-peak amplitude variation, DVB – degree of voice brakes,

DUV – degree of voiceless periods

According to Table 1, nine of the ten analysed acoustic parameters of voice demonstrate statistically significant deviations from the reference values for typical speakers. The only parameter that does not show a statistically significant difference is the fundamental voice frequency (F0), which is slightly lower than the average values for male speakers.

Table 2. Average values of acoustic parameters of voice and differences in relation to norms – women

	N	MDVP norms			T	p
		M	M	SD		
F0 (Hz)	8	243.973	243.973	26.162	-8.046	0.000
Fhi (Hz)	8	252.724	252.724	29.134	-5.753	0.001
Flo (Hz)	8	234.861	234.861	47.589	-6.577	0.000
STD (Hz)	8	2.722	2.722	20.952	2.159	0.068
Jitt (%)	8	0.633	0.633	1.404	2.868	0.024
vF0 (%)	8	1.149	1.149	11.203	2.464	0.043
Shim (%)	8	1.997	1.997	4.800	3.871	0.006
vAm (%)	8	10.743	10.743	27.157	2.559	0.038
DVB (%)	8	0.200	0.200	27.311	1.539	0.168
DUV (%)	8	0.200	0.200	22.023	2.578	0.037

F0 – average fundamental frequency, Fhi – highest fundamental frequency,

Flo – lowest fundamental frequency,

STD – standard deviation of F0, Jitt – absolute Jitter,

vF0 – fundamental frequency variation, Shim – Shimmer percent,

vAm – peak-to-peak amplitude variation, DVB – degree of voice brakes,

DUV – degree of voiceless periods

Table 2 indicates that eight out of the ten analysed acoustic parameters of the voices of women with ataxic dysarthria demonstrate statistically significant differences compared to the average values generated by the programme for typical female speakers. Parameters STD and DVB do not show statistically significant differences, but have higher values compared to the norms. The values of parameters F0, Fhi, and Flo are significantly lower in relation to the values representing the norms for women without a voice disorder. The placements of the first and second formants (F1 and F2) of all Serbian vowels (Table 3) were determined by analysing the speech samples collected by asking the 30 participants with ataxic dysarthria to read the Balanced Text.

Table 3. Average values of vowel formants and differences in relation to norms – entire sample

Vowel		N	Min	Max	M	SD	T	p
A	F1	30	481.000	1345.000	644.133	164.615	1.468	0.153
	F2	30	508.000	1465.000	1185.033	194.861	0.423	0.676
E	F1	30	358.000	1644.000	540.467	217.934	1.017	0.318
	F2	30	298.000	1913.000	1479.333	337.621	-3.904	0.001
I	F1	30	179.000	1943.000	365.500	316.658	1.133	0.267
	F2	30	627.000	2451.000	1893.467	390.715	-2.895	0.007
O	F1	30	388.000	1106.000	548.367	142.777	0.359	0.722
	F2	30	328.000	1173.000	967.600	150.377	-0.816	0.421
U	F1	30	269.000	956.000	373.600	127.459	-0.275	0.785
	F2	28	627.000	1524.000	896.429	240.680	2.120	0.043

F1 – first formant, F2 – second formant

Table 3 illustrates statistically significant differences in the second formant (F2) of the vowels /E/ ($p < 0.01$), /I/ ($p < 0.01$), and /U/ ($p < 0.05$) between participants with ataxic dysarthria and typical speakers. However, the spectral analysis of the vowel /U/ could not be conducted for two participants. The position of the second formant (F2) in the vowels /E/ and /I/ is significantly lower compared to the norms. Conversely, the average value of F2 in the vowel /U/ among participants with ataxic dysarthria was significantly higher. The average values of the first formant (F1) and second formant (F2) for the vowels /A/ and /O/ fell within the norms.

DISCUSSION

The results of the acoustic analysis of voice revealed differences in the values of the analysed acoustic parameters of voice between male and female participants with ataxic dysarthria, and typical speakers. In male participants, nine out of the ten analysed parameters showed a statistically significant difference, on average, from the reference values for typical speakers. The only parameter that did not show a statistically significant difference was the fundamental voice frequency (F0), which was slightly lower than the average value for typical male speakers. This lower average value of F0 in male participants was related to the lower value of the parameter Flo. All other parameters had higher values compared to the norms for typical male speakers. In female participants, the parameters representing the standard deviation of the fundamental frequency (STD) and the degree of voice breaks in percentage (DVB) did not differ statistically from the norms, but had higher values than the norms. The values of the fundamental frequency of the voice (F0, Fhi, Flo) were statistically significantly lower compared to the values representing the norms for fe-

males without a voice disorder. All other acoustic parameters had statistically significantly higher values than the norms. These findings indicate significant deviations in the acoustic parameters of the voices of the participants with ataxic dysarthria, both in men and women, compared to typical speakers.

The fundamental voice frequency (F0) represents the number of vocal cord vibrations per unit of time (seconds) and varies between men, women, and even within individuals across different utterances (Langarani & Van Santen, 2014). In our research, the average F0 values were slightly lower in men, and statistically significantly lower in women compared to the norms. In women, this finding indicates impaired voice quality due to vocal cord dysfunction. Additionally, most of the other analysed acoustic parameters had higher values, with the majority showing a statistically significant difference from the norms. Elevated values of the Jitt parameter indicate the presence of voice perturbations and poorer voice quality (Deliyski & Gress, 1998). The presence of any type of voice variation leads to an increase in the vF0 parameter, as observed in our study. The Shim parameter, which indicates phonatory stability, increases in value due to vocal cord lesions, and is associated with breathiness and noise in the voice. In individuals with various types of dysarthria, including ataxic dysarthria, abnormally high values of the Jitt and Shim parameters have been noted, indicating pitch and volume perturbations, which is consistent with the findings of this research (Teixeira & Fernandes, 2014). The obtained elevated values of the DVB and DUV parameters in both male and female participants with ataxic dysarthria indicate the presence of interruptions and periods without voice during tasks requiring continuous phonation. These parameters are expressed as a percentage, and values close to 0 (zero) are expected in typical speakers, as continuous phonation should not have interruptions or voiceless periods. It is noteworthy that the interpretation of DVB and DUV values in individuals with dysarthria is scarce in available literature, despite the presence of speech and voice interruptions, as well as periods without phonation due to dysfunctions in respiratory, phonatory, and articulatory mechanisms. Overall, the findings of this research highlight the deviations in acoustic parameters, including F0, Jitt, Shim, DVB, and DUV, in individuals with ataxic dysarthria, indicating voice abnormalities and disruptions in the continuous phonation of speech. This fact is surprising, especially because, for example, the speech of individuals with hypokinetic and spastic dysarthria is characterised by voice breaks (Duffy, 2013). The speech of individuals with ataxic dysarthria is characterised by an inadequate rhythm with interruptions, which reduces its intelligibility and leads to the emergence of an unnatural quality of speech. This phenomenon is referred to as 'scanning speech', and perceptually, it is observed as speech production segmented into syllables (Henrich, Lowit, Schalling, & Men-

nen, 2006). The average values of these two parameters in a sample of 30 participants with ataxic dysarthria indicate the presence of impaired speech flow and prosodic characteristics.

A review of the available literature reveals that other researchers have obtained similar results. In the Kent et al. (2000) study, significant abnormalities were also observed in participants with ataxic dysarthria regarding the average values of parameters such as vF_0 and STD, while Jitt, vAm , and Shim showed a high degree of abnormality. The elevated values of the Jitt and Shim parameters in individuals with ataxic dysarthria can be attributed to impaired respiration and vocal cord function, which are common features in various types of dysarthria (White, 2012). These changes in parameter values are considered to be the fundamental characteristics of speech in individuals with ataxic dysarthria (Kent et al., 2000). This was additionally supported by a recent study conducted by Gómez-Coello et al. (2017), which also reported significantly higher values for the Shim and Jitt parameters, and lower values for F_0 compared to the norms, which aligns with the findings of our research. Furthermore, other studies analysing the acoustic characteristics of the voices in individuals with ataxic dysarthria, such as those by Ackermann and Ziegler (1994) and Kain et al. (2004), have consistently found statistically significantly higher average values for the Jitt parameter.

In individuals with ataxic dysarthria, the most prominent deficits are observed in the domains of articulation and prosody. The articulation of both consonants and vowels is disrupted due to the slow and inaccurate movements of the oral and pharyngeal muscles. Tongue movements, which are necessary for the clear articulation of vowels and consonants, are particularly affected in individuals with ataxic dysarthria, as they become limited and imprecise, with rapid and alternating movements of the tongue to the side and upwards. These abnormal tongue movements in patients with ataxic dysarthria contribute to the difficulties in producing precise and intelligible speech. Additionally, individuals with ataxic dysarthria experience difficulty in performing slow alternating lip movements (Enderby, 1986). As a result of these impairments, changes occur in the positioning of vowel formants on the frequency scale in individuals with ataxic dysarthria. The position of the tongue and lips play a crucial role in determining the positioning of the formants. Specifically, the height of the tongue during vowel articulation influences the position of F_1 , while the protrusion or retraction of the tongue affects the value of F_2 (Nieman, 2018). Similarly, the position and shape of the lips when producing vowels also contribute to the positioning of both F_1 and F_2 (Kent, Weismer, Kent, Vorperian, & Duffy, 1999).

Inadequate vowel articulation is commonly observed in various types of dysarthria, including ataxic dysarthria. Spectral analysis is a useful tool for detecting deviations in the expected frequencies of the for-

nants, as well as their centralisation. It can also reveal changes in formant spacing, shallower slopes, and variability in vowel transitions (Cballero-Morales, 2013). Moreover, spectral analysis can provide insights into the quality of the voice. Individuals with ataxic dysarthria often have a throaty voice quality, characterised by a rough or strained vocal quality (Carmichael, 2014).

In the present study, the results of the spectral analysis of the speech of 30 participants with ataxic dysarthria revealed statistically significant differences in the second formant (F2) among different vowels. The F2 values in the vowels /E/, /I/, and /U/ showed significant differences between participants with ataxic dysarthria and typical speakers ($p < 0.01$ for /E/ and /I/, $p < 0.05$ for /U/). Specifically, the position of the second formant (F2) in the vowels /E/ and /I/ was found to be significantly lower compared to the norms. The average F2 value in the vowel /E/ for participants with ataxic dysarthria was $M = 1479.333$ Hz, while it falls within the range between 1720 and 2000 Hz in typical speakers. In the vowel /I/, the average F2 value was $M = 1893.467$ Hz, whereas it ranges between 2100 and 2500 Hz for typical speakers. Interestingly, the average F2 value in the vowel /U/ for participants with ataxic dysarthria was statistically significantly higher ($M = 896.429$ Hz), compared to the F2 range observed in typical speakers, which is between 650 and 800 Hz. Notably, the average values of F1 and F2 for the vowels /A/ and /O/ in the participants with ataxic dysarthria were within the expected norms.

The reduction of F2 in vowels has been identified as a valid sign of impaired speech intelligibility in individuals with dysarthria, and aids in the classification of ataxic dysarthria (Lansford & Liss, 2014). Furthermore, the results of the study by Lansford and Liss (2014) indicate a correlation between the phenomenon of centralisation and poor speech intelligibility. The reduction in the slope of the second formant in vowels has been observed in this study, as well as in the study conducted by other authors (Kent et al., 1999; Kim et al., 2009). Kim et al. (2009), on the other hand, investigated the possibilities of F2 slope as a quantitative metric of the severity of speech-motor control deficits in dysarthria. Other studies have underlined the occurrence of 'formants frequency centralisation' and a reduction in the vowel space area in people with dysarthria. The formant centralisation ratio was examined by Sapir and associates (2010) as an objective measure for distinguishing dysarthric from normal speech. The authors discovered that this centralisation phenomenon arises from the irregular and reduced movements of the articulators, which result in narrower intervals between vowel formants, particularly between F1 and F2. Arsenic and colleagues (2019) determined the link between formant centralisation and communication quality in people with dysarthria.

Through the spectral analysis of the participants' speech samples, we observed statistically significant differences in the position of for-

nants compared to the norms in our research, along with the phenomenon of vowel centralisation. The values of the second formant were found to be significantly lower in the vowels /E/ and /I/, indicating centralisation. Additionally, although not statistically significant, the average value of F1 in the vowel /I/ was higher, further confirming the centralisation phenomenon in individuals with dysarthria. Conversely, the average values of F2 in the vowel /U/ were significantly higher, suggesting the absence of formant centralisation in this particular vowel.

The Limitations of the Study

It is important to acknowledge that this study has certain limitations. First, the sample size of participants with ataxic dysarthria is small, which may limit the possibility of drawing reliable conclusions. Additionally, the significant age variation among participants could be a confounding factor, as certain acoustic voice parameters can be influenced by age-related changes (Nishio, Tanaka, & Niimi, 2011). Therefore, future research should aim to include a larger and more age-homogeneous sample of individuals with ataxic dysarthria. Furthermore, while acoustic and spectral analysis of voice and speech provide objective quantitative data on deviations in voice and speech characteristics of individuals with ataxic dysarthria compared to typical speakers, it is important to complement these findings with perceptual assessment methods. Perceptual assessment can provide a more comprehensive understanding of speech pathology and its impact on communication. Future studies should consider integrating acoustic analysis and perceptual assessment in order to obtain a more holistic view of the speech characteristics of patients with ataxic dysarthria.

In addition, it would be beneficial to explore a broader range of acoustic voice parameters, as tools like MDVP can process multiple parameters (e.g., 33 acoustic parameters). Conducting spectral analysis on all sounds in a specific language spoken by individuals with dysarthria would provide more precise information on the specificities and characteristics of their voice and speech. Moreover, comparing the results of acoustic analyses across different types of dysarthria could help identify unique parameter values and formant arrangements that may be indicative of specific types of dysarthria or related conditions.

CONCLUSION

Undisturbed communication between individuals relies on the presence of clear and intelligible speech production, without interruptions or compromised voice quality. Ataxic dysarthria, a motor speech disorder primarily caused by cerebellar damage, manifests as muscle hypotonia,

slow and imprecise movements, tremors, and lack of coordination during speech articulation. This condition affects respiratory, phonatory, and articulatory mechanisms, resulting in voice quality disturbances, articulation difficulties, and prosodic deficits.

The computer program MDVP was used to analyse the acoustic voice parameters of a group of 30 participants with ataxic dysarthria, revealing statistically significant differences in the measured values. These values indicate a decrease in pitch, the presence of pitch and volume perturbations, as well as periods without voice and pauses during speech production. The significant deviations from the norms applicable to typical male and female speakers highlight the presence of a significant voice and speech pathology in individuals with ataxic dysarthria. Additionally, spectral analysis identified significant deviations in the frequency values of certain vowel formants, along with the occurrence of formant centralisation.

The results obtained during this study were compared and found to be consistent with the findings of previous studies in terms of many acoustic parameters and the frequency position of vowel formants. However, there is a scarcity of studies specifically focused on examining the acoustic characteristics of the voice and speech of individuals with ataxic dysarthria as a distinct sample, separate from other types of dysarthria. Furthermore, certain speech characteristics in individuals with ataxic dysarthria may not be easily identified through perceptual assessment alone, underscoring the importance of employing computer programmes as an additional method for voice and speech analysis. Overall, besides its diagnostic value, the acoustic analysis of voice and speech in individuals with ataxic dysarthria, as well as other types of dysarthria, can significantly contribute to determining appropriate treatment approaches. MDVP, for example, includes tasks that can facilitate treatment and assist patients in achieving optimal values for individual acoustic voice parameters.

REFERENCES

- Ackermann, H., & Ziegler, W. (1994). Acoustic analysis of vocal instability in cerebellar dysfunctions. *Annals of Otolaryngology, Rhinology & Laryngology*, 103(2), 98-104. <https://doi.org/10.1177/000348949410300203>
- Arsenic, I. (2019). *Characteristics of speech and voice as predictors of the quality of communication in adults with dysarthria*. Doctoral dissertation. University of Belgrade.
- Arsenic, I., Simic, N. J., Lazic, M. P., Sehovic, I., & Drljan, B. (2019). Characteristics of speech and voice as predictors of the quality of communication in adults with hypokinetic dysarthria. *Serbian Journal of Experimental and Clinical Research*, 22(2), 157-165. <https://doi.org/10.2478/sjocr-2018-0081>

- Caballero-Morales, S. O. (2013). Estimation of phoneme-specific HMM topologies for the automatic recognition of dysarthric speech. *Computational and Mathematical Methods in Medicine*, 2013. <https://doi.org/10.1155/2013/297860>
- Carmichael, J. (2014). Diagnosis of dysarthria subtype via spectral and waveform analysis. *Computer Systems Science & Engineering*, 29(1), 33-42.
- Chenery, H. J., Ingram, J. C., & Murdoch, B. E. (1990). Perceptual analysis of the speech in ataxic dysarthria. *Australian Journal of Human Communication Disorders*, 18(1), 19-28. <https://doi.org/10.3109/asl2.1990.18.issue-1.02>
- Deliyski, D., & Gress, C. (1998, November). Intersystem reliability of MDVP for Windows 95/98 and DOS. In *Annual Convention of American Speech-Language-Hearing Association*, San Antonio, Texas.
- Duffy, J. R. (2013). *Motor Speech disorders-E-Book: Substrates, differential diagnosis, and management*. Elsevier Health Sciences.
- Enderby, P. (1986). Relationships between dysarthric groups. *International Journal of Language & Communication Disorders*, 21(2), 189-197. <https://doi.org/10.3109/13682828609012276>
- Gómez-Coello, A., Valadez-Jiménez, V. M., Cisneros, B., Carrillo-Mora, P., Parra-Cárdenas, M., Hernández-Hernández, O., & Magaña, J. J. (2017). Voice alterations in patients with spinocerebellar ataxia type 7 (sca7): Clinical-genetic correlations. *Journal of Voice*, 31(1), 123-e1. <https://doi.org/10.1016/j.jvoice.2016.01.010>
- Hartelius, L., Runmarker, B., Andersen, O., & Nord, L. (2000). Temporal speech characteristics of individuals with multiple sclerosis and ataxic dysarthria: "Scanning speech" revisited. *Folia Phoniatica et Logopaedica*, 52(5), 228-238. <https://doi.org/10.1159/000021538>
- Henrich, J., Lowit, A., Schalling, E., & Mennen, I. (2006). Rhythmic disturbance in ataxic dysarthria: A comparison of different measures and speech tasks. *Journal of Medical Speech Language Pathology*, 14(4), 291.
- Isaković, L., & Kovačević, T. (2015). Communication of the deaf and hard of hearing: The possibilities and limitations in education. *Теме*, 39(4), 1495-1514.
- Jannetts, S., & Lowit, A. (2014). Cepstral analysis of hypokinetic and ataxic voices: correlations with perceptual and other acoustic measures. *Journal of Voice*, 28(6), 673-680. <https://doi.org/10.1016/j.jvoice.2014.01.013>
- Joanette, Y., & Dudley, J. G. (1980). Dysarthric symptomatology of Friedrich's ataxia. *Brain and Language*, 10(1), 39-50. [https://doi.org/10.1016/0093-934X\(80\)90036-X](https://doi.org/10.1016/0093-934X(80)90036-X)
- Kain, A., Niu, X., Hosom, J. P., Miao, Q., & Santen, J. P. V. (2004). Formant re-synthesis of dysarthric speech. In *Fifth ISCA Workshop on Speech Synthesis*.
- Kent, R. D., Kent, J., Duffy, J. R., Thomas, J. E., Weismer, G., & Stuntebeck, S. (2000). Ataxic dysarthria. *Journal of Speech, Language, and Hearing Research*, 43(5), 1275-1289. <https://doi.org/10.1044/jslhr.4305.1275>
- Kent, R. D., Weismer, G., Kent, J. F., Vorperian, H. K., & Duffy, J. R. (1999). Acoustic studies of dysarthric speech: Methods, progress, and potential. *Journal of Communication Disorders*, 32(3), 141-186.
- Kim, Y., Weismer, G., Kent, R. D., & Duffy, J. R. (2009). Statistical models of F2 slope in relation to severity of dysarthria. *Folia Phoniatica et Logopaedica*, 61(6), 329-335. <https://doi.org/10.1159/000252849>
- Lansford, K. L., & Liss, J. M. (2014). Vowel acoustics in dysarthria: Mapping to perception. *Journal of Speech, Language, and Hearing Research*, 57(1), 68-80. [https://doi.org/10.1044/1092-4388\(2013\)12-0263](https://doi.org/10.1044/1092-4388(2013)12-0263)
- Langarani, M. S. E., & Van Santen, J. (2014, December). Modeling fundamental frequency dynamics in hypokinetic dysarthria. In *2014 IEEE Spoken Language Technology Workshop (SLT)* (pp. 272-276). IEEE. <https://doi.org/10.1109/SLT.2014.7078586>

- Liss, J. M., Spitzer, S. M., Caviness, J. N., & Adler, C. (2002). The effects of familiarization on intelligibility and lexical segmentation in hypokinetic and ataxic dysarthria. *The Journal of the Acoustical Society of America*, 112(6), 3022-3030. <https://doi.org/10.1121/1.1515793>
- Mariotti, C., Fancellu, R., & Di Donato, S. (2005). An overview of the patient with ataxia. *Journal of Neurology*, 252(5), 511-518. <https://doi.org/10.1007/s00415-005-0814-z>
- Nieman, S. (2018). *The Effect of Breathly and Strained Vocal Quality on Vowel Perception*.
- Nishio, M., Tanaka, Y., & Niimi, S. (2011). Analysis of age-related changes in the acoustic characteristics of voices. *Journal of Communications Research*, 2(1).
- Ogawa, K., Yoshihashi, H., Suzuki, Y., Kamei, S., & Mizutani, T. (2010). Clinical Study of the Responsible Lesion for Dysarthria in the Cerebellum. *Internal Medicine*, 49(9), 861-864. <https://doi.org/10.2169/internalmedicine.49.2913>
- Ozsancak, C., Parais, A. M., & Auzou, P. (2002). Perceptual analysis of dysarthria: presentation and validation of a clinical scale. Preliminary study. *Revue Neurologique*, 158(4), 431-438.
- Rosen, K., Kent, R., & Duffy, J. (2003). Lognormal distribution of pause length in ataxic dysarthria. *Clinical Linguistics & Phonetics*, 17, 469-486. <https://doi.org/10.1080/0269920031000105345>
- Sapir, S., Ramig, L. O., Spielman, J. L., & Fox, C. (2010). Formant centralization ratio: A proposal for a new acoustic measure of dysarthric speech. *Journal of speech, Language, and Hearing research*, 53(1), 114-125. [https://doi.org/10.1044/1092-4388\(2009/08-0184\)](https://doi.org/10.1044/1092-4388(2009/08-0184))
- Schalling, E., Hammarberg, B., & Hartelius, L. (2007). Perceptual and acoustic analysis of speech in individuals with spinocerebellar ataxia (SCA). *Logopedics Phoniatrics Vocology*, 32(1), 31-46. <https://doi.org/10.1080/14015430600789203>
- Šešum, M. (2013). Komparativna analiza formantnih struktura glasova sestara i glasova monozigotnih bliznakinja [Comparative analysis of the voice formant structures among siblings and monozygotic twins]. *Beogradska defektološka škola*, 19(3), 515-527.
- Šešum, M. (2021). Forenzička fonetika - identifikacija govornika [Forensic phonetics - identification of speaker]. U: S. Knežević (Ur.), *Forenzičko računovodstvo, istražne radnje, ljudski faktor i primenjeni alati* (str. 828- 859). Univerzitet u Beogradu - Fakultet organizacionih nauka.
- Šešum, M. (2022). Uloga surdologa i logopeda u forenzičkoj analizi glasa i govora [The role of a surdologist and a speech pathologist in forensic analysis of voice and speech]. V simpozijum logopeda Srbije „Timski rad u logopediji I defektologiji“, Beograd, Srbija
- Shriberg, L. D., Kent, R. D., & Munson, B. (2003). *Clinical phonetics*. Boston, MA: Allyn and Bacon.
- Sidtis, J. J., Ahn, J. S., Gomez, C., & Sidtis, D. (2011). Speech characteristics associated with three genotypes of ataxia. *Journal of Communication Disorders*, 44(4), 478-492. <https://doi.org/10.1016/j.jcomdis.2011.03.002>
- Sidtis, J., Strogther, S., Naoum, A., Rottenberg, D. & Gomez, C. (2010). Longitudinal Cerebral Blood Flow Changes during Speech in Hereditary Ataxia. *Brain and Language*, 114(1), 43-51. <https://doi.org/10.1016/j.bandl.2010.03.007>
- Spencer, K. A., & Dawson, M. (2019). Dysarthria profiles in adults with hereditary ataxia. *American Journal of Speech-Language Pathology*, 28(2S), 915-924. https://doi.org/10.1044/2018_AJSLP-MS18-18-0114
- Spencer, K. A., & France, A. A. (2016). Perceptual ratings of subgroups of ataxic dysarthria. *International Journal of Language & Communication Disorders*, 51(4), 430-441. <https://doi.org/10.1111/1460-6984.12219>

- Teixeira, J. P., & Fernandes, P. O. (2014). Jitter, Shimer and HNR classification within gender, tones and vowels in healthy voices. *Procedia Technology, 16*, 1228-1237. <https://doi.org/10.1016/j.protcy.2014.10.138>
- White, K. (2012). *Acoustic characteristics of Ataxic Dysarthria*. Doctoral dissertation. Gainesville: University of Florida.
- Vogel, A. P., Wardrop, M. I., Folker, J. E., Synofzik, M., Corben, L. A., Delatycki, M. B., & Awan, S. N. (2017). Voice in Friedreich ataxia. *Journal of Voice, 31*(2), 243-e9. <http://dx.doi.org/10.1016/j.jvoice.2016.04.015>
- Ziegler, W. (2003). Speech motor control is task-specific: evidence from dysarthria and apraxia of speech. *Aphasiology, 17*(1), 3–36.
- Zyski, B. J., & Weisiger, B. E. (1987). Identification of dysarthria types based on perceptual analysis. *Journal of Communication Disorders, 20*(5), 367-378. [https://doi.org/10.1016/0021-9924\(87\)90025-6](https://doi.org/10.1016/0021-9924(87)90025-6)

АКУСТИЧКЕ КАРАКТЕРИСТИКЕ ГЛАСА И ГОВОРА ОДРАСЛИХ ОСОБА СА АТАКСИЧНОМ ДИЗАРТРИЈОМ

Ивана Арсенић, Надица Јовановић Симић, Миа Шешум, Бојана Дрљан
Универзитет у Београду, Факултет за специјалну едукацију и рехабилитацију,
Београд, Србија

Резиме

Атаксична дизартрија се јавља као последица оштећења малог мозга услед ког долази до поремећаја у координацији и прецизности покрета мишића ефекторног система, нарочито артикулатора, уз хипотонију мишића. Говор особа са атаксичном дизартријом се одликује непрецизном артикулацијом консонаната и вокала, монотоншоћу, пролонгирањем говорних интервала, стереотипним интонационим обрасцима, уједначеним акцентом и изражавањем у кратким фразама. Присутни су храпав, напет и пригушен глас, поремећај ритма и прозодије говора, повећан број неадекватних пауза у говору, „скандирање“ приликом вокализације и колебљива модулација гласа, неадекватан шаблон наглашавања слогова, као и абнормалне вредности акустичких параметара гласа.

Данас се све чеће спроводи акустичка анализа гласа и говора помоћу компјутеризованих уређаја, на основу које се добијају објективни, квантитативни подаци. Нумеричким и графичким приказима представљају се разлике у вредностима акустичких параметара гласа између испитаника са патологијом говора и типичних говорника. Такође, добија се спектрографски приказ положаја форманата гласова чији правилан облик, положај и међусобни однос омогућавају препознавање сваког гласа појединачно и утичу на општу разумљивост говорне продукције. Програми за акустичку анализу гласа и говора омогућавају и праћење напретка пацијента у току третмана, али и садрже задатке помоћу којих пацијенти могу да побољшају квалитет гласа и разумљивост говорне продукције.

Мали број студија се бави испитивањем акустичких карактеристика гласа и говора особа са атаксичном дизартријом. Углавном су ови испитаници део већег узорка у коме се дизартрија посматра глобално, као моторички поремећај говора, без истицања специфичности везаних за тип дизартрије. Сходно наведеном, циљ овог истраживања је био да се утврде акустичке карактеристике гласа и говора испитаника са атаксичном дизартријом и да се испита у којој мери се оне разликују од ка-

рактеристика типичних говорника. Узорак је чинило 30 пацијената са атаксичном дизартријом, оба пола и узраста од 21 до 82 године (АС=56.07). Применом компјутерског програма за мултидимензионалну анализу гласа (MDVP) утврђене су вредности 10 акустичких параметара гласа за сваки пол појединачно. Истим програмом, спектралном анализом узорка говора добијеног читањем Балансираног текста, утврђене су фреквенцијске вредности прва два форманта свих пет вокала српског језика.

Резултати анализе су показали статистички значајне разлике у вредностима акустичких параметара између испитаника са атаксичном дизартријом и референтних вредности које важе за типичне говорнике, а које је генерисао MDVP. Разлике су утврђене на параметрима који указују на варијабилност фреквенције гласа (F0, Fhi, Flo, STD, Jitt, vF0) и варијабилност интензитета гласа (Shim и vAm), као и на присуство прекида у гласу (DVB) и перода без гласа (DUV). Спектралном анализом су утврђене статистички значајне разлике између испитаника са атаксичном дизартријом и типичних говорника српског језика на другом форманту (F2) вокала /Е/ ($p < 0.01$), вокала /И/ ($p < 0.01$) и вокала /У/ ($p < 0.05$), при чему је утврђена и централизација фреквенције форманата. Значајна одступања од норми које важе за типичне говорнике указују на перцептуално упадљиве промене које су присутне у гласу и говору особа са атаксичном дизартријом.

TAILOR-MADE COMICS ON GEOFORENSICS IN LANGUAGE TEACHING: INTERFACULTY COOPERATION AND APPLICATION

Lidija Beko^{1*}, Dragoslava Mićović²

¹University of Belgrade, Faculty of Mining and Geology, Belgrade, Serbia

²University of Criminal Investigation and Police Studies, Belgrade, Serbia

Abstract

Since comics are known as an increasingly popular modern educational strategy which have not been common in university classes so far, this paper represents a creative attempt to change this practice. Namely, we believe that a good comic, or more precisely an educational-scientific comic, could be a useful tool for teaching, bringing about change and inventiveness, and connecting topics and narratives in a multitude of registers. Additionally, we believe that the potential of university teaching can be increased by combining comics and foreign language teaching, not only due to the already mentioned interest in comics as a language method but also due to its multidisciplinary and the possibility of interfaculty cooperation as a completely new language practice, hitherto unexamined or insufficiently tested in language learning. The paper first discusses the arguments for and against the use of comics in teaching foreign languages, and then offers a practical overview on how to create a comic. Finally, we present our experiences in achieving interfaculty cooperation. In other words, this paper intends to shed light on three aspects: (1) promoting the idea of the teacher as a creator of innovative materials and strategies in education; (2) using comics as a language activity; and (3) the intellectual flexibility of students and lecturers in using comics at two different faculties. The research was conducted with the students of the Department of Geology of the Faculty of Mining and Geology of the University of Belgrade, and with the students of the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies.

Key words: educational-scientific comics, geoforensics, language teaching, teacher-creator, inter-faculty cooperation.

* Corresponding author: Lidija Beko, University of Belgrade, Faculty of Mining and Geology, 7 Đušina Street, 11000 Belgrade, Serbia, lidija.beko@rgf.bg.ac.rs

СТРИПОВИ О ГЕОФОРЕНЗИЦИ У НАСТАВИ ЈЕЗИКА: МЕЋУФАКУЛТЕТСКА САРАДЊА И ПРИМЕНА

Апстракт

Будући да су стрипови познати као све популарнија савремена образовна стратегија, а да у универзитетској настави они до сада нису били уобичајени, овим радом смо покушали да на креативан начин променимо ту праксу. Наиме, сматрамо да добар стрип, односно образовно-научни стрип, може бити користан вид наставе, да доноси освежење и промену, као и да повезује теме и наративе у више регистара. Такође верујемо у то да се спајањем стрипа и наставе страног језика може повећати потенцијал универзитетске наставе, не само због већ поменутих занимљивости стрипа као језичке методе, већ и због мултидисциплинарности и могућности остварења међуфакултетске сарадње као потпуно нове језичке праксе, до сада неиспитане или недовољно испитане у учењу језика. У раду се најпре наводе аргументи за и против коришћења стрипа у настави (страног језика), а затим се нуди практичан приказ о томе како се креира стрип. На крају, рад дискутује искуства аутора при остваривању међуфакултетске сарадње. Другим речима, овим радом намера нам је да осветлимо три аспекта: (1) промовисање идеје о наставнику као креатору иновативних материјала и стратегија у образовању, (2) употребу стрипа као језичке активности и (3) интелектуалну флексибилност студената и предавача при употреби стрипа на два различита факултета. Истраживање је обављено са студентима Одсека за геологију Рударско-геолошког факултета Универзитета у Београду и са студентима Департмана форензичког инжењерства Криминалистичко-полицијског Универзитета у Београду.

Кључне речи: образовно-научни стрип, геофорензика, настава језика, наставник-креатор, међуфакултетска сарадња.

INTRODUCTION

We belong to a large number of authors (Tadić, 2008; Tatalović, 2009; Trnova et al., 2013; Maričić & Popović, 2014; Toh et al., 2017; Lo et al., 2019; Akcanca, 2020; Wijaya et al., 2021) who consider comics to be an interesting and useful tool in language teaching. Although comics are believed to be an entertaining and fun tool which brightens the atmosphere of classes, they can also be seen as an effective and serious educational tool when it comes to young academics for whom this type of language practice is not common. The novelty is all the greater and more serious because we used the same educational-scientific comic (hereafter referred to as ESC) in class for the first time at two different faculties: the Department of Geology of the Faculty of Mining and Geology of the University of Belgrade, and the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. Interfaculty cooperation opens the possibility for the students and professors of the two faculties to frame new forms of practice, affiliation and reciprocity, wherein they can think and learn from the repertoire of joint practice, teaching materials and concepts as members of a 'new team'. A

new cohesive approach to learning allows the teaching team with a common interest or passion to communicate with each other and learn how to understand their own state of development from multiple perspectives, to re-examine assumptions and patterns, to discover hidden possibilities, and to use this self-awareness to move forward (Wenger, 2000, p. 230).

In the words of de Hosson et al. (2018, p. 2), a large number of works dealing with comics, as well as ESC, rely on the use of existing comics, where students are readers who identify scientific information conveyed in comics, examine scientific cohesion, and memorise specific scientific data. The role of the teacher is to be a guide who facilitates the identification and acquisition of relevant scientific information, concepts and vocabulary (Hosler & Boomer, 2011; Chevallier, 2013; Arguel et al., 2017).

THE RISKS AND PITFALLS OF USING COMICS IN THE CLASSROOM

The fact that comics are mostly composed of images and do not deal deeply with the topics present in them was accepted as the main reason for the underestimation of their value. This led many educators to believe that comics were created just for fun, and that they had little or no educational and literary value (Lo et al. 2019, p. n.d.), which was what initially prevented the use of comics in the process of education and scientific research. There were even periods during which it was considered forbidden to read comics during classes (Toh et al., 2017, p. 3), as comics were regarded as an ‘enemy’ of schools. Therefore, students caught reading comics in some schools were punished (Clever, 2008, p. 29). However, these periods did not last long, and it can be said that comics have regained the value and role they deserve in the educational process (Tilley, 2008, p. 24).

According to Trnova et al. (2013, p. 4-5), the disadvantages and risks of using comics can be listed as follows:

- There is a risk of their excessive or inappropriate use in classes, and inadequate choice of content;
- Shortening and simplifying texts can result in ambiguous and scientifically incorrect formulations;
- It is possible that a fixed linking of a phenomenon or situation to its comic solution can result in describing the phenomenon in a way that is not fully in line with reality. Therefore, the comic should include additional, i.e. alternative presentations in order to avoid misleading students;

- Students may find the requirement of interdisciplinary skills an obstacle. However, this can be solved by appropriate guidelines, or by choosing an appropriate task;
- Incorrect processing in comics, such as the simplification of the text, can lead to confusion and errors, so prevention is needed in the form of combining comics with other teaching methods and tools (Ibid).

THE PERSPECTIVES OF USING COMICS IN TEACHING

Visual literacy, which characterises the younger generations, suggests that today's youth bases their mode of expression on visual communication – a multitude of pictures, and little text. Moreover, young people easily integrate text and images, move quickly between real and virtual environments, and often have problems with long texts and uninteresting instructions due to poor concentration or short periods of concentration. The aforementioned should all be taken into account by teachers when creating tasks.

Today, students have a habit of searching the Internet for information they need in their private and educational lives, and increasingly refuse to learn by heart. They feel that everything can be found on the Internet, and that there is no need to remember or recall facts. They refuse to read long texts and prefer visual stimuli. Their needs are met in comics that contain short messages placed in the meaningful contexts created by special images. Also, according to research, students adopt abstract concepts better if they use comics instead of conventional textbooks (Kabapinar, 2005, p. 136).

The advantages of comics, or teaching through comics, can be explained by the following arguments:

- Comics have great motivational potential;
- Short summary texts are suitable for today's Internet generation that refuses to read long texts;
- Comics put topics in a meaningful context;
- It is easier to visualise problems, as problems are presented through pictures;
- They are examples of an interdisciplinary approach – the use of scientific knowledge and skills, mother tongue, art, IT and English;
- They make a significant part of non-formal education, either in the form of printed materials or interactive materials on web-sites (Trnova et al., 2013, p. 5).

Maričić and Popović (2014, p. 619) are of the opinion that comics as a form are unfairly neglected, and should be used in the classroom like other media of communication because they offer great potential that can be used for developing language (lexical, grammatical, pragmatic) and

sociocultural competence, as well as for practicing language production and reception skills.

In addition to the above arguments, we were also guided by what Rose (2007, p. 30) calls the ‘culture of quality’, or the quality of work and organisational structure in teaching. Quality management means that what we implement as innovation needs to be focused on good organisation, to be well focused in general, to have a clear and efficient task function, to be based on personal and professional qualities that can help each student, to have moral value, and to have a democratic value, because it encourages all participants in the process to cross the boundaries of being passive recipients.

When it comes to interfaculty collaboration, joint task management focuses teachers on integrated management that expands the boundaries of management beyond a single classroom or faculty. The efficiency of such an endeavour will draw values from the repertoire based on the adjustment of all participants, and according to the set goal.

In a previous paper on interfaculty cooperation, wherein the focus was on teachers’ experiences and teaching activities using the same material, Beko and Mićović (2022, p. 89) noticed that such cooperation in the field of foreign language teaching as an educational challenge is rarely promoted by institutions of higher education even within the same country. The common practice of teaching the same foreign language activity at two completely different faculties – in our case two universities (the University of Criminal Investigation and Police Studies and the University of Belgrade, Faculty of Mining and Geology) – is a situation in which the heterogeneity of lecturers, students and teaching materials may potentially lead to tensions and uncertainty¹.

It is equally important to point out that innovations of interfaculty scope are not related only to building new forms of work and increasing the capacity of institutions. This means that, in addition to the development of professional, intercultural, and technical capacities, the importance of the development of ‘emotional capacities’ should be emphasised because teachers’ feelings about success and efficiency are factors that directly affect students’ achievements. Teachers’ feelings are not usually taken into account by English language teaching methodology, and Benesch (2018,) notices that “emotions in ELT have mainly been considered as private psychological phenomena” (p. 3). In her research, Benesch “presented an alternative to psychological approaches to emotions that construct English language teachers as isolated individuals who experience emotions privately” (2018, p. 7), and instead tried to illustrate the ways in which the teachers’ emotions are the effects of interactions

¹ For more on the teachers’ attitudes and proposed activities see (Beko and Mićović, 2022).

between teachers, institutional policies, and students. According to Timperley and Phillips (2003), “the complex interplay of new knowledge, how to teach it, and unanticipated changes in students’ achievements help to achieve changes in teachers’ feelings of self-efficacy in their expectations of students” (p. 639).

HOW TO CREATE A TAILOR-MADE EDUCATIONAL-SCIENTIFIC COMIC

There are a lot of ready-made comics available on the market. There are comics that are made specifically for educational purposes – they tell a historical story, or graphically explain a natural or social phenomenon (Tadić, 2014, p. 207). In addition to such purpose-drawn educational comics, which do not have to be funny, there are many comics created with the sole intention of entertaining the reader, and those can be used in the classroom as well, under the supervision of the teacher (Ibid, p. 209). The teacher’s task is to constantly find new forms of work in order to make the lesson more interesting and harmonise it with the interests of his/her students (Maričić & Popović, 2014, p. 622).

Comics are usually made by hand, with the artist drawing panels for a story created by the writer. Illustrations can be black and white, or in colour. The development of technology has enabled comics to be created digitally with the help of applications². There are also a number of online comics dealing with science and scientific topics³. Therefore, teachers can choose some of the ready-made comics available, if they find one suitable for their needs in the classroom. Even though there are a lot of scientific comics available, the chances of finding one best suited for a particular course are slim to none. This is a situation in which teachers can create comics on their own. This is also what we opted for, and an overview of the process of creating the tailor-made comic we used in class with two different groups of students is given in the text below. This particular comic was created by Lidija Beko and illustrated by Mijat Mijatović.

The creation of the comic occurred in four stages, discussed in the following subsections of the paper.

² Some of them include Make Beliefs Comic (<http://www.makebeliefscomics.com>), Comic Life (<http://comiclifecom.com/>), Strip Generator (<http://stripgenerator.com>), Storyboard That (<http://www.storyboardthat.com>), Comic Creator by Read Write Think (<http://www.readwritethinkink.org>), Toondo (<http://www.toondo.com>) or Picton (<https://www.pikton.com/mk>), to name just a few of them (Tatalović, 2009; Vijaia et al., 2021);

³ Such comics are to be found on the following websites: LabRatz on laboratory and cabinet life, Newton and Copernicus on the adventures of laboratory rats, or PhD on research work.

Stage 1: Selecting and Creating a Story

When choosing a comic, Petrovački and Savić (2012, p.14) suggest keeping in mind the following criteria: *psychological* – the meaning should be clear, and the text should be understandable and distinct, whereas the content should be interesting for students, so that its interpretation would cause satisfaction; *aesthetic* – the images should have certain aesthetic and artistic value; and *pedagogical* – the situation in the comic should be appropriate for the age of the students, and their interests. Therefore, the same criteria should be applied when selecting a story which will be translated into a comic.

In addition to the above criteria, we should also take into account the type of course, i.e. the language being taught (if a General English (GE) course is being taught, then any topic suitable for a GE course can be chosen, and if an English for Special Purposes (ESP) course is being taught, then the topic should be related to a particular field of interest). Preferably, the story should be related to the topics covered by the main courses within the curriculum. In our case, those courses include Mineralogy, Geology, Palentology or Forensic Science⁴.

The story selected for making the comic used and given as an example in this article is a true story, and a good example of an interdisciplinary approach simultaneously covering geoscience, police investigation and forensic science. This is why it also proved appropriate for use at two different faculties.

Geology Mystery Files:

The Case of Vandals, Rocks, and Smashed New Cars

As long as there are people, there will be imaginative ways to destroy someone's property. An interesting example of that is the case of vandalism that occurred somewhere along the standard car transportation route from Detroit to New Jersey. The Penn Central Transportation Company was in a pickle due to mysterious incidents of smashed and dented new cars that were transported via their railroad cars.

The idea that someone would throw rocks at a passing train was insane. It was even more insane (and impossible) to have the police wait all along the tracks from Michigan to New Jersey in an attempt to catch the culprits. Especially since the cars were transported via two routes: one passing through Pennsylvania, and the other through New York City.

⁴ One of the books that helped in selecting a story is *An Introduction to Forensic Geoscience* by Elisa Bergslien. This is a book fundamental for training in geoscience, but its goal is also to familiarise the readers with the wide range of ways in which geoscience principles and geological materials can be utilised forensically. In addition to theory, it includes the examples of real criminal cases to help make connections between theory and real-world application.

So, what was the transportation company to do? They contacted the Pennsylvania Geological Survey and asked their researchers to inspect rocks found in smashed cars. Of course, everyone was aware that there were probably many places along these two routes that had the same types of rocks. However, the element of luck had its fair share in this story.

It turned out the combination of rocks the vandals used wasn't that common. They were metamorphic rocks that contained feldspar, quartz, biotite mica, chlorite, and slender crystals, probably apatite. The researchers consulted geologic maps, which helped them eliminate most of the locations from Detroit to New Jersey, and leave two sites: one in New York and one in Pennsylvania.

Upon closer inspection of the sites, it turned out the one in Pennsylvania had almost no apatite, while the NY location was rich in both apatite and biotite. They had a winner! The local police focused on this particular area during a regular Detroit-New Jersey car transport and they easily caught the vandals who enjoyed throwing rocks at new cars. Now, why did the vandals do it? That's a question for some other field. Perhaps psychology.

Figure 1. Text of the selected story

Stage 2: Sequencing frames via text

In this stage, an outline of the comic was made using only text. In other words, the story given above was broken down into sequences giving a rough idea what each panel would contain. This stage provided a skeleton of the story and was used by the graphic artist/illustrator while making drawings in the next stage.

Illustration 1

In the box in the corner:

Somewhere in Pennsylvania...

A man in a suit on the phone (maybe the company Boss):

Some vandals have been smashing brand new cars on our cargo trains for weeks!

A younger man:

I will deal with that problem immediately, sir!

Illustration 2

The younger man on the phone:

Hello, Pennsylvania Geological Survey lab? The Penn Central company needs you to check out some rocks URGENTLY!

...

Figure 2. Example of sequencing of the story

Stage 3: Making drawings

In this stage, based on the previous framework, the graphic artist produced the first rough sketch of the future comic, outlining the layout of illustrations and the text. One should take care to not put too much text in a panel, and to limit the number of speech bubbles as well as the number of words in a panel.

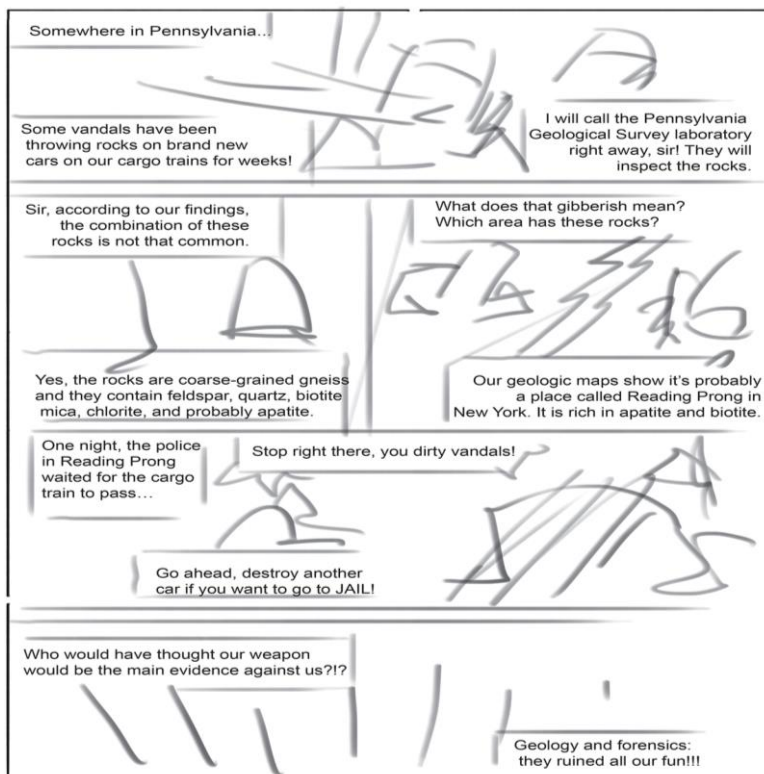


Figure 3. Example of rough drawings of the future comic

Stage 4: Making comics

When the rough sketch described in the previous stage was checked and approved, the process of making the actual comic continued. Within this stage, the drawings were finished, each frame was put in its place, and the comic took its final form.



Figure 4. Comic book example (illustrated by Mijat Mijatović)

HYPOTHESES AND METHODOLOGY

This research is designed to examine the interest and sensitivity of students in using scientific comics in English classes in their first year of studying geology at the Department of Geology at the Faculty of Mining and Geology of the University of Belgrade, and in their first year of studying forensic engineering at the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. We assumed that the respondents would show openness and understanding for the adoption of new and different learning patterns that are in line with their academic needs. The respondents were expected to discover the fundamental motives that comics offer in science, as well as that solving the tasks related to criminal acts does not exclude aesthetics, morals or humour. Learning and solving forensic cases thusly opens the possibility for students to study an area that abounds in examples contrary to culture and morals in a culturally appropriate way.

The study aims to prove the following hypotheses: Hypothesis 1) the scientific comic is a useful educational activity in the dual learning of language and forensics at the two faculties; Hypothesis 2) the scientific

comic connects real life with the academic one in a convincing way; and Hypothesis 3) the scientific comic additionally and positively motivates students to include aesthetics, morals and humour in their studies.

The participants of this study were first year students who attended the English language course in 2021, and a total of 98 respondents participated in this study. It is important to point out that all the students who participated in this research at both faculties had previously had classes where the comic presented in this paper was used. Therefore, they were familiar with the comic and the possibilities of its use in the classroom. In order to examine what the students' opinions were following the classes during which the scientific comic was used, a questionnaire of 10 closed ended questions was made, and the answers were given based on a 5-point Likert scale (1 – Strongly Disagree; 2 – Disagree; 3 – Neither Agree nor Disagree; 4 – Agree; 5 – Strongly Agree). The questionnaire was posted on the Moodle platform, and the students were given a maximum of 30 minutes to complete it. The process was conducted in the course of their regular English classes in October 2021. All students gave their consent to participate in the research. The researcher informed them that their answers would remain confidential and instructed them to be as open as possible in order to contribute to the validity and the success of the research study. The researchers analysed the results of the application and the use of scientific comics through numerical data, and connected them with practical experiences.

RESULTS AND DISCUSSION

The results of the research are shown in Table 1.

The answers presented in the above table confirm our expectations, taking into account our impressions of the class. Concerning Question 1, 72.4% of the participants of the survey strongly agree that comics are a very positive experience, and 22.4% agree that they are a positive experience. This leads us to the conclusion that the students liked a theme from geoforensics being presented in an artistically convincing way through pictorial illustrations. Contrary to the stereotype claiming that comics usually deal with fictional characters and events, true events and authentic characters were given in our comic. Through this scientific comic, students were not introduced to the world of illusions, and we are of the opinion that it would be useful to add additional information to the comic for those who are interested in reading about the case in more detail, so that they would be able to find out the names of those involved in the case, the time of the described crime, and the verdicts of the subsequent trial.

Table 1.

Question	1 (Strongly Disagree)	2 (Disagree)	3 (Neither Agree nor Disagree)	4 (Agree)	5 (Strongly Agree)
1. <i>I assess that comics as a language activity are a positive experience.</i>	0%	1%	4.2%	22.4%	72.4%
2. <i>I assess that comics as a language activity are a negative experience.</i>	85.7%	6.1%	5.1%	2.1%	1%
3. <i>Comics and comic text are in line with my academic interests.</i>	0%	1%	15.3%	34.7%	49%
4. <i>Multidisciplinary areas can be adopted through comics: geology, forensics, foreign language.</i>	0%	1%	6.1%	22.4%	70.5%
5. <i>Real life examples in comics affect the learning and use of different language registers: professional language, informal language, jargon, etc.</i>	0%	1%	10.2%	31.6%	57.2%
6. <i>Comics can be stimulating even in the higher years of language learning.</i>	1%	1%	7.1%	30.6%	60.3%
7. <i>Comics help to see the role of science and language in professional life more clearly.</i>	0%	3.1%	13.3%	33.6%	50%
8. <i>The comic suits my aesthetic taste.</i>	3.1%	4.1%	16.3%	30.6%	45.9%
9. <i>Comics meet my moral standards.</i>	1%	1%	12.2%	30.6%	55.1%
10. <i>Comics can reinvigorate classwork with humour.</i>	0%	0%	6.1%	12.2%	81.7%

Question 2 was asked in order to precisely establish the percentage of students who did not experience the class positively, and not to confirm the previous question. The percentage suggests that the majority of the students did not have a negative experience. In other words, 85.7% of the respondents think that they did not have a negative experience, and a total of 14.3% of the respondents found the experience to be less pleasant. This suggests that not all students are ready for innovation from the very first class. Moreover, not all students are open to cooperation within the new learning environment, especially when it comes to their first year of study.

Answering Question 3, 49% of the respondents strongly agree, and 34.7% of the respondents agree that comics and the texts of comics are in line with their academic interests. This makes the majority of 83.7%, confirming our assumption that comics are a great idea, and a good way to present geoforensics or forensics through painting and art. Academic knowledge can be achieved in more ways besides the traditionally accepted ones, especially when everyday life and its various examples are introduced into the world of theory. In the academic sense, however, it is important to cover as many areas of major studies as possible. However, one should not overdo it with comics, because they will lose their persuasiveness.

As far as Question 4 is concerned, according to the majority of the respondents (70.5% strongly agree, and 22.4% are less convinced, which is a total of 92.9%), multidisciplinary areas, such as geology, forensics or foreign language, can be adopted through comics. In other words, the majority of the respondents agree that comics unite more than one scientific field and sphere of knowledge. Therefore, if done in moderation, the combination of text and comics directs attention to the most important details and describes real-life contexts, censoring unnecessary details and avoiding trivialisation, while artistic effects follow the plot and its unfolding. Language is adapted to the speakers and speech situations. Thus, several disciplines, such as language, forensics, geology, and ethics, are imperceptibly intertwined, and this is done in an educationally useful way.

A large percentage – 57.2% of the respondents strongly agree, while 31.6% of the respondents agree with the statement covered by Question 5, which shows that the majority of the respondents are aware that comics nurture various forms of speech. Depending on the speaking circumstances, students are given the opportunity to practice and adopt different forms of formal and informal types of communication in specific situations. Also, depending on the circumstances, students can show their knowledge of the forms of speech used in specific situations in an appropriate amount and varying degrees of seriousness. The practical and the didactic must be carefully harmonised. If the text in the comics is too didactic, it could lose its connection with the context, resulting in a less interesting reading. In other words, the students would quickly lose motivation, and the comic would cease to be linguistically and scientifically stimulating.

The majority of the students agree (60.3% strongly agree and 30.6% agree) with Question 6, which states that comics can be stimulating even in the higher years of language learning. Such a result suggests that comics could serve as a useful contribution to traditional teaching, that they can illustrate different types of speech, and that they can help the students who have a photographic memory, or those who learn more easily through stories, memorise information more smoothly. The classic

way of teaching, that is, teaching through texts in the academic register, still remains the main type of academic teaching, while comics, animations, illustrations and the like can only be good additions.

The answers to Question 7 show that 50% of the respondents strongly agree, and 33.6% of the respondents agree that comics help students see the role of science and language in professional life more clearly. Although the percentage of 'strongly agree' and 'agree' answers considered together is rather high, it is a little bit lower than it is for previous questions, which leads us to the conclusion that, although comics are stimulating in learning, the professional life of our respondents is still a matter of the distant future, and they are not completely sure to what extent it is really important. Here, they should mostly be confident that scientific comics and other activities chosen by their lecturers contribute to their overall knowledge. Comics cannot be constantly applied in the field of forensics and geoforensics, since 'stereotypical' learning is prevalent. However, they are pragmatic and instructive enough for professional life. Promoting science and professional life through comics is exciting because it brings about change, but research on how much can be achieved with their use is still in its infancy.

The answers to Question 8 are dispersed to some extent. The majority of the respondents – 76.5% (45.9% strongly agree, and 30.6% agree) agree that the comic suits their aesthetic taste. It was noticed during classwork that a number of students had a problem with some pictures rich in text. In situations such as this, a more balanced approach regarding drawings and text should be taken. A problem of this kind can be overcome by constructing more frames/pictures in order to avoid overcrowding the panels. This also suggests that if a more complex story is selected, more space should be allocated for it in the textbook in order to better distribute the amount of useful details and increase visibility. The image to text ratio is important in learning, and it also determines the aesthetic moment when it comes to evaluating comics as a teaching tool.

The majority of the respondents (55.1% strongly agree and 30.6% agree) confirm that comics meet their moral standards. In other words, the majority of the respondents answered in favour of the moral aspect of comics (Question 9). Perhaps this aspect is not crucial for students, or it is not something they would think about a lot; however, such a high percentage suggests that they are not exclusively interested in knowledge and experience, that their engagement at the faculty is not focused only on academic values and knowledge, and that they are aware of moral standards. Subsequent research could shed more light on this particular aspect.

Finally, as can be seen from the table, the students do not have any negative attitude towards humour (81.7% strongly agree, and 12.2% agree that comics can reinvigorate classwork with humour) – they recognise it and accept it. Considering the fact that traditional learning methods

can sometimes be difficult and demanding, humour and a more cheerful way of presenting knowledge are a welcome change, especially in today's time of stress caused by the pandemic.

CONCLUSION

This research presents the idea of using educational-scientific comics with the aim of pointing out the multiple benefits and the value of their use at the university level. The presented study dealt with the creation and implementation of a tailor-made comic at two faculties: the Faculty of Mining and Geology of the University of Belgrade, and the Department of Forensic Engineering of the Belgrade University of Criminal Investigation and Police Studies. In this way, the study also promoted interfaculty cooperation. The attitudes of students at both faculties were tested using a quantitative research model, and the data collected represents the first database on the creation and use of comics in teaching language, criminology and geology, or, more specifically, the topic of geoforensics. The choice of geoforensics, which concerns geology on the one hand and forensics on the other, enabled us to give the students a model of interdisciplinarity, or multidisciplinary, and to introduce to them the idea of interfaculty similarity and cooperation.

The results of the research confirmed all three of our hypotheses, and led to the following conclusions:

- Comics are a welcome novelty in university teaching when they are based on the quality of the text;
- Illustrations and language structures are acceptable to both academics and lecturers;
- Comics contribute to an increase in motivation, and increase interest in the topic being discussed;
- Comics do not interfere with concentration, but increase the parallel development of double literacy;
- Comics can encourage the development of interdisciplinarity, or multidisciplinary, by integrating language, forensics and geology;
- Comics help discover an alternative approach to language and content learning that has already been developed and accepted in the world;
- Comics are suitable for discussion;
- Comics give the opportunity to discover reality in a new way, sometimes without previous educational activity in that field;
- Comics make it easier to remember information since images and visualisation are used;
- Comics are sometimes more interesting than text because they offer opportunities for the active application of knowledge or theory, which is sometimes difficult to achieve in class.

However, it is necessary to keep comics in the domain of a smaller number of goals, and primarily within the goals limited to science, and to develop moral, aesthetic and professional elements gradually and with measure.

Interfaculty cooperation can also affect the quality of teaching in the higher years of study if research continues, and if new comic book models are potentially created with the greater participation of lecturers interested in the teaching process. We believe that this type of cooperation ensures that members of the academic community can experience a greater sense of contribution to scientific practice than they would while working within a single faculty. In this way, the development of the repertoire of common practices and concepts is augmented, as is the knowledge created from multiple perspectives, modalities and possibilities. In other words, through interfaculty cooperation, reciprocity, belonging and collegiality are prioritised alongside knowledge.

REFERENCES

- Akcanca, N. (2020). An alternative teaching tool in science education: educational comics. *International Online Journal of Education and Teaching (IOJET)*, 7(4), 1550-1570.
- Arguel, P., Bonfond, P. and Matricon, J. (2017). Lumière sur la BD': une approche modulaire de l'optique par l'analyse de vignettes issues de bandes dessinées. *Rencontres Enseignement de l'Optique et Didactique (REOD)*. France: Limoges.
- Beko, L., Mićović, D. (2022). Inter-faculty cooperation in English language teaching using educational comic strips on geoforensics – A pilot study, *International Journal of Cognitive Research in Science, Engineering and Education (IJCRSEE)*, 10(3), 89-97.
- Benesch, S. (2018). Feeling Rules and Emotion Labor: Tools of English Language Teacher Engagement. *NYS TESOL Journal* Vol. 5, No. 1, January 2018, 2-9.
- Chevallier, T. (2013). 'Tintin et la force gravitationnelle'. *Les cahiers pédagogiques* 506, 28–29.
- Cleaver, S. (2008). Comics and graphic novels. *Instructor*, 117, (6), 28-30.
- Hosler, J. and Boomer, K. B. (2011). 'Are Comic Books an Effective Way to Engage Nonmajors in Learning and Appreciating Science?' *CBE — Life Sciences Education* 10 (3), 309–317. <https://doi.org/10.1187/cbe.10-07-0090>.
- Hosson, de C., Bordenave, L., Daures, P.L., Décamp, N., Hache, C., Horoks, J., Guediri, N. and Matalliotaki-Fouchaux, E. (2018). Communicating science through the Comics & Science Workshops: the Sarabandes research project, *Journal of Science Communication*, Vol. 17, Issue 2, <https://doi.org/10.22323/2.17020203>
- Kabapinar F. (2005). Effectiveness of teaching via Concept Cartoons from the Point of View of Constructivist Approach. *Educational Sciences: Theory & Practice*; 5(1), 101-146.
- Lo, P., Allard, B., Ho, K. K., Chen, J. C. C., Okada, D., Stark, A., & Lai, C. C., (2019). Librarians' perceptions of educational values of comic books: A comparative study between Hong Kong, Taiwan, Japan, Australia and New Zealand. *Journal of Librarianship and Information Science*, 51(4), 1103-1119. <http://dx.doi.org/10.1177/0961000618763979>

- Maričić, S., Popović, N. (2014). Učenje stranog jezika kroz strip. U: S. Gudurić i M. Stefanović (ur.). *Jezici i kulture u vremenu i prostoru III*, 619-629. Novi Sad: Filozofski fakultet
- Petrovački Lj., Savić, M. (2012). Strip u nastavi gramatike srpskog jezika. *Metodički vidici* 3, 11-28.
- Rose, M. (2007). Quality and people. In L. Muresan, F. Heyworth, G. Mateva, & M. Rose (Eds.), *QualiTraining: A training guide for quality assurance in language learning* (pp. 23–31). Council of Europe Publishing.
- Tadić, M. (2008). Strip u nastavi geografije. *Globus, br. 33*, 207-214. Srpsko geografsko društvo. Available at: https://www.researchgate.net/publication/326190919_Ucene_stranog_jezika_kroz_strip_analiza_i_zastuplenost_stripovne_forme_u_udbenicima_za_francuski_i_spanski_kao_strani_jezik [accessed Mar 25 2023].
- Tatalović, M. (2009). Science comics as tools for science education and communication: A brief exploratory study. *Journal of Science Communication*, 8(4), 1-17.
- Tilley, C. L. (2008). Reading comics. *School Library Media Activities Monthly*, 24, 23-26.
- Timperley, H. S. & Phillips, G., (2003). Changing and sustaining educators' expectations through professional development in literacy. *Teaching and Teacher Education*, 19, 627-641.
- Toh, C. L., Cheng, L. P., Ho, S.Y., Jiang, H & Lim, K. M. (2017). Use of comics to enhance students' learning for the development of the twenty-first century competences in the mathematics classroom, *Asia Pacific Journal of Education*, 37(4), 437-452. <https://doi.org/10.1080/02188791.2017.1339344>
- Trnova, E., Trna, J. and Vacek, V. (2013). The Roles of Cartoons and Comics in Science Education. In: M. Costa, B. Dorio, M. Kireš. HSci2013. Educating for Science and through Science. Košice (Slovakia): P. J. Šafarik University, Košice. Slovakia, 2013, 240-244. ISBN 978-989-98032-2-0
- Wenger, E. (2000). Communities of Practice and Social Learning Systems. *Organization* 7 (2), 225–246.
- Wijaya, E. A., Suwastini, N. K. A., Adnyani, N. L. P. S., Adnyani, K. E. K. (2021). Comic strips for language teaching: the benefits and challenges according to recent research, *ETERNAL (English, Teaching, Learning, and Research Journal)*, Vol. 7, No. 1, 230-248. <https://doi.org/10.24252/Eternal.V71.2021.A16>

СТРИПОВИ О ГЕОФОРЕНЗИЦИ У НАСТАВИ ЈЕЗИКА: МЕЂУФАКУЛТЕТСКА САРАДЊА И ПРИМЕНА

Лидија Беко¹, Драгослава Мићовић²

¹Универзитет у Београду, Рударско-геолошки факултет, Београд, Србија

²Криминалистичко-полицијски универзитет, Београд, Србија

Резиме

У овом раду приказана је употреба образовно-научног стрипа као корисне активности у учењу на основним академским студијама. Сматрамо да је образовно-научни стрип мултимодална наставна активност која причом и сликом на хармоничан и користан начин ствара нови наставни контекст. Активност базирана на стрипу током академских студија може ићи више корака испред традиционалне наставе, јер своју привлачност заснива на уживању у читању и учењу, креирању снажних визу-

елних ефеката кроз комбинацију слике и приче, као и буђењу маште која олакшава и обезбеђује дуже памћење. Самим тим што се путем уживања у читању појачавају позитивне емоције, спој стрипа и наставе може да има важну улогу у развоју визуелне перцепције, те код оних који имају фотографско памћење може допринети бољем усвајању знања.

Такође, концепт образовно-научног стрипа користили смо да бисмо развили репертоар заједничког учења и праксе на међуфакултетском нивоу. У овом случају је у питању сарадња Рударско-геолошког факултета Универзитета у Београду и Криминалистичко-полицијског универзитета. Сматрамо да овај вид рада дозвољава члановима академске заједнице да осете да у већој мери доприносе научној пракси но што је то случај са унутарфакултетским радом, да се овим начином повећава развој репертоара заједничке праксе и концепата, као и да се ствара знање из више перспектива, модалности и могућности. Другим речима, међуфакултетском сарадњом осим знања приоритети постају и узајамност, припадност и колегијалност.

Ова студија је понудила различите узорке питања која се могу користити како би се расветлиле не само предности коришћења стрипа на два факултета или предности коришћења стрипа као модела наставе, већ и предности коришћења стрипа као алата за учење. Приказани резултати показују да се стрип лако може користити у академској настави, да је поучан, те да се може сматрати потпуно прихватљивим алтернативним образовним задатком када је учење језика у питању. Студенти су у готово свим тестираним аспектима благонаклоно третирали поставку новог задатка.

Нема сумње да уџбеници и наставни материјали имају доминантну улогу у процесу учења и стицања научних знања у форензици, односно геофорензици, будући да је то случај у већини академских дисциплина. Међутим, с обзиром на специфичност научне области, њену новину и растућу популарност, као и недостатак наставног материјала, намера нам је била да наставу језика допунимо кроз креирање властитог стрипа. Даљи рад на технолошком унапређењу примене стрипа могао би бити предмет будућих истраживања.

THE CONCEPTUALISATION OF *MUSIC* IN THE FRENCH AND SERBIAN LANGUAGES

Jovana Marčeta*

University of Novi Sad, Faculty of Philosophy, Novi Sad, Serbia

Abstract

Word associations are an important part of cognitive-linguistic and ethnolinguistic research on semantics. Associative responses to stimulus words provide important information about their lexical meaning. In cognitive studies, there is a vast interest in examining the connection between language and music. The aim of this research is to determine and compare the conceptualisations of *music* in the French and Serbian languages through the associative connection between the stimulus word *music* and the responses given by French and Serbian students. The conceptual organisation of the associative material will establish the extent to which the perception of *music* in the two observed linguacultural communities is specific, and the extent to which it expresses universal characteristics. The empirical material for the research was excerpted from two associative dictionaries of French and Serbian.

Key words: music, word associations, conceptualisation, French, Serbian.

КОНЦЕПТУАЛИЗАЦИЈА МУЗИКЕ У ФРАНЦУСКОМ И СРПСКОМ ЈЕЗИКУ

Апстракт

Вербалне асоцијације представљају важан део когнитивнолингвистичких и етнолингвистичких истраживања семантике. Асоцијативни одговори на вербалне стимулусе пружају важне информације о лексичком значењу. Интересовање за изучавање везе између језика и музике у великој мери је присутно у когнитивним студијама. Циљ овог истраживања јесте да се утврди и упореди начин на који се *музика* концептуализује у француском и српском језику кроз асоцијативну везу између стимулуса *музика* и одговора француских и српских студената. Концептуалном организацијом асоцијативне грађе установићемо у којој мери је перцепција *музике* у две посматране лингвокултуролошке заједнице специфична, а у којој мери исказује универзалне карактеристике. Емпиријска грађа за истраживање ексцерпирана је из асоцијативних речника француског и српског језика.

Кључне речи: музика, вербалне асоцијације, концептуализација, француски језик, српски језик.

* Corresponding author: Jovana Marčeta, University of Novi Sad, Faculty of Philosophy, Dr Zorana Đinđića 2, 21102 Novi Sad Serbia, jovana.marceta@ff.uns.ac.rs

INTRODUCTION

Music and dance have played important roles in human history. Songs that were passed down from generation to generation testify to the former way of life and reveal national customs, whereas celebratory ritual dances indicate the cultural identity of a society. Music is considered the most social of the arts, and as such represents an excellent basis for research into the social development of different nations and cultures.

France is a country with a long classical music tradition in which opera and ballet performances date back to the 16th and 17th centuries. In their study on the origins of classical ballet in Serbia and abroad, Obradović Ljubinković (2016) claims that the first ballet performances in Serbia date to the beginning of the 20th century. This suggests that music and ballet terminologies are relatively new in the Serbian language. Taking into account the importance of music in the cultural development of the Serbian society, Marčeta and Savić (2020) propose the standardisation of ballet terminology of French origin in the Serbian language in order to eliminate the irregularities and inconsistencies which occur in the oral and written usage of those terms.

Savić (1968) has already noticed similarities between the structure of language and the form of classical ballet: in classical ballet there is a limited number of movements from which one can make an infinite number of new and unique combinations united in choreography, just as in language there is a limited number of voices used to create an unlimited number of words. Furthermore, recent studies have shown that music and speech functions have many aspects in common (Jäncke, 2012; Tallal & Gaab, 2006). In the field of comparative studies, there is a vast interest in the research of language and music as cognitive systems, including various branches of cognitive science (psychology, linguistics, cognitive neuroscience, education, etc.) (see Antović, 2014; Antović, 2009; Rebuschat, Rohmeier, Hawkins, & Cross, 2012).

This study aims to examine the associative connection between music and language, that is, the stimulus word *music* and associative responses to it. Word associations represent an important resource for exploring the relationship between language and culture, as well as for determining the organisation of the mental lexicon, i.e., lexical memory (Dragičević, 2010a). The mental lexicon contains both universal and language-specific characteristics. In order to determine the extent to which the conceptualisation of *music* is universal, and the extent to which it is specific to language and culture, this paper analyses and compares the associative responses given by adult French and Serbian native speakers to the stimulus word *music*.

*THE CONCEPTUAL APPROACH TO INVESTIGATING
LEXICAL MEANING*

Conceptual analysis has evolved within the framework of cognitive science and represents an important tool for studying lexical meaning. According to Lakoff (1987, preface XV), a conceptual structure can be described using cognitive models. Human knowledge of certain phenomena is organised into cognitive models that include a number of associations related to specific concepts, depending on the cultural model of the speaker.

Our conceptual system has an important role in defining everyday realities:

If we are right in suggesting that our conceptual system is largely metaphorical, then the way we think, what we experience, and what we do every day is very much a matter of metaphor.

(Lakoff & Johnson 1980, p. 4)

Lakoff and Johnson (1980) distinguish three fundamental types of conceptual metaphors: ontological (e.g., VITALITY IS A SUBSTANCE; LIFE IS A CONTAINER), orientational (e.g., HAPPY IS UP; SAD IS DOWN), and structural (e.g., LOVE IS MADNESS). Furthermore, Brodin (1984, p. 45) claims that metonymy may in fact be more common than metaphor. Lakoff and Johnson (1980, p. 36) include what traditional rhetoricians have called synecdoche as a special case of metonymy, where the part stands for the whole (THE PART FOR THE WHOLE (e.g., There are a lot of *good heads* in the university = intelligent people, etc.)).

Word associations are an important part of cognitive linguistic and ethnolinguistic research on semantics. Reactions to stimulus words provide important information about how the collective perception of reality interferes in lexical meaning. Furthermore, associative experiments are a reliable method of examining the conceptualisation of various notions, especially emotions. Indeed, analyses of word associations offer significant material for examining conceptualisation using metaphors (Dragićević, 2010a, pp. 108-128). Different languages may show a high degree of similarity in metaphorical expression. Therefore, some conceptual metaphors are common to people at different places and times (Kövecses, 2005; Lakoff, 1987). Possible differences are conditioned by their cultural heritage and environment. While members of one culture associate a phenomenon or object with a particular idea, representatives of other cultures may associate the same phenomenon with a completely different idea (Popović, 2008, pp. 50-51). According to Kövecses (2000; 2005), the conceptual metaphor combines universal cognition and culture-specific cognition. Conceptual classification of associative responses helps researchers discover the extent to which cognitive mechanisms are universal, and the ex-

tent to which they are language and culture specific. Therefore, the conceptual approach to the analysis of word associations is important for cross-linguistic and cross-cultural studies.

Every time we reason about any kind of thing (chairs, nations, emotions, etc.), we are categorising (Lakoff, 1987, pp. 5-6). In associative experiments, the name of the category elicits associations which indicate prototypical members of the category¹.

Respondents' responses to a stimulus word do not usually represent the connotation of that word, but the participants' attitude towards the phenomenon that the stimulus expresses, i.e., *affection*. Connotation is part of the lexical meaning and it is not individual. It may vary from language to language, but it can sometimes be influenced by *affection*² (Dragičević, 2010b).

Conceptual organisation is related to the issue of polysemy (Lakoff, 1987, p. 316). Within the cognitive linguistic theoretical framework, polysemy represents a form of categorisation. A polysemous structure is defined in terms of a cluster of partial descriptions. None of the senses in a polysemous structure possesses all the prototypical components (Halas, 2016; Wittgenstein, 1980). The polysemy of the stimulus words is an important aspect that can influence the results of the analyses of word associations (Dragičević, 2010a; Marčeta, 2022). Therefore, an analysis of lexicographic definitions excerpted from dictionaries is an important step in the contrastive research of word associations.

METHODS

Lexicographic Definitions of the Lexeme Music in French and Serbian

The first step is to analyse and compare the lexicographic definitions of the word *music* in French and Serbian dictionaries.

According to *Trésor de la langue française informatisé* (TLF), the meanings of the lexeme *music* (Fr. *musique*) are:

- (I) A. harmonious or expressive combination of sounds (1. myth., anc. Gr. The Muse; 2. art of expressing oneself through sounds according to rules which vary depending on periods and civilizations; 3. type of sound combinations characterised from a technical or cultural point of view; 4. by meton. musical work(s); 5. melody specific to a piece of music);
- B. interpretation of musical work(s);
- C. written notation of a musical work; score;
- D. ensemble of instrumentalists.

¹ For the importance of limiting response time see Dragičević (2010a, p. 85);

² E.g., the negative connotation of the secondary meaning of the lexeme *zmija* ('snake') was created due to *affection*.

(II) By analogy: A. (liter.). sequence of sounds more or less pleasant to the ear, reminiscent of music (ex. *music of the birds, of the wind*, etc.); B. (ling., styl.) harmony with the rhythm and sounds of words; musical effects.

The meanings of the lexeme *music* (Serb. *muzika*) cited in the dictionary of the Serbo-Croatian standard literary language, *Rečnik srpskohrvatskoga književnog jezika* (RMSH) are:

1. a. temporal art expressed through tones, tonal art; b. tonal art and its theory as a school subject;
2. musicians in one orchestra;
3. playing, concert;
4. Fig. melody, harmony; musicality.

A comparison of the lexicographic definitions is usually the first stage in the contrastive research of word associations. Lexicographic definitions allow researchers to identify possible aspects of the concept(s). Nevertheless, analyses of associative responses will provide more detailed material for contrastive research.

Empirical Materials

Corpora for this research consist of the associative responses to the stimulus word *music* given by French and Serbian respondents. French responses were obtained from the *Dictionnaire des associations du français 2019* (DAF-2019), which is based on responses to online questionnaires completed since October 2018. Serbian responses were excerpted from *The associative dictionary of the Serbian language* (Piper, Dragičević, & Stefanović, 2005).

The data for these dictionaries was collected from native French- and Serbian-speaking students. The participants in both free associative experiments were given the same task of writing down the first association that came to their minds as a response to the stimulus word. Eight hundred Serbian and 488 French participants in associative experiments responded to the stimulus word *music*. Despite the asymmetrical size of the two datasets, both groups of participants (French and Serbian) were large enough (more than 200) to represent statistically relevant samples (see Brysbaert, 2019). Therefore, the results are comparable in the sense that the difference in the sizes of the two groups is not expected to significantly influence the relative participations of the responses.

The two datasets were compared in the frequency of associative responses, i.e., the structure of associative fields. Furthermore, the associative responses were classified according to the concepts that they express.

RESULTS³

Structural and statistical analyses of the materials

The structure of the associative field consists of the centre (prototypical response), and the closer and farther periphery. To understand the structure of the prototype, it is important to determine if the associative responses belong to the same synonymous sequence (Piper, Dragičević, & Stefanović, 2005, p. 14). Therefore, in this paper, we combined responses with the same or similar meaning⁴. The structures of the French and Serbian associative fields are illustrated by the frequency of responses and the number of responses with the same frequency (Figure 1).

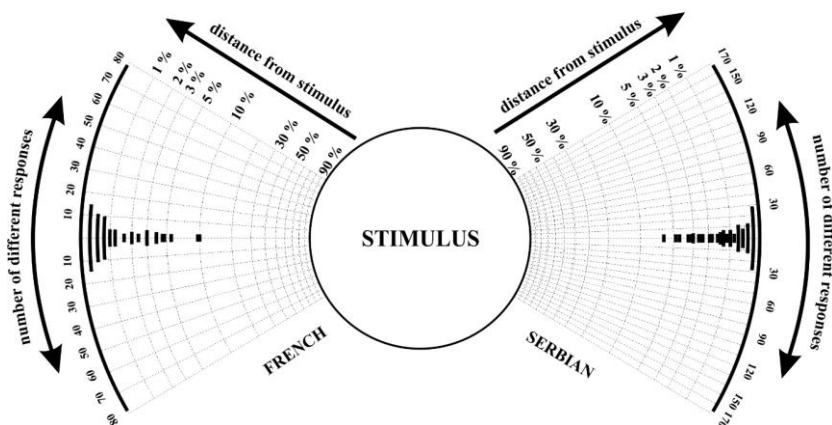


Figure 1. Structures of the associative fields of the stimulus word *music* in French and Serbian

The analyses of the French and Serbian corpora show that the French participants gave 131 different responses, among which 78 responses were idiosyncratic (see Appendix A), whereas the Serbian participants gave 248 different responses, among which 165 were idiosyncratic (see Appendix B). Idiosyncratic responses were given by 16% of the French participants and 21% of the Serbian participants. There is only one omission among the French responses. Conversely, 51 Serbian participants refused to give responses.

³ In this paper, the English translation is used for the responses, while the list of original responses (accompanied by their English translation) is provided in Appendix A and Appendix B;

⁴ The responses with the same or close meaning were combined under the same term in English (e.g., *metal/heavy metal/metal muzika*: *metal*; *lepa/lepo*: *beautiful*; *oslobodjenje/oslobađanje*: *liberation*; *rok/rock*: *rock*; *électronique/électro*: *electronic*; *son/un son*: *sound*, etc.).

The most frequently given response by the French participants was *note(s)*, constituting approximately 10% of the total responses. The primary response among the Serbian participants was *relaxation*, constituting 6% of the total responses.

Equivalents in meaning constitute 47% of the French corpus and 25% of the Serbian corpus. Nevertheless, statistical analyses of the experimental material reveal that equivalent associations in the French and Serbian languages differ in frequency (see Table 1). The most significant differences in frequencies can be observed for the equivalents *singing*, *melody* and *radio*. Equivalent responses were given by 381 French students (78%) and 397 Serbian students (50%).

Table 1. Equivalent responses in French and Serbian, and their frequencies

Equivalent response	French		Serbian	
	Number of occurrences	Percentage	Number of occurrences	Percentage
appeasement	1	0.2	4	0.5
art	15	3	9	1.1
Bach	3	0.6	7	0.9
beautiful	1	0.2	5	0.6
beauty	1	0.2	9	1.1
CD	2	0.4	5	0.6
Chopin	1	0.2	1	0.1
classical	23	4.7	17	2.1
colours	1	0.2	1	0.1
concert(s)	4	0.8	3	0.4
dance	10	2	18	2.3
electronic(s)	3	0.6	1	0.1
Eminem	1	0.2	2	0.3
emotion(s)	3	0.6	1	0.1
festival	1	0.2	2	0.3
film	4	0.8	2	0.3
flute	2	0.4	2	0.3
guitar	8	1.6	4	0.5
happiness	4	0.8	7	0.9
harmony	4	0.8	10	1.3
harp	1	0.2	2	0.3
inspiration	1	0.2	1	0.1
instrument(s)	22	4.5	4	0.5
jazz	3	0.6	4	0.5
joy	4	0.8	10	1.3
liberation	1	0.2	3	0.4
liberty	1	0.2	1	0.1
life	3	0.6	9	1.1
listening	3	0.6	1	0.1
loud	2	0.4	7	0.9
melody	19	3.9	2	0.3
metal	4	0.8	5	0.6
Mozart	2	0.4	10	1.3

music	4	0.8	1	0.1
necessity/necessary	1	0.2	1	0.1
noise	1	0.2	2	0.3
note(s)	51	10.5	25	3.1
opera	2	0.4	7	0.9
orchestra	1	0.2	1	0.1
paradise	1	0.2	1	0.1
party (parties)	1	0.2	5	0.6
piano	12	2.5	9	1.1
playing	1	0.2	1	0.1
pleasure	6	1.2	4	0.5
pop	1	0.2	5	0.6
radio	1	0.2	22	2.8
record	1	0.2	1	0.1
reggae	1	0.2	1	0.1
relaxation	10	2	45	5.6
rest	1	0.2	3	0.4
rhythm	2	0.4	2	0.3
rock	6	1.2	22	2.8
singing	19	3.9	1	0.1
song(s)	27	5.5	31	3.9
soul	2	0.4	5	0.6
soul (music)	1	0.2	1	0.1
sound(s)	49	10	14	1.8
sublime	1	0.2	1	0.1
techno	1	0.2	11	1.4
to dance	1	0.2	1	0.1
to listen	15	3	2	0.3
violin	3	0.6	3	0.4

Among the ten most frequently given responses by the Serbian students, seven of them have equivalents in French, while among the ten most frequently given responses by the French students, all have equivalents in Serbian. According to the statistical analysis of the responses, the more frequently given responses are more likely to have equivalents in the other language. The dependence of the frequency of equivalents in meaning on the response frequency is displayed in Figure 2. The numbers of the same associative responses are represented on the horizontal axis, while the percentage of equivalents in the group of all responses with that or a higher number is given on the vertical axis.

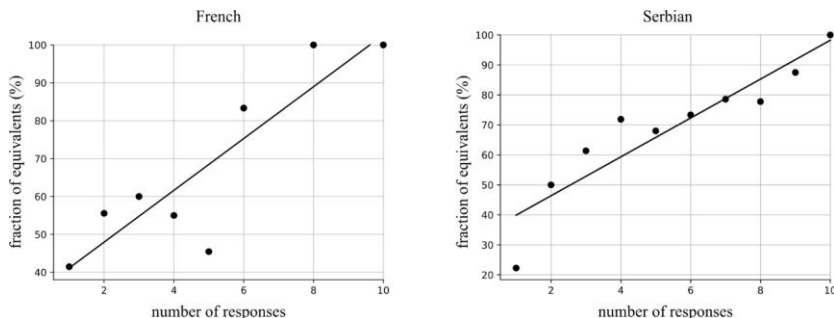


Figure 2. Relationship between the frequency of responses and the number of equivalents in meaning

The results show that the frequency of equivalents increases as the frequency of associative responses rises. This is confirmed by Pearson's correlation coefficients between the variables (see Figure 2), which are .88 for French and .92 for Serbian.

Conceptual Analyses of the Materials

According to the associative responses given by the French and Serbian participants, music is perceived as a **necessity**. This concept is expressed with the lexemes *necessity* and *indispensable* in French, and *necessary* in Serbian. In addition, the French corpus includes the responses *life-saving* and *survival*. The responses *cure* and *balm*, given by the Serbian participants, might be explained by the expression *music is a balm to the soul*, indicating the conceptual metaphor MUSIC HEALS. Furthermore, music is conceptualised as *life* in both languages.

The stimulus word *music* is associated with the concept of **liberty**. Indeed, the responses *liberty* and *liberation* are found in both corpora.

Emotions, i.e., the emotional states that music evokes in the respondents are expressed with the responses: *emotion(s)*, *pleasure*, *joy* and *happiness*, which are found in both corpora. In addition, the French participants responded with: *feelings*, *happy*, *passion* and *wellbeing*. The Serbian corpus includes a greater variety of associative responses which indicate emotions: *cheerful*, *cheerfulness*, *enjoyment*, *bliss*, *mood*, *good mood*, *love*, *pleasantness*, *heart*, *of the heart*, *ecstasy*, *fulfilment*, *trip* and *suffusion*. Music is associated with sadness in the French response *tear*, as well as the Serbian responses: *sadness*, *melancholy*, *anguish of the heart*.

The stimulus word *music* elicited rather **positive associations and notions**. The associative response *sublime* is found in both corpora. The French corpus includes the response *deliverance*, whereas the Serbian corpus includes the associations: *wonderful*, *good*, *the best*, *treasure*, *meaning*, *cool*, *power* and *strong*. The responses that indicate **negative associations and notions** are found only in the Serbian corpus: *quarrel* and *doom*.

Both French and Serbian participants responded with *paradise* and *soul*, which indicates a **spiritual aspect** of music. The Serbian corpus includes associations: *paradise for ears, food for soul, infinity, spiritual need and spirituality*.

Some of the associative responses in both languages refer to the concept of **beauty**: *beauty, beautiful*. Furthermore, music is perceived as something soft and gentle. The responses which refer to **softness** are *softness* and *soft* in French, and *gentle* and *gentleness* in Serbian.

French and Serbian speakers associate music with **calmness**: *relaxation, rest, appeasement*. The French corpus includes the responses *chill* and *sleep*, whereas in the Serbian corpus there are responses: *dream, to calm down* and *calm/peace*. Conversely, some associative responses are associated with **movement**. The reaction *escape*, which may suggest an escape from reality, and the responses *waves* and *action*, which indicate the rhythm of the music, were given by the French participants. The response *movement* is found among the reactions of the Serbian respondents.

The **importance** of music is expressed through the Serbian responses: *everything, anything* and *everything around us*. These responses indicate the conceptual metaphor MUSIC IS THE SUBSTANCE THAT SURROUNDS US.

The visual perception of the stimulus *music* can be seen in the associative connection between music and **colours**. Indeed, in both languages music is perceived as *colours*. Furthermore, this type of conceptualisation is indicated by the Serbian response *colour for ears*. The French participants associated music with the colour *orange*, whereas the Serbian association norms express it as *yellow*.

The most represented concept in both languages is **sound** (43.4% in French, and 15.1% in Serbian). Both corpora include the responses: *sound(s), song, singing, harmony, note(s), noise, loud, melody, to listen, and listening*. This concept also includes the French responses: *sound spectrum, musical notes, sol, quavers (eighth notes), to sing, soprano, earphones, listening, cadence, harmonic, and solfège*. The responses given by the Serbian students are: *unity of sound, good ear for music, ears, choir, voice, female singer, tone(s), treble clef, frog, acoustics, quiet, silence, ballad, and hit song*.

Certain responses show an associative connection between music and **dance**. Both corpora include the responses *dance, to dance, dum dum* and *rhythm*. In addition, the Serbian participants responded with *for dance, and dancing*.

Music is metonymically associated with **musical instruments** as material representatives of music. The prototypical representative of the instruments in both languages is *piano*. Six more equivalent responses occur in this concept: *instrument(s), guitar, violin, harp, flute, and orchestra*. The French native speakers associate music with *saxophone, percussion*

and *drums*, whereas the Serbian native speakers associate music with *musical instrument, musical group, band, keys, organ, reed* and *gusle* – which is related to the Serbian intangible cultural heritage. Furthermore, the response *playing* is found in both corpora, whereas the response *to play* is found only in the Serbian corpus.

The response *film* in both languages, as well as *of the film/film score, cinema* and *Your lie in April*⁵ given by the French participants, associate music with **film**.

The equivalent responses indicating **the reproduction of music** are *radio, record* and *CD*. Furthermore, the French students relate music to *playlist* and *Spotify*⁶, whereas the Serbian students associate music with *cassette tape, tape recorder, transistor radio, Hi-Fi Stereo System, MP3, TV, record player, computer, and mobile phone*.

Some responses refer to **fun and places where one can hear music**. Except for the equivalents *party (parties)* and *festival*, all the other responses occur in the Serbian corpus: *techno party, ball*⁷, *amusing, fun/amusement, festivity/celebration, wedding reception, grand*⁸ *disco (discotheque), Barutana*⁹, *theatre club, coffee shop, gig, and pastime*. The responses *praviti lom*¹⁰, *ludnica*¹¹ and *ludilo*¹² are colloquialisms which denote *great fun*.

The associative connection between music and **language** is specific for the French language: *word(s), word/speech* and *language*.

Both corpora include the names of famous **composers**. *Bach, Mozart* and *Chopin* are common to both languages. Conversely, *Vivaldi* and *composer* are found only in the French corpus, whereas *Beethoven, Handel* and *Verdi* make part of the Serbian corpus.

The equivalent response which refers to **musicians/singers and bands** is *Eminem*. The French responses include the names of French rappers *Booba, Booba and Kaaris* and *Jul*, as well as the name of the popular English rock band *Pink Floyd*. This concept is much more represented in

⁵ A Japanese romantic drama manga series;

⁶ A Swedish audio streaming and media services provider. It is one of the largest music streaming service providers;

⁷ A large formal occasion where people dance (Cambridge Dictionary);

⁸ *Grand Production* is a company and record label from Serbia that concentrates on promoting folk artists. It is responsible for creating the TV program, *Grand Parada*, which airs weekly, and for arranging the pop-folk and turbo-folk music competition *Grand Festival*;

⁹ *Barutana* was initially built to house large quantities of gunpowder, which was utilised to safeguard the Kalemegdan Fortress. However, since 1995, the site has transformed into a popular regional venue that regularly features a variety of domestic and international artists;

¹⁰ Literal translation ‘to make a breakage’;

¹¹ Literal translation ‘madhouse’;

¹² Literal translation ‘madness’.

the Serbian language. It includes the names of musicians and bands from former Yugoslavia: *Bajaga, Balašević, Zdravko Čolić, Aca Lukas, Darko Rundek, Doris Dragović, Haris Dž., Kolonija, Magazin, Tozovac, Van Gogh*. In addition, the Serbian participants responded with *Madonna, Nirvana, Bocelli, Jamiroqai, Queen* and *Vaya con Dios*. The response *electric* refers to the song of the popular Serbian singer Bajaga *Electric music*.

The responses which refer to **musical works** are *opera* and *concert(s)* in both languages. Furthermore, the French corpus includes: *piece, symphony, score, divertissement, aria* and *lied*, whereas the Serbian corpus contains *ballet, work, encore* and *composition*.

The responses indicating the **type of music** are remarkably frequent in both language communities. The equivalent responses that refer to music genres are: *classical, rock, pop, metal, techno, jazz, reggae, soul (music)* and *electronic(s)*. Additionally, the French participants responded with *traditional, Latino, rap, Celtic, and chamber*, while the Serbian participants responded with *folk music, popular, pop-rock, evergreen, hip-hop, house, punk, samba, turbo folk*¹³, and *type*. Certain responses describe music: *soft music, slow, engaged, favourite, and (musical) taste* in the French language, as well as *live, intimate, love, good, bad, and without value* in the Serbian language.

The concept of **art** includes the equivalent response *art*, alongside the responses *artist* and *culture* given by the French students. Furthermore, the Serbian responses indicate **country names**: *Italy* and *Finland*.

Some responses indicate the concept of **education/schooling**. The only French response related to this concept is *book*. The Serbian corpus includes: *classroom, music school, music education, class/lesson, and music notebook*.

There are responses related to the **process of musical creation** in both languages: the equivalent response *inspiration*, as well as *creation* and *expression* in French, and *muse* and *imagination* in Serbian.

The conceptual classification reveals that the majority of French and Serbian responses can be grouped according to the same concepts. However, as Table 2 shows, the same concepts have different percentages of participation in the total numbers of responses in the two languages.

¹³ A term for the music genre which is most often associated with Serbia, but also performed in some variations in other countries of the Balkans and Southeast Europe. The main characteristics of this type of music production are a simplified, repetitive musical form, wide availability to consumers, and cheap production of visual and textual components (Grujić, 2013).

Table 2. *Conceptual classification of associative responses to the stimulus music in French and Serbian*

Concepts	French [%]	Serbian [%]
art	3.5	1.1
beauty	0.4	1.8
calmness	2.9	7.8
colours	0.4	0.4
composers	1.6	3.1
country names	/	0.4
dance	2.7	2.9
education/schooling	0.2	0.6
emotions, i.e., emotional states	5.5	10.9
film	1.4	0.3
fun and places where one can hear music	0.4	8.9
importance	/	0.8
language	1.2	/
liberty	0.4	0.5
necessity	1.4	1.6
negative associations and notions	/	0.3
movement	1.6	0.1
musical instruments	11.5	4.3
musical works	3.3	1.8
musicians/singers and bands	1	3.1
positive associations and notions	0.4	1.3
process of musical creation	0.6	0.4
reproduction of music	1.4	5.5
softness	0.8	0.3
sound	43.4	15.1
spiritual aspect	0.6	1.5
type of music	11.9	13

Furthermore, both corpora include **repeated responses, i.e., the translation of the word *music*** into other languages: *music*¹⁴ and *Ongaku*¹⁵ in the French corpus, and *glazba* in the Serbian corpus.

Certain associative responses are based on the respondents' **individual experience**. The reactions *subway, future, and young* in French, and the reactions *time, spare time, Saturday, night, bed, sex, and tidying up* in Serbian indicate the typical time, i.e., periods and places that the respondents associate with music. In addition, the Serbian respondents associate music with family members: *brother and uncle*.

Some responses given by the Serbian students show a **less evident connection** with the stimulus and they might be related to several concepts depending on their potential relationship: *money, and bread, of Ibar*¹⁶, of

¹⁴ *Musique* and *music*;

¹⁵ A Japanese word for music.

¹⁶ The name of a river that flows through Serbia;

the dentist, of the people who went crazy, sport, ball¹⁷, leg, neighbours, people, cosmos, mind, indulgence, region, memory, zombie, xxx hardcore, kla, Rage, Bulovan¹⁸, Flašenko.

The participants sometimes perceive the stimulus word as a question. Thus, the responses represent the answers to the question or the complement of the stimulus word. These responses are found in the Serbian corpus: *ah; I love; la, la, la; ok; you conclude; it messes with me; my world; mine; my; which I love; for my ears; for everyone.*

DISCUSSION AND CONCLUSIONS

The analyses show that the primary responses to the stimulus word *music* in French (*note(s)*) and Serbian (*relaxation*) do not yield the same meaning. Regardless of the disagreement in primary responses, the results indicate a high dispersion of both associative fields (see Figure 1). The variety of associations in both languages indicates the instability of the stimulus word in the associative system of the respondents, that is, the lack of a close semantic relationship between the stimulus and the responses.

Equivalent responses are considerably represented in both corpora (constituting 47% of the French corpus, and 25% of the Serbian corpus). Although there are more equivalents among more frequent responses, the equivalence is also noticeable among the idiosyncratic responses in both languages (see Figure 2).

The results of the conceptual analysis show that the majority of the associative responses given by the French and Serbian respondents can be classified according to the same concepts with different percentages of participation in the total numbers of responses (see Table 2). Most responses in both languages refer to **sound** and **type of music**. Nevertheless, the responses indicating **negative associations and notions** as well as the responses referring to the **importance of music** and **country names** occur only in the Serbian corpus. Conversely, the associations related to **language** appear only among the French responses.

The findings of our research confirm that word associations provide significant material for examining conceptualisation through metaphors (Dragičević, 2010a). The stimulus word *music* elicited rather similar metaphorical associations among French and Serbian participants: music is LIFE, PLEASURE, HAPPINESS, etc. In both languages music is metaphorically seen as a human need, i.e., **necessity**, and it is conceptualised as rather *soft* and *calm*. According to the responses of both French and Serbian students, it is evident that music is a substance that can be perceived by the sense of

¹⁷ Any object in the shape of a sphere, especially one used as a toy by children, or one used in various sports such as tennis and football (Cambridge Dictionary);

¹⁸ The response might refer to the conductor of the choir “Koča Kolarov” from Zrenjanin.

hearing. In addition, in both languages, music is experienced through visual perception. This type of conceptualisation is expressed through the responses referring to colours (*colours, colour for ears, yellow, orange*). The results show that the stimulus word *music* evokes rather positive emotions i.e., emotional states in respondents of both languages. Furthermore, the respondents of both linguacultural communities metonymically associate music with musical works and instruments.

The analysis of lexicographic definitions has identified certain aspects of the concept (e.g., melody, harmony, i.e., *sound*), and confirmed the importance of the possible polysemy of the stimulus word in the contrastive research of word associations (Dragičević, 2010a; Marčeta, 2022). Therefore, the fact that the responses referring to **language** exist exclusively in the French language is due to meaning II (B.) (harmony with the rhythm and sounds of words) of the lexeme *music* cited in TLF, whereas the greater representation of the responses referring to **education/schooling** in the Serbian language can be related to meaning 1. b. (tonal art and its theory as a school subject) of the lexeme *music* cited in RMSH. Nevertheless, certain aspects determined by the analyses of the associative material cannot be connected with lexicographic definitions (e.g., *fun, necessity, softness*, etc.), further suggesting that associative fields provide more detailed material for the contrastive research of conceptualisation.

In addition to the polysemy of the stimulus word, the results of the analyses show that the polysemy of the responses should also be taken into consideration in a study of word associations (e.g. The French responses *divertissement* and *sol* are related to musical terminology. Furthermore, the French response *écouteur* can denote *earphones*, but also *listener*. The Serbian response *zabava* denotes *fun/amusement*, but also *party*). Certain responses are culture specific (e.g., the names of singers and bands, the Serbian responses *gusle, turbo folk*, etc.).

In conclusion, the results show that the conceptualisation of *music* in both languages is based on a combination of universal human experiences and culture-specific cognition (Kövecses, 2000; 2005). The differences can be seen in the disagreement of primary responses and the dissimilar distribution of associative responses. Certain linguistic and cultural differences are a consequence of socio-cultural diversity. The similarities between the two language communities are evident in the conceptual grouping of the associative responses, similar metaphorical associations, and a large number of equivalents.

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REFERENCES

- Antović, M. (2014). Metafora o muzici ili metafora u muzici? Jedan prilog za saradnju kognitivne lingvistike i kognitivne muzikologije [Metaphor in Music or Metaphor about Music: A contribution to the cooperation of cognitive linguistics and cognitive musicology]. U: M. M. Stanojević (Ur.), *Metafore koje istražujemo: suvremeni uvidi u konceptualnu metaforu* (str. 233-254). Zagreb: Srednja Europa.
- Antović, M. (2009). Towards the Semantics of Music: The Twentieth Century. *Language and History*, 52(1), 119-129.
- Bredin, H. (1984). Metonymy. *Poetics Today*, 5(1), 45-58.
- Brysaert, M. (2019). How many participants do we have to include in properly powered experiments? A tutorial of power analysis with reference tables. *Journal of Cognition*, 2 (1), 1-38. doi: 10.5334/joc.72
- Cambridge Dictionary. Retrieved from <https://dictionary.cambridge.org/>
- Dictionnaire des associations du français (DAF-2019). Retrieved from <http://dictaverf.nsu.ru>
- Драгићевић, Р. (2010a). *Лексикологија српског језика [The lexicology of Serbian language]*. Београд: Завод за уџбенике.
- Драгићевић, Р. (2010b). *Вербалне асоцијације кроз српски језик и културу [Word associations across the Serbian language and culture]*. Београд: Друштво за српски језик и књижевност Србије.
- Grujić, M. (2013). Turbo-folk u Srbiji i reprezentacija žena: prividna transgresivnost jedne muzičke produkcije [Turbo-Folk in Serbia and the Representation of Women: The Illusory Transgressiveness of a Musical Production]. *Balkanica*, 4, 196-236.
- Halas, A. (2016). The Application of the Prototype Theory in Lexicographic Practice: A Proposal of a Model for Lexicographic Treatment of Polysemy. *Lexikos*, 26, 124-144.
- Jäncke L. (2012). The Relationship between Music and Language. *Frontiers in Psychology*, 3, 1-2. doi: 10.3389/fpsyg.2012.00123
- Kövecses, Z. (2005). *Metaphor in culture: Universality and variation*. Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511614408
- Kövecses, Z. (2000). *Metaphor and emotion: Language, culture, and body in human feeling*. Cambridge: Cambridge University Press.
- Lakoff, G. (1987). *Women, fire and dangerous things: What categories reveal about the mind*. Chicago, IL: University of Chicago Press.
- Lakoff, G., & Johnson, M. (1980). *Metaphors We Live By*. Chicago, London: The University Press of Chicago Press.
- Marčeta, J. (2022). Linguistic picture of woman in French and Serbian. *Review of Cognitive Linguistics*. John Benjamins Publishing Company.
- Марчета, Ј., & Савић, С. (2020). Балетски термини француског порекла у српском језику [Ballet Terminology of French Origin in the Serbian Language]. *Теме*, XLIV (3), 813-828. doi: 10.22190/TEME181114058M
- Obradović Ljubinković, V. (2016). *Koreodrama u Srbiji u 20. i 21. veku: rodna perspektiva [Choreodrama in Serbia in the 20th and 21st centuries: gender perspective]*. Novi Sad: Pokrajinski zavod za ravnopravnost polova.
- Пипер, П., Драгићевић Р., & Стефановић, М. (2005). *Асоцијативни речник српског језика, I део: од стимулуса ка реакцији [Associative dictionary of the Serbian language, the first part: From stimulus to reaction]*. Београд, Србија: Београдска књига – Службени лист СЦГ – Филолошки факултет.
- Поповић, Љ. (2008). *Језичка слика стварности: когнитивни аспект контрастивне анализе [Linguistic picture of reality: Cognitive aspect of contrastive analysis]*. Београд, Србија: Филолошки факултет.

- Rebuschat, P., Rohmeier, M., Hawkins, J., & Cross, I. (Eds.). (2012). *Language and Music as Cognitive Systems*. Oxford University Press. doi: 10.1093/acprof:oso/9780199553426.001.0001
- Речник српскохрватскога књижевног језика [Dictionary of the Serbo-Croatian standard literary language] (RMSH)*. I–VI: 1967–1976. Нови Сад – Загреб : Матица српска – Матица хрватска.
- Савић, С. (1968). Нови покрети у класичном балету [New movements in the classic ballet]. *Позориште [Theatre]*, 6–7, 10. Нови Сад: Српско народно позориште.
- Tallal, P., & Gaab, N. (2006). Dynamic auditory processing, musical experience and language development. *Trends Neurosci*, 29, 382-390. doi: 10.1016/j.tins.2006.06.003
- Trésor de la Langue Française informatisé (TLF)*. Retrieved from <http://atilf.atilf.fr>
- Wittgenstein, L. (1980). *Filosofska istraživanja* (drugo, pregledano i popravljeno izdanje) [*Philosophical Investigations*]. Beograd: Nolit

КОНЦЕПТУАЛИЗАЦИЈА МУЗИКЕ У ФРАНЦУСКОМ И СРПСКОМ ЈЕЗИКУ

Јована Марчета

Универзитет у Новом Саду, Филозофски факултет, Нови Сад, Србија

Резиме

Музика представља значајан ресурс за истраживање друштвеног развоја различитих народа и култура. Интересовање за изучавање језика и музике као когнитивних система веома је присутно у компаративним студијама и обухвата различите гране когнитивне науке. Вербалне асоцијације чине важан део когнитивнолингвистичких и етнолингвистичких истраживања семантике и имају значајну улогу у проучавању менталног лексикона, теорије прототипа и концептуализације различитих појмова. Концептуализација се заснива на човековом физичком, чулном и интелектуалном искуству са светом који га окружује. Различити језици могу показати висок степен сличности у метафоричком изражавању и концептуализацији појединих појмова и појава, док су могуће разлике условљене културним наслеђем и окружењем.

У овом раду анализирали смо асоцијативне одговоре француских и српских студената на стимулативну реч „музика“ како бисмо испитали сличности и разлике у концептуализацији музике у француском и српском језику. Емпиријски материјал, који смо ексцерпирани из асоцијативних речника француског и српског језика, употребљени смо за поређење структура асоцијативних поља, као и за утврђивање еквиваленције одговора. Поред тога, објединили смо асоцијативне одговоре сходно концептима које означавају како бисмо установили у којој мери су концептуализације специфичне за језик и културу, а у којој мери одражавају универзална својства.

Резултати истраживања показују да је концептуализација музике у оба језика заснована на комбинацији универзалних људских искустава и културолошких спознаја. Поједине разлике последица су језичких и социокултурних различитости. Сличности између две лингвокултуролошке заједнице уочљиве су у концептуалном груписању асоцијативних одговора, сличним метафоричким асоцијацијама и великом броју еквивалената, док се разлике огледају у неслагању примарних одговора и различитој дистрибуцији асоцијативних одговора.

POLITICS BETWEEN ILLUSIONS AND REALITY

Srdan Milašinović*

The University of Criminal Investigation and Police Studies, Belgrade, Serbia

The book *Politics as an Art of Illusion*, written by academician Dragan Simeunović¹, was published in times of comprehensive and deep social changes, geopolitical turmoil, and dizzying digital acceleration. Multi-layered, intellectually diverse, and theoretically grounded, with an encyclopaedic approach and analyticity that offer a synthesised and conceptually grounded approach to the contemporary interpretation of politics, this scientific study represents a significant novelty in the field of political science and the contemporary study of political practice. As an Associate Professor at the Faculty of Political Sciences in Belgrade, and the acting director of the National Security Academy, professor Simeunović has been asserting himself for decades as one of the best connoisseurs of changes in the landscape of European political architecture. However, with this book, Simeunović takes a step forward in proving how the complex phenomena of interstate and internal politics can be understood through camouflaged mechanisms and techniques for the realization of political ideas and programmes. At the centre of his interest is the concept of illusions, by which human thought is creatively shaped into the garb of seductive efforts to rule over others. Simeunović explains it sophisticatedly and unobtrusively, through a series of intentions that shape political practice in these areas, making the content attractive and interesting at all times. Everything starts with political illusions, leading to the state as a great illusion, to further emphasise the illusions spread by political elites, which was most visible in our country through the illusion of the ideology of Yugoslavism. Political opinion is further configured through current events – the illusion of a world without borders, or of media freedom belonging to all citizens.

Comparing history, sociology, law, literature, anthropology, philosophy, psychology, security, and other sciences, the author weaves a picture of the lost meaning of democracy, skilfully pointing out the exhaustion of the great narratives characteristic of the 20th century, but also of the crisis shaking modern society with major changes. That is why this new book is much more than a textbook retrospective of political theories. On 485 pages of beautifully structured text, it shows the pragmatic, ideologically sterile side of the illusion of political action in which the state, under the guise of serving the citizens, actually betrays them and their freedoms. Tirelessly active, searchingly stimulating, theoretically referen-

* Corresponding author: Srdan Milašinović, The University of Criminal Investigation and Police Studies, Belgrade, Serbia, srdjan.milasinovic@kpa.edu.rs

¹ Dragan Simeunović, “Politics as an Art of Illusion”, Prometej, Matica Srpska, Center for Cultural Integration, Novi Sad, 2022, p. 485.

tial, and authorially grounded, Simeunović wanders through the labyrinths of political ideas and programmes, showing how democratic institutions turned into alienated oligarchic centres that constructed a new order of values by forcing profit and a consumerist philosophy. Illustrative examples that can be found on the pages of the book help to better understand the trajectory of changes from the classical to the modern understanding of politics.

Professor Simeunović is known in our academic community as the leading researcher of national political theory, history, and philosophy; therefore, it is not surprising that, at a mature age, he left generations of future political scientists, and all those interested in the sphere of social change, a theoretically comprehensive and well-founded work indispensable for understanding the way social collectives function. Linguistically adept with rhetorical ease and stylistic opulence, he shows how society has transformed, betraying the traditional postulates of democracy, which has, in modern communities, in contrast to Aristotle's concept of public action in the agora, moved into the arcane of hidden cabinets in which the networks of causing crises and economic-military shock therapies are woven to replace disobedient elites.

The presented book is recognised as an academically rich source, because in its conceptual search, it cites the opinions of almost all relevant scholars in this field. Thus, in addition to Socrates', Plato's, Aristotle's, and Cicero's thoughts on the state and politics, the pages of this book can also trace the development trajectory of numerous philosophers and religious interpreters of social phenomena and processes through time – from Thomas Aquinas, Machiavelli, and Thomas More, through Thomas Hobbes, Max Weber, Karl Schmidt, Lenin, Marx, Habermas, Bloch, Horkheimer, Adorno, Easton, Luhmann, Hannah Arendt, and Lukács, complemented by a wide range of quoted thoughts of our famous authors – from Vladimir Jovanović and Radomir Lukić to Mihailo Marković, Vladeta Jerotić and Milan Matić. To give the presented definitions a scientific character, Simeunović explains them thoroughly and systematically, precisely listing the characteristic properties and connections that distinguish them from similar social phenomena. Therefore, the authentic and clear definitions of politics represent an exceptional aspect of this book, because they give it a specific and unique identity, whereby the author seemingly imperceptibly creates the doctrine of contemporary political action.

In terms of content and structure, the book *Politics as an Art of Illusion* consists of two thematically close and coherent units. The first unit is theoretically focused on the state as a common good in constant interrelation with the concepts of power, authority, force, and violence, which are its support mechanisms. It consists of nine chapters that gradually, methodologically, academically precisely, and theoretically indicate the importance of the state, legitimising its concept of functioning, with special reference to its legal, national, democratic, and social framework. The conceptual entanglement and distinction of power, authority, force, and violence are only inducements for the further explanation of the foundations and causes of violence in politics, which is skilfully linked to numerous forms of conquest and retention of power. The author's interpretation of the origin of the term ideology is also remarkable, where, in addition to the basic definitions and functions, he singles out the importance of manipulations by which the truth is sacrificed for the sake of some illusion. "Obscuring the truth through illusions then appears as an important means of ideologising political reality, if

not as the main goal”, claims Simeunović, stating that ideologies are not aimed at solving problems “but at mass political mobilisation with the aim of effective political action to influence the government, or for the sake of winning or staying in power” (p. 201). This is where political parties and political leaders come to the fore, notes the author, highlighting the importance of political culture and political style in the art of governance. Political illusions rely on emotions, and the more primitive the social environment is, the easier it is to establish and maintain them, which the author rightly states, relying on Gadamer’s interpretation of the existence of style in political action. In a comprehensive and detailed manner, Simeunović theoretically breaks down the dilemmas of the existence and interpretation of elites, summarising in one place a number of the most valuable and influential ones, and marking the perceived shortcomings and strong points of the cited theorists. This is the virtue of this book, which, pointing to the transformation of the elites in our environment, does not fail to recognise their quasi-elitism legitimised by the purchase of university diplomas, doctorates, or social recognitions that enable them to climb the ladder of the social hierarchy.

The second part of the book, titled *The Great Scene*, figuratively refers to Yugoslavism as the great political illusion of the unification of all South Slavs. Through a narratively moving and historically precise chronicle of the creation, realisation, and expansion of a new state union composed of distinctly related ethnic identities, the author reveals the flame of the burning romantic dreams of Ljudevit Gaj, and later Mihailo Obrenović, as the trailblazer of a vision that will become the greatest utopia for Serbs. Each of the nations that entered the new state union envisioned it in its way, whereby Slovenes and Croats insisted more on the preservation of ethnic, religious, and cultural-civilizational diversity, while Serbs blithely accepted the ideological veil and become the flag bearers of Yugoslavism. The seemingly romantically receptive theoretical setting of the ideology of Yugoslavism was ‘brutally rejected’ in practice at the end of the same century, remaining only in the memories of dreamers who, although observing political reality with open eyes, are still in a state of spiritual delirium.

Among the great Serbian illusions, Professor Simeunović includes the Serbian myth and belief ‘in brotherly Russia’, based on ‘belonging and adhering to Orthodoxy’. Elaborating historical points as the strongholds of the myth, from the Nemanjić dynasty and Byzantium to the present day, in detail and argumentatively, he tirelessly, skilfully, and diligently points out the hidden state-political and military interests that secretly influenced political practice and the shaping of collective ideas about a ‘century-old friendship’. For each of the Serbs who adopt it, the myth “provides at least an illusory participation in something grand, all too well-known and confirmed as historically relevant, while political reality is often mundane and very limiting in terms of political creativity” (p. 347).

It is rationally explained why each chapter of the book is within its covers. Thus, the theoretically impeccable reflection on the tradition of collective guilt is followed by an example of the Serbian trauma of collective punishment, which traces its roots back to both the Balkan Wars and the two Great Wars. Professor Simeunović, a renowned researcher of these events, singles out the phenomenon of the disruption of European political harmony and Serbian ignorance of realpolitik, political blindness, and misunderstanding of changes as reasons which, like houses of cards, destroyed traditional relations between major states. As Simeunović emphasises, “the trouble of the Serbs is that the Americans are also

prone to all kinds of imitation of the European tradition, taking from it the concept of the tradition of European guilt and that its interests of globalisation were opposite to the interests of the Serbian great-state uniqueness” (p. 366).

Books like *Politics as an Art of Illusion* are rare in the recent practice of political science. Although it was primarily intended for political scientists and sociologists, it can also be recommended as essential reading for future lawyers, historians, and pedagogues, as well as a wider audience interested in the area of political ideas, programmes, and practices. Professor Dragan Simeunović, having collected his best and most seasoned thoughts in one place, offers readers a codebook of the contemporary understanding of politics, which makes this book an indispensable source for the study of political practice. Finally, attention should also be drawn to the great effort of the publishers, who contributed to the high evaluation of the overall edition by utilising excellent and high-quality text editing.

INSTRUCTIONS FOR AUTHORS ON PAPER PREPARATION

Formatting. Papers should be sent as *Microsoft Office Word* files (version 2000, 2003, 2007), font *Times New Roman*, font size 12. Page setup margins should be 2.5 cm (top, bottom) and 2.5 cm (left, right), paper size A4 (210 mm x 297 mm). Paragraphs should be formatted with line spacing 1.5, and justified (Format, Paragraph, Indents and Spacing, Alignment, Justified). Do not break words at the end of the line.

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Language, alphabet. The languages of publication in the TEME is English (font *Times New Roman*). Contributions be rejected if the language is not at the appropriate level of correctness and style. If the authors wish to increase the visibility of their papers, they are supposed to submit Serbian version of the article as well (as Supplementary file - Word format, using the Cyrillic alphabet).

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- **Paper title in Serbian**
- **Abstract in Serbian**, followed by 5 key words.
- The paper should follow the **IMRAD** structure (Introduction, Methods, Results and Discussion), when it presents an empirical study
- **Paper body** should not contain more than three levels of subdivision into *sections* and *sub-sections*. Level one sections should be introduced by headings printed in *Italic* and in **CAPITAL LETTERS**, formatted as centred. Level two sections should be introduced by headings in *Italic*, with the initial capital letter, formatted as centred. Level-one and level-two headings should be separated from the previous text by one line. Level three sections should be introduced by a heading printed in *Italic*, but placed as a regular paragraph, separated by a full-stop from the text that follows.

Each paragraph should have the first line indented (1 cm).

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author-date system (Surname, year of publication, pages referred to, all in brackets) – Please, refer to the table at the end of these *Instructions*.

- When referring to several works by the same author, provide all the years of publication chronologically after the author's name. If there are several works by the same author published the same year, provide further specification using letters (a, b,...) after the year of publication: "...confirming this hypothesis (Wuthnow, 1987a, p. 32)...".

- When referring to several works by different authors, provide the authors' names in brackets following the alphabetical order, separating authors by semi-colon: "... several studies were central to this question (Jakšić, 1993; Iannaccone, 1994; Stark and Finke, 2000)."

Direct quotations can be included in the text if not longer than 20 words. Longer quotations should be given as separate paragraphs, spaced-out from the previous and following text, and with the following formatting: Format, Paragraph, Indents and Spacing, Left 1 cm, Right 1 cm, Line spacing – Single; for instance:

To explain how “culture through language affects the way we think and communicate with others of different background” (Gumperz, 2001, p. 35), Gumperz states:

“Conversational inference is partly a matter of a priori extra-textual knowledge, stereotypes and attitudes, but it is also to a large extent constructed through talk” (Gumperz, 2001, p.37).”

It is crucial that the in-text citations and references should match the literature listed at the end of the paper. All in-text citations and references must be listed in the References, and the References must not contain sources not referred to or cited in the text. The bibliography listed at the end of the paper should contain author names and source titles in original languages and alphabets, without translation.

Tables, graphs, and figures. Tables, graphs and figures should be numbered (sequentially), with captions explaining their content. Captions should precede tables, but follow graphs and figures. Graphs and figures must be clearly visible in the text, so they should be provided in 300dpi resolution. Graphs and figures must be single objects (no Drawing elements added). Where necessary, mathematical formulas should be added to the text using Microsoft Equation Editor.

Appendices. should be marked by *letters* (sequentially), e.g. Appendix A, Appendix B etc., and should contain a title describing the content of the appendix. When there is only one appendix, no letters are necessary in its title (only "Appendix").

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EXAMPLES OF SOURCE QUOTING AND REFERENCING:

Journal papers and articles – 1 author

In-text citation:

(Manouselis, 2008), i.e. (Manouselis, 2008, p. 55)

In ‘References’:

Manouselis, N. (2008). Deploying and evaluating multiattribute product recommendation in e-markets. *International Journal of Management & Decision Making*, 9, 43-61. doi:10.1504/IJMDM.2008.016041

Journal papers and articles – 2 to 6 authors

In-text citation:

First reference: (Uxó, Paúl, & Febrero, 2011)

Subsequent references: (Uxó et al., 2011)

In ‘References’:

Uxó, J., Paúl, J., & Febrero, E. (2011). Current account imbalances in the monetary union and the great recession: Causes and policies. *Panoeconomicus*, 58(5), 571-592.

Journal papers and articles – more than 6 authors

In-text citation:

(Cummings et al., 2010, p. 833)

In ‘References’:

Cummings, E., Schermerhorn, A., Merrilees, C., Goetze-Morey, M., Shirlow, P., & Cairns, E. (2010). Political violence and child adjustment in Northern Ireland: Testing pathways in a social-ecological model including single-and two-parent families. *Developmental Psychology*, 46, 827-841. doi: 10.1037/a0019668

Book – 1 author

In-text citation:

(Heschl, 2001, p. 33)

In ‘References’:

Heschl, A. (2001). *The intelligent genome: On the origin of the human mind by mutation and selection*. New York, NY: Springer-Verlag.

Book – edited volume

In-text citation:

(Lenzenweger & Hooley, 2002)

In 'References':

Lenzenweger, M. F., & Hooley, J. M. (Eds.). (2002). *Principles of experimental psychopathology: Essays in honor of Brendan A. Maher*. Washington, DC: American Psychological Association.

Paper or chapter in an edited volume**In-text citation:**

(Cvitković, 2007)

In 'References':

Cvitkovic, I. (2007). Katolicizam [Catholicism]. U A. Mimica i M. Bogdanović (Prir.), *Sociološki rečnik [Dictionary of Sociology]* (str. 226-227). Beograd: Zavod za udžbenike.

Encyclopaedia entry**In-text citation:**

(Lindgren, 2001)

In 'References':

Lindgren, H. C. (2001). Stereotyping. In *The Corsini encyclopedia of psychology and behavioral science* (Vol. 4, pp. 1617-1618). New York, NY: Wiley.

Papers in Conference Proceedings**In-text citation:**

(Bubanj, 2010)

In 'References':

Bubanj, S., Milenković, S., Stanković, R., Bubanj, R., Atanasković, A., Živanović, P. et al. (2010). Correlation of explosive strength and frontal postural status. In: Stanković, R. (Ed.): *XIV International Scientific Congress FIS Communications 2010 in Sport, Physical Education and Recreation* (191-196). Niš: University of Niš, Faculty of Sport and Physical Education.

PhD Dissertations, MA Theses**In-text citation:**

(Gibson, 2007)

In 'References':

Gibson, L. S. (2007). *Considering critical thinking and History 12: One teacher's story* (Master's thesis). Retrieved from <https://circle.ubc.ca/>

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(Републички завод за статистику, 2011)

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Републички завод за статистику. *Месечни статистички билтен*. Бр. 11 (2011).

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(Закон о основама система васпитања и образовања, 2004, чл. 5, ст. 2, тач. 3.)

In ‘References’:

Закон о основама система васпитања и образовања, Службени гласник РС. Бр. 62 (2004)

Legal and other documents

In-text citation:

(Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276, 1971)

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