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EKONOMSKI VJESNIK

ECONVIEWS

Review of contemporary business,
entrepreneurship and economic issues

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INVESTIGATION OF THE MEDIATING ROLE OF LIFE SATISFACTION IN THE EFFECT OF EMOTIONAL LABOR ON WORK-LIFE BALANCE

Abstract

Purpose: The aim of the research is to test the mediating effect of life satisfaction (LS) on the impact of emotional labor (EL) on work-life balance (WLB).

Methodology: The research tested the mediating effect of LS on the impact of EL efforts of taxi drivers on WLB. The quantitative research used a questionnaire-based methodology to collect research data.

Results: A positive and weak relationship has been determined between EL and LS. Additionally, the results also show a similar relationship between LS and WLB. However, no statistically significant relationship was found between EL and WLB. In addition, the impact of EL on LS and the impact of LS on WLB have also been determined. In a model without LS, it was observed that EL did not have a significant effect on WLB.

Conclusion: Research findings are limited only to the perceptions of taxi drivers in a city. To generalize the results, the research model could be repeated in different cities and sectors for comparative analysis. Measures can be taken to improve employees' life satisfaction. Thus, the EL efforts of employees will not be in vain, supporting them in maintaining and improving their WLB.

Keywords: Emotional labor, life satisfaction, work-life balance

1. Introduction

Many good effects are expected from vehicle automation and connected cars. These include improved road safety and fewer accidents due to the elimination of human error (Pakusch et al., 2020). Connected automated vehicles (CAVs) can be seen as one of the most annoying inventions in current transportation systems. There are potential changes that can have a direct impact on congestion, trip costs, and modal splits with CAVs. Additionally, there are possible secondary impacts on land use or car ownership rates, as well as other repercussions for employment, energy consumption and public health (Duboz et al., 2022). Autonomous, self-driving vehicles are becoming an increasingly

common part of the current transportation system. Many car industry companies have started to use autonomous driving technologies, like emergency stops in the case of obstacles, in their new car models. However, a driver still needs to remain in charge (Hemmati & Rahmani, 2022).

Road accidents incur huge economic expenses for transportation companies and pose a severe safety risk to professional drivers and other road users (Useche et al., 2018). Several studies have been conducted to investigate the influence of personality and attitude toward traffic safety in predicting the driving behavior of different types of drivers. It is well acknowledged that driving a car is a difficult endeavor that necessitates the integration of cognitive, decision-making, and physical control skills in order to ensure road safety (Tanglai et al., 2022). Some psychological work variables, such as driving stress, work overtime, and job strain, have recently gained prominence in explaining occupational health and safety issues in the professional driver community (Useche et al., 2018; Rowden et al., 2011; Du et al., 2011). Work stress, in particular, is one of the factors most commonly related with workplace accidents or injuries (Useche et al., 2018; Greiner et al., 1998; Öz et al., 2010).

For taxi drivers, instant decision-making and flexibility are essential in the taxi industry, which is a type of transportation that operates almost everywhere in the world and provides employment for many (Varol, 2022). In large cities like Istanbul, rapid population growth, unplanned urbanization, inadequate transportation infrastructure, increasing travel demand, and lack of coordination between transportation modes have made transportation the primary problem (Kahya, 2018). To increase productivity in taxi transportation in Istanbul, Munzuroğlu (2005) studied the planning of taxi drop-off and waiting areas using Geographic Information Systems (GIS), which can help taxis operate more efficiently by picking up passengers regularly at designated locations.

On the other hand, Eryılmaz (2008) approached the taxi industry from a different perspective, aiming to better understand the commercial taxi drivers we encounter daily. The study examined whether their job satisfaction and anxiety levels vary depending on sociodemographic variables and working conditions. The study found that job satisfaction and anxiety levels of taxi drivers did not vary based on demographic variables such as age, working hours,

working hours, marital status, and working conditions. It was also found that university graduate drivers were more satisfied with their relationships with colleagues compared to those with primary education. The study also revealed that the level of anxiety increased with the length of time spent living in Istanbul. However, no significant difference was found between anxiety levels and job satisfaction (Kahya, 2018; Eryılmaz, 2008).

In line with these findings, the aim of the research is to test the mediating effect of life satisfaction on the impact of emotional labor on work-life balance.

2. Theoretical framework and hypotheses

2.1 Emotional labor

Emotion is a phenomenon experienced in relation to our encounters and interactions with others (Walby & Cole, 2019). Emotions, which each person experiences differently, play a significant role in human existence because they influence how people live their lives (Amissah et al., 2022). People frequently use various strategies in both work and everyday life to deal with emotional occurrences (Gou et al., 2022). As a result, managing emotions is necessary in the majority of employee everyday tasks. Therefore, individuals' role performances depend on the expression and utilization of emotions to carry out their responsibilities (Brotheridge & Lee, 2003).

EL serves as a functional component of organizational communication (Mann, 1997), and according to Constanti and Gibbs (2004), EL is an emotional representation of responsibilities and tasks. The idea of EL was first used by Hochschild in 1983. Researchers like Ashforth and Humphrey (1993), Morris and Feldman (1996), and Grandey (1999), contributed to the evolution of the idea over time. Hochschild (1983, p. 7) defines EL as the process of managing emotions, both bodily and facially, performed by employees and observable by others. EL is described by Morris and Feldman (1996, p. 987) as the effort, planning, and control necessary to exhibit organizationally desired emotions during interpersonal interactions. Later, Grandey (1999) used a holistic perspective on the concept of EL and made inferences about the antecedents and consequences of the concept. EL includes every effort to change the voice and behavior of the person against the other person (Gulsen & Ozmen, 2019) and can also be expressed as the process of regulating the emotions of employees according to the requirements of their organizations (Lv

et al., 2012). Emotion management comes as a cost to the employee, but this situation can sometimes be ignored by organizations (Isenbarger & Zembylas, 2006). Therefore, if this cost is addressed, emotion management turns into EL (Karaman, 2017).

EL is a job that requires special skills (James, 1992) and the display of EL may require both soft (feminine) and hard (masculine) emotions. For example, a prison guard and a constantly smiling flight attendant may represent the opposite extremes of EL (Basım & Begenirbaş, 2012). According to Hochschild (1983), EL consists of two dimensions: surface acting and deep acting. Ashforth and Humphrey (1993) later added a third dimension to these—real role-playing.

The importance of EL has become an issue that is increasingly being considered by the service sector (Taylor, 1998). In the literature, there are studies developed to examine EL relations, especially media workers (Hesmondhalgh & Baker, 2008), call center workers (Başbuğ, 2010; Goodwin et al., 2011), store salespeople (Ikeler, 2016), hotel workers (Lv et al., 2012; Wu et al., 2017), nurses (Karimi et al., 2013; Liang et al., 2016), magazine staff (Soronen, 2018), coaches (Lee & Chelladurai, 2018), teachers (Bodenheimer & Shuster, 2019), and animators (Yağcı & Avcıkurt, 2020). Walby and Cole (2019), on the other hand, discussed the peer support among prison inmates in the context of EL and examined the management of both their own emotions and emotions of other prisoners.

2.2 Emotional labor and life satisfaction relationship

The concept of satisfaction refers to the state of meeting expectations, needs, demands, and wishes (Avçin & Erkoç, 2021). The concept of LS was first introduced by Neugarten et al. (1961). LS shows the difference between people's expectations from life and the ability to meet these expectations (Başpınar, 2021). Although business life is very important for individuals, it is not the only aspect of life. It can even be said that business life is not a goal but a tool (Bekmezci et al., 2021). At this point, LS refers to the degree to which an individual positively evaluates the overall quality of their life (Moran & Çoruk, 2021). At the same time, components such as health and social relations should be evaluated together when considering LS of individuals (Darling et al., 2011). It is also expected that individuals with high LS will be stronger under challenging conditions due to their positive evaluations (Avşaroğlu & Koç, 2019).

The literature includes studies exploring the relationship between LS and burnout (Avşaroğlu et al., 2005), workplace environmental conditions (García-Mainar et al., 2015), well-being (Becchetti & Conzo, 2018), distress tolerance (Avşaroğlu & Koç, 2019), psychological resilience (Durak, 2021), EL (Yeşil & Mavi, 2021), quality of life (Demir et al., 2021), happiness (Özavci et al., 2022), and mental health (Otaghi et al., 2023). In addition, the mediating role of LS in the relationship between EL and depression was tested by Başpınar (2021). Other studies have found statistically significant correlations between EL and LS (Atasoy & Turan, 2019; Moran & Çoruk, 2021; Palmer et al., 2002). Similar to EL studies, the sample selection in LS studies is often focused on store employees (Yeşil & Mavi, 2021), teachers (Demir et al., 2021), and nurses (Otaghi et al., 2023). Buser and Kearney (2017, p. 230) found that high stress levels reduce LS. All this information suggests that EL influences LS through similar variables. Based on these findings, the following hypothesis is proposed:

H₁: The relationship between emotional labor and life satisfaction is positive.

2.3 Life satisfaction and work-life balance relationship

WLB is a concept that emerges as a human need in today's fast and variable living conditions (Şahin-S Söylemez & Alpar, 2022). With changing living conditions, WLB has become increasingly important and a frequently studied topic in academic research (Akyaz & Boz, 2022). WLB refers to a state in which both an individual's work and personal life demands are in balance (Batur & Saylık, 2022). WLB is an element that affects one's LS, happiness and health (Allen et al., 2000). It can be said that the quality of work life, which plays an important role in WLB, reflects efforts to enhance employees' satisfaction with their work environment (Dere & Alkan, 2022).

In the literature, researchers have tried to examine the relationship between LS and WLB (Taşdelen-Karçkay & Bakalim, 2017; Toker & Kalıpçı, 2020; 2023). Aslan et al. (2021) examined the relationship between remote work, WLB, and LS. On the other hand, Umer and Zia-ur-Rehman (2013) argue that especially women have difficulties in maintaining WLB due to responsibilities such as motherhood, spousal duties, and home care. Yusuf and Khan (2018) found in their research with police officers that WLB significantly affects the life dimension. Bouzari and Karatepe (2020) determined that when

salespeople achieve a balanced WLB, their LS increases significantly. In addition, Best and Chinta (2021) found that one of the important determinants of LS for self-employed individuals is WLB. Furthermore, it has been determined that the work sector (public/private) has a regulatory effect on the relationship between WLB and LS (Bekmezci et al., 2021). Kuzulu et al. (2013) also found that work-life imbalance reduces LS. Taking this set of information into consideration, the following hypothesis is proposed:

H$_2$: Life satisfaction has an impact on work-life balance.

2.4 Emotional labor and work-life balance relationship

The perception of WLB and the sense of LS have become mandatory for organizations aiming to increase employee performance (Chanderkant & Neeraj, 2016). Achieving WLB requires individuals to actively participate in their professional and personal social roles (Sirgy & Lee, 2017). Hofmann and Stokburger-Sauer (2017) found in their research that EL negatively affects WLB. Based on these findings, the following hypothesis is proposed:

H$_3$: Emotional labor has an impact on work-life balance.

Studies in the literature have shown that there is a relationship between EL and WLB (Erebak & Tarhan, 2018), and that EL affects LS (Gümüş, 2020). There is also a relationship between EL and job satisfaction (Gulsen & Ozmen, 2019), as well as a positive correlation between work-life development, a sub-dimension of WLB and LS (Toker & Kalıpçı, 2023). In addition, Haar et al. (2014) and Noda (2020) found that employees who maintain WLB have high LS. On the other hand, Casper et al. (2018) found that WLB has strong relationships with job, family and LS. However, the relationship between LS and WLB has not been extensively studied yet (Toker & Kalıpçı, 2023, p. 80). Current research findings (Best & Chinta, 2021; Marks & MacDermid, 1996; Talukder & Galang, 2021; Žnidaršič & Marič, 2021) reveal a positive relationship between LS and WLB. At the same time, it has been determined that WLB positively affects LS (Çetinkaya & Dinçer, 2021). Based on these findings, the following hypothesis is proposed:

H$_4$: Life satisfaction has a mediating effect on the impact of emotional labor on work-life balance.

The research model tested in line with the hypotheses is shown in Figure 1.

Figure 1 Conceptual model of the research
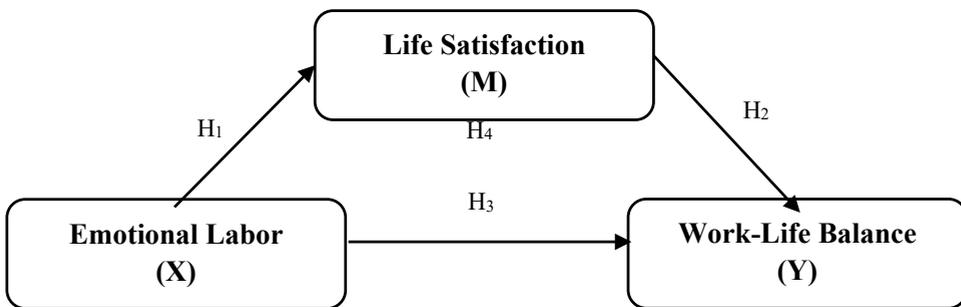
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3. Method and measurements

The data collection form consists of four sections. The first section contains six demographic questions. The second and the third section include the emotional labor scale (13 items) and the life satisfaction scale (5 items), respectively, while the fourth, i.e. the final, section includes the work-life balance scale (20 items).

3.1 Emotional labor scale

The emotional labor scale was developed by Diefendorff et al. (2005), and its Turkish validity and reliability of the scale were established by Basım and Begenirbaş (2012). The version of the scale adapted to the service sector was used by Yağcı (2020). The emotional labor scale consists of three sub-dimensions: surface behavior (1, 2, 3, 4, 5, 6), deep behavior (7, 8, 9, 10), and sincere behavior (11, 12, 13).

3.2 Life satisfaction scale

The life satisfaction scale was developed by Diener et al. (1985) as the "Satisfaction with Life Scale". Köker (1991) established its Turkish validity and reliability. The scale consists of one dimension.

3.3 Work-life balance scale

The scale used to measure WLB is the work-life balance scale developed in Turkish by Apaydın (2011). The scale consists of four sub-dimensions including work-life adjustment (7, 8, 9, 19, 6, 17), neglecting life (1, 4, 10, 5, 11, 2), taking time for oneself (13, 12, 20, 18), and only work (14, 15, 16, 3). Additionally, items 1, 4, 10, 5, 2, 13, 12, 20, 18, 15, 14, and 16 were reverse coded. The scales were measured using a five-point Likert type scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

3.4 Universe and sample

The population of the research consists of officially registered commercial taxi drivers in Istanbul, Turkey. There are 17,395 commercial taxis operating in the city (Engin, 2022, p. 37). Using the simple random sampling method, the aim was to reach at least 376 individuals, based on a 95% confidence level and a 5% margin of error. Within the scope of the research, taxi drivers registered at a particular taxi stand were interviewed face-to-face. After removing outliers or incorrectly coded forms from the data collected from 421 taxi drivers, the research was conducted using 394 valid responses.

4. Results

First, descriptive statistics were applied to the research data. As a result of the frequency analysis, it was observed that the majority of participants (N=394) were between the ages of 31-40 (34.5%), male (94.2%), primary school graduates (47.5%), married (72.3%), had 4-6 years of work experience (29.9%), and did not own the vehicle they used (97.2%). The results of the correlation analysis between the variables are shown in Table 1.

Table 1 Correlation analysis findings

	Mean	**Std. Deviation**	**1**	**2**	**3**
1-Emotional Labor	3.46	.549	(.77)		
2-Life Satisfaction	2.99	.882	.222[**]	(.87)	
3-Work-Life Balance	3.01	.564	.037	.574[**]	(.88)

[**]. Correlation is significant at the 0.01 level (2-tailed).
Note: The values in parentheses are Cronbach's alpha values of the scales.
Source: Created by the authors

According to the correlation analysis results presented in Table 1, it was found that EL has a positive and weak relationship with LS ($0 < r \le 0.3$). However, no statistically significant relationship was found between EL and WLB. On the other hand, there is a positive and moderately strong relationship ($0.3 < r$ ≤ 0.7) between LS and WLB. In addition, since the Cronbach's alpha values were at a reasonable level ($\alpha > 0.70$), the data were accepted as valid. To test the construct validity of the scales, confirmatory factor analysis (CFA) was conducted for each scale. Figure 2 shows the CFA model for the LS scale.

Figure 2 Satisfaction with life scale CFA model
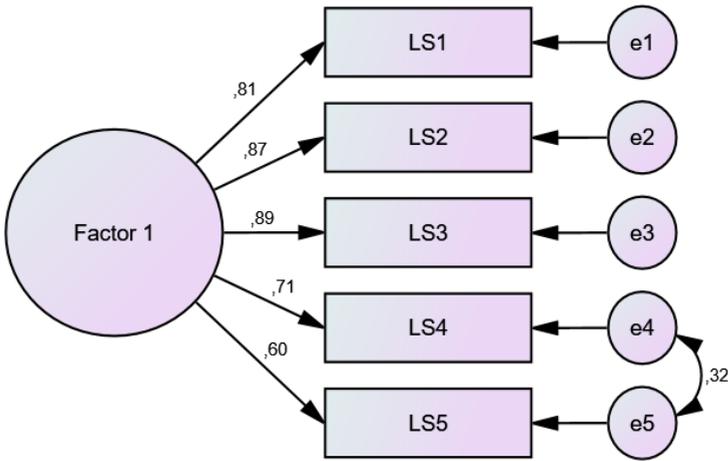
Source: Created by the authors

As can be seen in Figure 2, the factor loading of each item belonging to the life satisfaction scale is above 40. Figure 3 shows the CFA model for the emotional labor scale.

Figure 3 Emotional labor scale CFA model
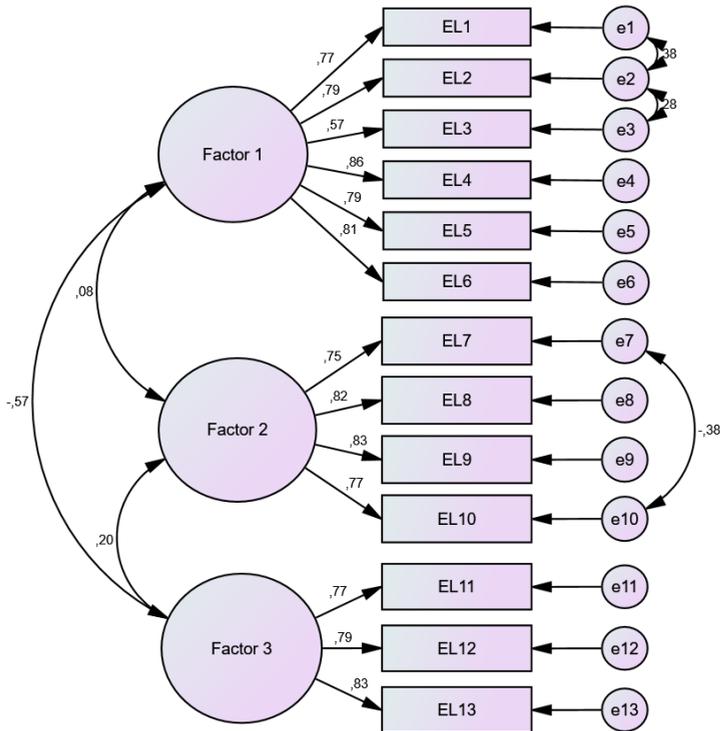
Source: Created by the authors

Figure 4 Work-life balance scale DFA model
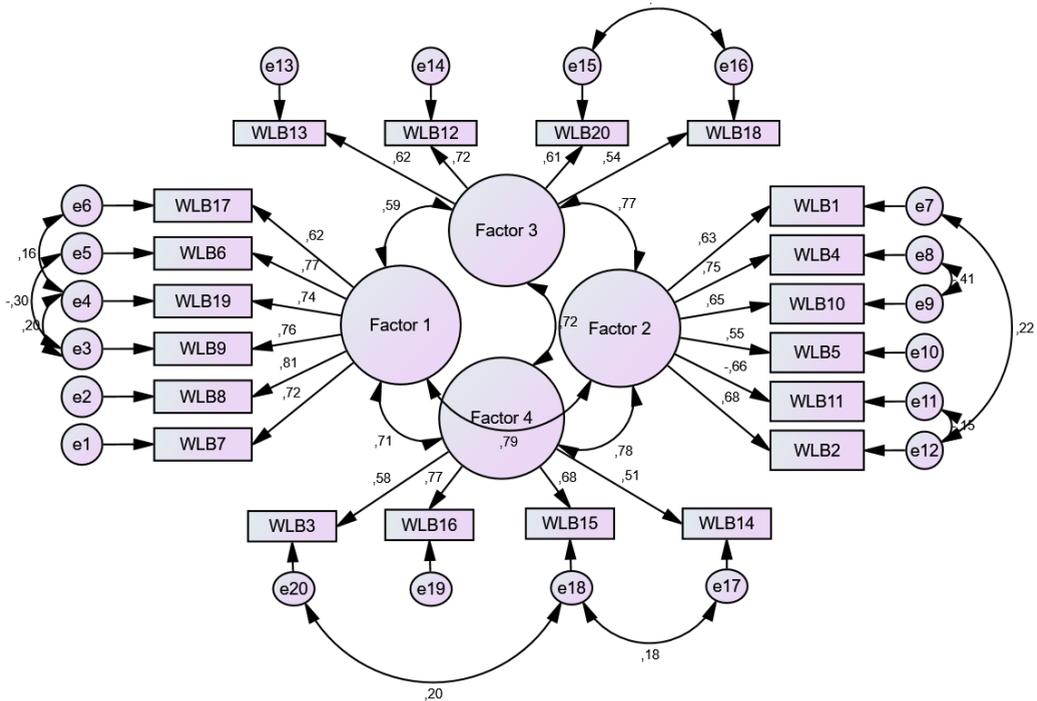
Source: Created by the authors

As can be seen in Figures 3 and 4, the factor loading of each item belonging to the EL and work-life balance scales is above .40. The goodness of fit index values of the scales are presented in Table 2.

Table 2 CFA model fit indices of scales

Index	Emotional Labor Scale	Life Satisfaction Scale	Work-Life Balance Scale	Good Fit Values	Acceptable Fit Values
X^2/df	2.643	2.611	3.01	<3	3< (X^2/df)<5
RMSEA	.065	.064	.072	<.05	<.08
SRMR	.04	.02	.05	<.05	<.08
CFI	.966	.994	.911	>.90	>.80
NFI	.947	.991	.873	>.90	>.80
GFI	.944	.990	.894	>.90	>.80
AGFI	.914	.962	.856	>.90	>.80

Note: X^2/df = Ki square / degrees of freedom, RMSEA = Root Mean Square Error of Approximation, SRMR = Standardized Root Mean Square Residual, CFI = Comparative Fit Index, NFI = Normed Fit Index, GFI = Goodness-of-Fit Index, AGFI = Adjusted Goodness-of-Fit-Index.
Source: Chow et al. (2001, p. 407) and Schermelleh-Engel et al. (2003, p. 52)

In Table 2, it is shown that EL and life satisfaction scales showed a good fit, while the work-life balance scale exhibited an acceptable fit. Since the item factor loadings of the scales were above .40 and the model fit was confirmed through the index values, it was concluded that the construct validity of the

scales was ensured. Following this, hypothesis testing began. The SPSS Process Macro 4 developed by Hayes (2018) was used to test the proposed hypotheses. The analysis results are shown in Figure 5.

Figure 5 The mediating role of life satisfaction in the effect of emotional labor on work-life balance (N=394)
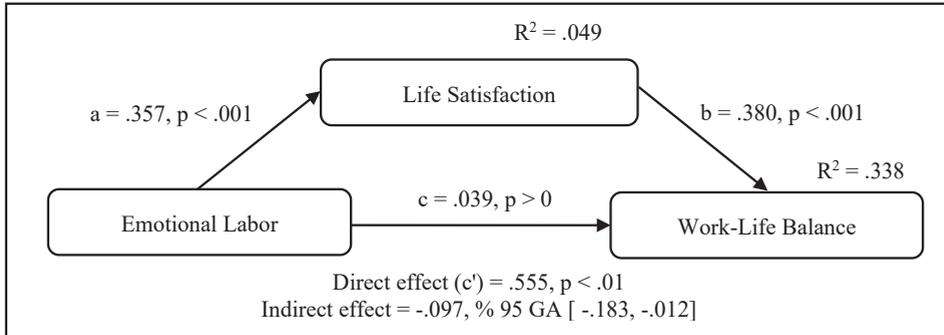
Note: Non-standardized beta coefficients have been reported. CI=Confidence interval. R2 values show the explained variance.
Source: Created by the authors

In path *a* of Figure 5, the regression analysis results show the effect of predictive variable EL (X) on the mediating variable LS (M). Accordingly, it can be seen that EL has a significant and positive effect on LS (b = .357, 95% CI [.2009, .5125], t = 4.5023, p = < .001). The significance of the non-standardized beta value *b* is understood because both the p value is less than 0.001 and the confidence interval (CI) values do not include the zero value (Gürbüz, 2021, p. 68; MacKinnon et al., 2004, p. 113). Thus, it can be said that EL explains about 5% (R^2 = .049) of the change in LS. In this case, the H_1 hypothesis is accepted. In addition, based on the effects of mediating variable LS (M) and the EL (X) on the result variable WLB (Y), it has been determined that LS has a significant and positive effect on WLB (b = .380, 95% CI [.3274, .4334], t = 14.1073, p < .001). In this case, the H_2 hypothesis of the research is accepted. EL did not seem to have a significant effect on WLB (b = -.097, 95% CI [-.1825, -.0119], t = -2.2404, p > 0). EL and LS explain about 34% (R^2 = .338) of the change in WLB.

In Figure 5, the effect of EL (X) on WLB (Y) (c) is shown in a model without the mediating variable (M), representing the total effect. Accordingly, the results indicate that EL did not have a significant effect on WLB in the absence of LS (b = .039, 95% CI [-.0635, .1405], t = .7421, p > 0). In this case, the H_3 hypothesis is rejected.

Finally, an indirect effect of EL (X) on WLB (Y) through the mediating variable LS (M) is shown in Figure 5. Considering the confidence intervals obtained by the bootstrap technique, the indirect effect of EL on WLB is significant; in other words, LS appears to mediate the relationship between EL and WLB (b = .136, 95% CI [.0761, .1961]). In this case, hypothesis H_4 is accepted, as the values of the confidence interval (CI) do not include the value of zero (0). In the bootstrap method, GA values related to the distribution were calculated using percentile bootstrap confidence intervals (Gürbüz, 2021, p. 78). The partial standardized effect size of the mediation effect is .241, indicating a high effect (Gürbüz, 2021).

5. Conclusion and discussion

Many research studies are being conducted in the fields of public health, LS, and reducing traffic accident risks. Technological advances in autonomous and connected vehicles have the potential to reduce these risks and offer numerous other benefits. However, there is still a need to further develop and fully integrate these technologies into our transportation systems. In the meantime, human error remains one of the main reasons for traffic accidents, and this is closely linked to the drivers' physiological state and health. The main reason that motivated this research is the growing need to con-

duct empirical studies that shed light on the factors influencing driver behavior, physiological health, and WLB.

The research, which tested the mediating effect of LS on the impact of EL efforts of taxi drivers on WLB, was conducted with 394 respondents. First of all, the majority of the participants were aged between 31 and 40 (34.5%), male (94.2%), primary school graduates (47.5%), married (72.3%), had 4-6 years of work experience (29, 9), and did not own the vehicle they used (97.2%). According to the correlation analysis results, it was found that EL has a positive and weak relationship with LS. Other studies also identified statistically significant correlations between EL and LS (Atasoy & Turan, 2019; Moran & Çoruk, 2021; Palmer et al., 2002). Yeşil and Mavi (2021) also found a positive relationship between EL and LS. The research findings align with the existing literature, confirming the relationship between EL and LS in the sample of taxi drivers. The strong and positive relationship may indicate that EL plays an important role in increasing employee LS. However, no statistically significant relationship was found between EL and WLB. On the other hand, Erebak and Tarhan (2018) argue that EL and WLB are related. This may be due to sector differences. In addition, there is a positive and moderately strong relationship between LS and WLB. Findings from many studies (Best & Chinta, 2021; Marks & MacDermid, 1996; Talukder & Galang, 2021; Žnidaršič & Marič, 2021) also reveal a positive relationship between LS and WLB. Moreover, Haar et al. (2014:362) and Noda (2020:1346) also determined that the LS of employees who maintain WLB is high; in other words, the relationship between the variables is positive. Similarly, Casper et al. (2018) have found that WLB has a strong relationship with LS. These findings are consistent with the research findings. Thus, it can be said that the relationship between LS and WLB was confirmed in the sample of taxi drivers.

According to the regression analysis results, EL had a significant and positive effect on LS. In this case, the H_1 hypothesis was accepted. Gümüş (2020) also obtained a similar result in his research. Thus, it can

be concluded that EL can be used to increase LS. Similarly, it has been determined that LS has a significant and positive effect on WLB. In this case, the H_2 hypothesis of the research was accepted. It has been determined in the literature that WLB positively affects LS (Çetinkaya & Dinçer, 2021). Yusuf and Khan (2018) found in their research with police officers that WLB significantly affects the life dimension. Bouzari and Karatepe (2020) determined that when the WLB of salespeople is well-managed, their LS tends to be higher. Best and Chinta (2021), on the other hand, found that one of the important determinants of LS for self-employed individuals is WLB. Both the research findings and the given variables obtained from the literature reveal that they influence each other. In this case, it can be said that employees who are able establish a WLB experience increased LS, and conversely, employees with high LS are likely to contribute positively to their WLB. According to the regression analysis results, EL did not have a significant effect on WLB in a model without LS. In this case, the H_3 hypothesis was rejected. Hofmann and Stokburger-Sauer (2017) found that EL negatively affects WLB, which may be due to industry differences. In addition, since EL is a demanding process, it can be expected that it does not contribute to WLB. Finally, it was determined that LS mediated the relationship between EL and WLB. In this case, the H_4 hypothesis was accepted. No study has been conducted testing this model. Moreover, Başpınar (2021) claims that LS plays a mediating role in the relationship between EL and depression. In this case, while EL does not directly affect WLB, it can affect WLB through LS. This can provide valuable insights into contributing to WLB.

In conclusion, measures can be taken to enhance employee LS, ensuring that their EL efforts are not in vain. This will, in turn, support employees in maintaining and improving their WLB. Research findings are limited only to the perceptions of taxi drivers in a city. To generalize the results, it is recommended that the research model be applied in different cities and sectors to be able to compare the results.

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ABUSIVE SUPERVISION AND INDIVIDUAL CREATIVITY: THE ROLES OF TRUST IN SUPERVISOR AND PSYCHOLOGICAL CONTRACT BREACH

Abstract

Purpose: In this research, drawing on social exchange theory, we presented and evaluated a moderated mediation model, investigating trust in supervisor (TIS) as a mediator and psychological contract breach (PCB) as a moderator in the correlation between abusive supervision and individual creativity.

Methodology: Data were collected from 275 employees employed in 11 private banks located in a city in Eastern Turkey.

Results: The results revealed that TIS mediated the correlation between abusive supervision and individual creativity. Moreover, analyses of moderated mediation demonstrated that PCB moderated the indirect correlation between abusive supervision and individual creativity via TIS.

Conclusion: This study enhances the abusive supervision literature by incorporating research on TIS and PCB.

Keywords: Abusive supervision, individual creativity, trust in supervisor, psychological contract breach

1. Introduction

Academic research has increasingly focused on the "dark side of leadership" in recent years (e.g., Khan et al., 2021; Mackey et al., 2021). The main reasons for the current interest are the rise in the number of destructive supervisory behaviors in the workplace and their significant impact on organizational and employee outcomes (Lee et al., 2013). One of the destructive supervisor behaviors, abusive supervision, refers to "subordinates' perceptions of the extent to which their supervisors engage in the sustained display of hostile verbal and nonverbal behaviors, excluding physical contact" (Tepper, 2000, p. 178). Previous research (e.g., Park et al., 2018; Wang et al., 2020) revealed that abusive su-

pervision has negative effects on many work outcomes (e.g., job satisfaction, job performance, and organizational commitment). One of the negative effects of abusive supervision is that it reduces individual creativity, which is defined as "an individual employee effort in producing new things, useful ideas, or problem solutions" (Amabile et al., 2005, p. 368). Although there have been number of studies (e.g., Akram et al., 2021) investigating the relationship between leadership and creativity in recent years, the impacts of abusive supervision on individual creativity lack a comprehensive understanding of the underlying mechanisms and limiting factors. In this study, we broaden prior investigations by examining PCB as a moderator in the mediated connection between abusive supervision and individual creativity through TIS.

Previous studies (e.g., Walter et al., 2015) have investigated that trust plays a key role as a mechanism between abusive supervision and employees' work outcomes (e.g., job performance, citizenship behaviors). Thus, we investigated TIS as a mediator in the correlation between abusive supervision and individual creativity. According to social exchange theory (SET) (Blau, 1964), "the social exchange process" commences when a supervisor interacts with a subordinate in a positive or negative manner. A subordinate tends to respond to the supervisor's positive actions by displaying good behaviors and to their negative actions by showing bad behaviors (Cropanzano & Mitchell, 2005; Cropanzano et al., 2017). In this context, employees can react to the supervisor's abusive actions by increasing their bad behaviors and decreasing their good behaviors. Due to unfavorable interactions with an abusive supervisor, employees' TIS (as good behavior) can erode over time, sometimes leading to distrust of him or her (Tepper, 2007; Legood et al., 2021). Moreover, employees attempt to "harmonize" the equation in their interaction with an abusive leader by either underperforming or, more frequently, engaging in explicit or covert acts of workplace misbehavior (Han et al., 2017). That is, abusively supervised employees may respond to this treatment by not showing creativity in their jobs (Eva et al., 2019).

As mentioned earlier, we posit PCB as a limiting factor in the mediating effects of TIS concerning the correlation between abusive supervision and individual creativity. PCB was chosen as a boundary condition because PCB is another form of bad supervisory action that negatively influences employees' attitudes and behaviors. PCB is a subjective experience based on the employees' belief that the organization or its representatives, such as supervisors, fail to fulfill the promises made to them (Robinson, 1996). Empirical research has demonstrated that PCB is related to numerous undesirable employee behaviors and attitudes, such as less job satisfaction, performance, organizational citizenship behavior, and commitment, as well as more workplace deviant behaviors, turnover intention, and job burnout (Ghani et al., 2020). One of the negative consequences of PCB is a decline in the creativity of employees (Srivastava & Yun, 2018). Nevertheless, given the ever-changing global marketplace, promoting individual creativity is crucial for organizational survival and growth (Amabile et al., 2004). Organizations need their employees to think creatively to offer a different service to their customers and create added value (Liu et al., 2016). However, this seems possible by keeping some of the promises they made to their employees during the recruitment process, thus gaining their trust.

In this study, drawing on SET, we aimed to examine (a) the possible correlation between abusive supervision and individual creativity, (b) the mediating role of TIS in the abusive supervision and individual creativity linkage, and (c) the moderating role of PCB in the indirect correlation between abusive supervision and individual creativity via TIS. This study will contribute to the literature in several ways. First, we tested TIS as a mediator in the correlation between abusive supervision and individual creativity. It should be noted that TIS has been independently related to both abusive supervision (Chen & Wang, 2017; Kwon et al., 2020; Azizah, 2022) and individual creativity (Liu et al., 2016; Han et al., 2017), but it has not been investigated as a mediating mechanism in the correlation between abusive supervision and individual creativity. Second, we suggest that PCB interacts with TIS to predict individual creativity. By incorporating PCB into the model as a moderator, we broaden previous studies by proposing that the mediated correlation between abusive supervision and individual creativity, through TIS, depends on employees' varying perceptions of PCBs.

2. Theory and hypotheses

2.1 The mediating role of TIS

Individual creativity pertains to generating novel and valuable ideas, processes, products, or procedures (Amabile, 1988; Zhou & George, 2001). Individuals' perceptions related to organizational support, resource sufficiency, and supervisory be-

haviors all have an impact on individual creativity (Amabile, 1997). Leaders resorting to abusive behaviors, encompassing accusations, criticism, indifference, and a low tolerance for errors, can undermine employees' work engagement, restrict their motivation for innovative involvement, and ultimately obstruct individual creativity (Zhang et al., 2014; Wang et al., 2021a). Moreover, innovative ideas improve with supervisory support and feedback. If supervisors are not tolerant of employees with creative thoughts, these employees perceive that they cannot receive enough support (Wang et al., 2021b) and thus may hesitate to express their ideas. Also, within the framework of SET (Blau, 1964), abusively supervised employees can try to "balance". Facing an abusive leader, employees may respond by either delivering subpar performance or, more commonly, involving themselves in overt or covert acts of workplace misconduct (Han et al., 2017). In this context, they can respond to this treatment by not showing creativity in their jobs.

As part of this research, it is considered that abusive supervision impacts individual creativity indirectly by affecting employees' TIS. Abusive supervision represents an adverse manifestation of leadership behavior, resulting in strained leader-subordinate relationships and diminished trust in leaders among subordinates (Chen & Wang, 2017). According to SET, due to unfavorable interactions with a supervisor, employees' TIS can erode over time, sometimes leading to distrust of him or her (Tepper, 2007; Legood et al., 2021). If leaders engage in abusive behavior, they stray away from the values like reliability, integrity, and honesty that play a significant role in the constitution of trust (Hua, 2008), and thus employees' TIS can decrease (Xiaqi et al., 2012). Previous studies also confirm this relationship. For instance, Chen and Wang (2017) identified that supervisory trust plays a mediating role in the correlation between abusive supervision and job performance, with abusive supervision exerting a negative impact on supervisory trust. Similarly, Kwon et al. (2020) established that abusive supervision detrimentally influences both affective trust and cognitive TIS. Azizah's (2022) research revealed a negative association between abusive supervision and employees' TIS.

In this study, we propose that TIS may mediate the correlation between abusive supervision and individual creativity. Rousseau (1995, p. 395) defined trust as "a psychological state comprising the intention to accept vulnerability based upon positive expecta-

tions of the intentions or behavior of another". Conversely, TIS, a facet of interpersonal trust, reflects a subordinate's readiness to expose themselves to the actions of a supervisor whose behavior or actions they cannot regulate (Tan & Tan, 2000). That is, although employees cannot control the actions of their supervisor, they are voluntarily vulnerable to these actions (Mayer et al., 1995). In a supportive work environment, employees focus more on their tasks, produce high-quality work, and feel safe to try new ideas and engage in creative activities without fear of being unfairly punished (Mayer et al., 1995; Edmondson, 1999; Mayer & Gavin, 2005). On the contrary, due to the insecure environment that comes with abusive supervision, employees are hesitant to produce new ideas, cannot pay attention to their work (Mayer & Gavin, 2005), and thus behave less creatively (Madjar & Ortiz-Walters, 2009). According to SET, leaders who care about their followers' well-being instill in them a favorable psychological state, which is reciprocated by them in the form of enhanced trust and creativity (Jaiswal & Dhar, 2017). Conversely, employees who are constantly criticized and blamed by their abusive leaders respond by reducing their trust in them and their abusive supervision. In the literature, Bhattarai (2015) found that the supervisor's supportive behavior and supervisory trust are significantly and positively correlated with subordinates' creativity. Khalifa (2019) revealed that supervisor trust has a positive influence on employees' innovative work behaviors. In this context, the following hypothesis was created:

Hypothesis 1: TIS mediates the correlation between abusive supervision and individual creativity.

2.2 The moderating role of PCB

Rousseau (1989, p. 128) defined PCB as a "failure of organizations or other parties to respond to an employee's contribution in ways the individual believes they are obligated to do". Robinson (1996) further stated that PCB is a personal experience stemming from an individual's perception that another party has not upheld their commitments which has an impact on their attitudes and behavior. When a psychological contract is violated, the employee believes that supervisors have not fulfilled their commitments. PCB is an unpleasant occurrence for employees and frequently has negative consequences for their work-related attitudes or behaviors (Guo, 2015).

PCB is a subjective experience based on the employees' belief that the organization or its representatives,

such as supervisors, fail to fulfill the promises made, which has an impact on their attitudes and behavior (Robinson, 1996). Research findings indicate that PCB is linked to a range of unfavorable employee behaviors and attitudes. These include diminished job satisfaction, performance, organizational citizenship behavior, and commitment as well as more workplace deviant behaviors, turnover intention, and job burnout (Ghani et al., 2020). Also, one of the consequences of PCB is low individual creativity. As for SET, when employees perceive that the organization or supervisor has not fulfilled contractual obligations, their attachment to the relationship weakens, reducing their willingness to contribute (Robinson & Morrison, 1995). Unfulfilled promises may lead to negative attitudes, fostering beliefs that organizations and managers are deceptive. These negative attitudes can hinder employees from displaying creative behaviors that would otherwise benefit their organizations. In other words, employees concentrate solely on completing the tasks outlined in their work contract, reducing innovative activity that benefits the supervisor and organization (Eva et al., 2019). Several studies in the literature also showed that PCB diminishes creativity and innovative work behaviors (e.g., Lehner et al., 2014; Srivastava & Yun, 2018; Eva et al., 2019).

In this context, it is considered that when employees with trust in their supervisor have a low PCB

perception in the workplace, TIS leads to a further increase in employees' creativity. On the other hand, when employees with trust in their supervisors have a high PCB perception, the positive correlation between TIS and individual creativity declines. In other words, the correlation between TIS and individual creativity is stronger when PCB perception is low and weaker when it is high. Thus, the following hypothesis was formed:

Hypothesis 2: There is a correlation between TIS and individual creativity, and this correlation is stronger for employees with low PCB.

We also tested if PCB would conditionally impact the magnitude of the mediated effect of abusive supervision on individual creativity through TIS. Aligned with Hypotheses 1 and 2, we posit that the mediated correlation between abusive supervision and individual creativity (via TIS) will exhibit greater strength among employees with elevated levels of PCB. Conversely, this mediated correlation is anticipated to be diminished for employees with lower levels of PCB. Thus, the ensuing hypothesis has been formulated:

Hypothesis 3: There is an indirect correlation between abusive supervision and individual creativity, and this indirect correlation is stronger for employees with higher PCB.

Figure 1 Hypothesized theoretical model
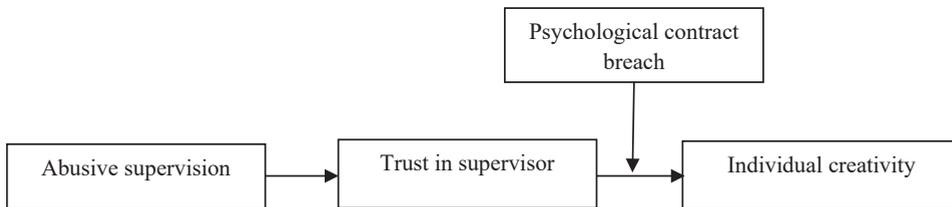
Source: Authors

3. Method

3.1 Sample and procedure

We collected the sample data from employees of 11 private banks located in a city in East Turkey. With the assistance of each bank's human resources manager, survey questionnaires were hand-delivered and collected by the first author with a statement guaranteeing their confidentiality to the participants. Of the 275 bank employees, 60%

were male, with an average age of 35. In terms of tenure with a supervisor, 20.6% had worked with a supervisor for one to five years, 31.4% for six to ten years, 37.1% for 11 to 20 years, and 10.9% for 21 years and above.

3.2 Measures

All scales were translated from English into Turkish using the "translation–back-translation procedure"

(Brislin, 1970). The participants answered the items on the scales using a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree).

Abusive supervision: We used Tepper's (2000) 15-item scale to assess participants' abusive supervision perceptions. A sample item is: "My supervisor tells me that my thoughts or feelings are stupid." Cronbach's coefficient α was 0.82.

TIS: We measured TIS using McAllister's (1995) 11-item scale. The sample item is: "I can freely share my ideas, feelings, and hopes with my supervisor." Cronbach's coefficient α was 0.87.

PCB: We used Robinson and Morrison's (2000) five-item scale to measure perceptions of employees' PCB. A sample item is: "Almost all the promises made by my employer during recruitment have been kept so far." Cronbach's coefficient α was 0.84.

Individual creativity: To assess employees' creativity, Zhou and George's (2001) 13-item scale was used. A sample item is: "Suggests new ways to achieve goals or objectives." Cronbach's coefficient α was 0.92.

Control variables: In the current study, gender, age, and tenure with supervisor were controlled for potential effects on their creativity (Binnewies et al.,

2013; Matud et al., 2007). Gender was coded as a dummy variable (0 = female, 1 = male), while other variables (age and tenure with the supervisor) were measured in years.

4. Results

4.1 Confirmatory factor analysis (CFA)

In our study, we performed CFA using AMOS 23.0 to test the discriminant validity of the variables. In these analyses, we compared the four-factor measurement model of the research (abusive supervision, PCB, TIS, and individual creativity) with four alternative models. The results revealed that the measurement model had a better fit than the alternative models (X^2 (81) = 313, TLI = 0.94, CFI = 0.95, RMSEA = 0.07).

4.2 Descriptive statistics and correlations

Means, standard deviations, and correlations are given in Table 1. Consistent with our expectations, abusive supervision was negatively correlated with TIS (r = -0.54, p < 0.01) and individual creativity (r = -0.49, p < 0.01). In addition, TIS was positively correlated with individual creativity (r = 0.48, p < 0.01).

Table 1 Means, standard deviations, and intercorrelations for variables

Variable	M	SD	1	2	3	4	5	6	7
1. Gender	1.60	0.49	-						
2. Age	35.00	0.78	0.27**	-					
3. Tenure with sup.	2.38	0.93	0.29**	0.61**	-				
4. AS	2.46	1.20	-0.24**	-0.42**	-0.17*	(0.82)			
5. TIS	3.77	0.96	0.13	0.31**	0.07	-0.54**	(0.87)		
6. PCB	3.27	0.59	0.16*	0.41**	0.37**	-0.54**	0.50**	(0.84)	
7. IC	3.73	1.03	0.16*	0.31**	0.08	-0.49**	0.48**	0.46**	(0.92)

Note: N = 275. Abusive supervision = AS; trust in supervisor = TIS; psychological contract breach = PCB; individual creativity = IC.
*p < 0.01; **p < 0.001
Source: Authors

4.3 Hypothesis testing

We tested the research hypotheses in two interrelated steps. First, we tested the first hypothesis of the study (Hypothesis 1) using regression analysis. Second, we tested our moderation hypothesis (Hypothesis 2) and moderated mediation hypothesis

(Hypothesis 3) by including the moderator variable (PCB) in the model.

4.3.1 Mediation tests

The results of Hypothesis 1 are given in Table 2. We tested the significance of the mediation hypothesis using the Sobel test and the bootstrapping method

in line with the Hayes PROCESS macro (Hayes, 2013). The results showed that the indirect correlation between abusive supervision and individual creativity was significant ($\beta = -0.35$, SE = 0.08, Sobel Z = -6.14, p <0.01). Also, bootstrap results confirmed the Sobel test (see Table 2), with a bootstrapped 95% bias-corrected CI around the indirect correlation between abusive supervision and individual creativity not containing zero (-0.51-0.22). Thus, Hypothesis 1 was supported.

Table 2 Regression results for mediation effect

	IC			
	B	**SE**	**T**	**P**
Gender	0.11	0.08	1.36	0.18
Age	0.05	0.07	0.73	0.47
Job tenure	-0.02	0.05	-0.35	0.72
Direct effect of AS	0.01	0.04	0.17	0.87
TIS	0.93	0.05	20.16	0.00
Total effect of AS	-0.36	0.06	-5.63	0.00
	Effect	**BootSE**	**LLCI%95**	**ULCI%95**
Indirect effect of AS	-0.35	0.08	-0.51	-0.22

Note: N=275. Bootstrap sample size = 5.000. LL = lower limit; CI = confidence interval; UL = upper limit; abusive supervision = AS; trust in supervisor = TIS.
Source: Authors

4.3.2 Moderation test

To test the moderation hypotheses (Hypotheses 2 and 3), we conducted a moderated regression analysis using Hayes PROCESS macro (Hayes, 2013). Prior to the analyses, all continuous variables were mean centralized to reduce multicollinearity (Aiken & West, 1991).

The results of Hypothesis 2 are given in Table 3. Hypothesis 2 predicted that a positive correlation between TIS and individual creativity would be stronger for employees with low PCB. The results showed that the interaction term between TIS and PCB was significantly related to individual creativity ($\beta = -0.34$, p < 0.01). For Hypothesis 2 to be said to be fully supported, this interaction must conform to the assumed model. Therefore, we plotted simple slopes to investigate this interaction effect at one standard deviation above and below the mean of PCB (see Figure 2). The slope of the correlation between TIS and individual creativity was stronger for employees with low PCB (simple slope = 0.84, p < 0.01), whereas the slope was weaker for employees with high PCB (simple slope = 0.52, p < 0.01). Thus, Hypothesis 2 was supported.

Table 3 Regression results for moderated mediation

	IC			
	B	**SE**	**T**	**P**
Gender	0.17	0.08	2.29	0.02
Age	-0.01	0.06	-0.06	0.94
Job tenure	0.02	0.05	0.36	0.72
AS	-0.03	0.04	-0.84	0.40
TIS	-0.83	0.05	17.29	0.00
TIS x PCB	-0.34	0.06	-5.36	0.00

Note: N = 275. SD = standard deviation; SE = standard error. Bootstrap sample size = 5.000. LL = lower limit; CI = confidence interval; UL = upper limit, AS = abusive supervision; TIS = trust in supervisor; PCB = psychological contract breach.
Source: Authors

Figure 2 Interaction effect of TIS and PCB on IC
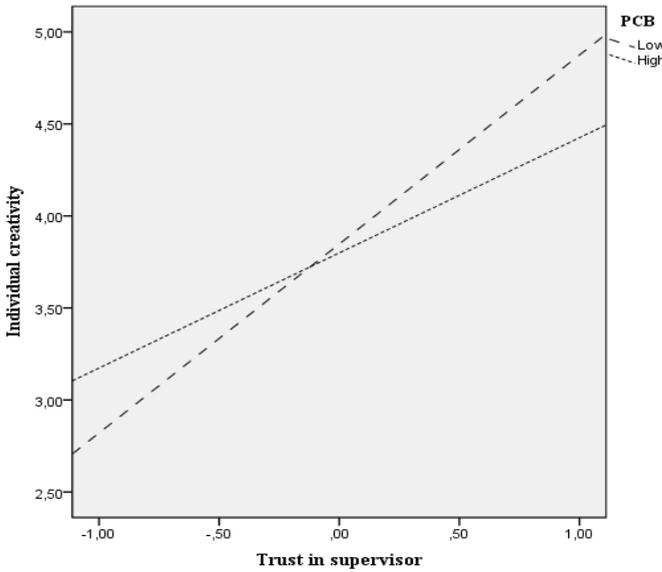
The results of Hypothesis 3 are given in Table 4. Hypothesis 3 predicted that the indirect correlation between abusive supervision and individual creativity through TIS would be stronger for employees with high PCB. Therefore, we investigated the conditional indirect correlation between abusive supervision and individual creativity through TIS at two levels of PCB (one standard deviation above the mean and one standard deviation below the mean). As indicated in Table 4, the results revealed that the conditional indirect correlation between abusive supervision and individual creativity via TIS was stronger for employees with high PCB (conditional indirect effect = −0.40, boot SE = 0.08, 95% bootstrap CIs from −0.55 to −0.25). These results supported Hypothesis 3.

Table 4 Results for the conditional indirect effect of abusive supervision on individual creativity through TIS

Conditional indirect effect of AS on IC				
PCB	Boot indirect effect	BootSE	BootLLCI	BootULCI
Low (-1 *SD*)	-0.25	0.07	-0.41	-0.12
High (+1 *SD*)	-0.40	0.08	-0.55	-0.25
Index of conditional indirect effects	0.13	0.04	0.06	0.21

Note: N = 275. SD = standard deviation; SE = standard error. Bootstrap sample size = 5.000. LL = lower limit;
CI = confidence interval; UL = upper limit.

5. Discussion

The finding of this study indicated that TIS mediated the correlation between abusive supervision and individual creativity. Furthermore, the correlation between TIS and individual creativity varied across different levels of PBC. The correlation between TIS and individual creativity is stronger for employees with low PBC. The results also indicated that the indirect correlation between abusive supervision and individual creativity is stronger for employees with

high PBC. Theoretical and practical implications of the findings are discussed in the following.

5.1 Theoretical and practical implications

Our findings contribute to the literature in three ways. First, the mediating role of TIS implies a social exchange mechanism in explaining the correlation between abusive supervision and individual creativity. Accordingly, if supervisors engage in abusive behavior, they stray away from values like reliability, integrity, and honesty, which play a significant role in trust (Hua, 2008). Furthermore, within the framework of SET, employees who interact unpleasantly with their abusive managers respond to them by lowering their trust (Tepper, 2007; Legood et al., 2021). Furthermore, because of the insecure environment that comes with abusive supervision, employees are hesitant to produce new ideas, cannot pay attention to their work (Mayer & Gavin, 2005), and thus behave less creatively (Madjar & Ortiz-Walters, 2009). In other words, employees reciprocate abusive behavior in the form of decreased trust and creativity. This finding complies with studies that previously identified a positive correlation between abusive supervision and TIS (Chen and Wang, 2017; Kwon et al., 2020; Azizah, 2022), and between TIS and individual creativity (Bhattarai, 2015; Khalifa, 2019).

The second finding illustrated that the correlation between TIS and individual creativity varied across the level of PBC. That is, the correlation between TIS and individual creativity is stronger for employees with low PCB, and the correlation is weaker for employees with high PCB. When employees encounter PCB, they form negative attitudes towards their organizations and managers, believing that they have been deceived. In response to PCB, these employees concentrate solely on completing the tasks outlined in their work contract, reducing creative activities that benefit the supervisor and the organization. (Eva et al., 2019). As a result, if employees who trust their managers also have a low PCB perception, the positive impact of TIS on individual creativity will increase. Conversely, if these employees have a high PCB perception, the positive impact of TIS on individual creativity will diminish.

The last finding indicated that PCB has a moderating role in the indirect correlation between abusive supervision and individual creativity. Accordingly, the indirect correlation between abusive supervision and individual creativity (through TIS) is stronger for employees with high PCB. On the other hand, this indirect correlation is weaker for employees with low PCB. As a result of this study, the following conclusion was reached: abusive supervision reduces employees' creativity by decreasing their trust in their supervisor. If employees whose TIS declines with abusive treatment also have a high PCB perception, their creativity is more negatively affected by AS. Conversely, if these employees have a low PCB perception, their creativity is less negatively affected.

In today's high-risk competitive environment, practitioners have found that innovation is critical and essential to survival, especially in industries where creativity is vital. From practitioners' perspectives, the results suggest that supervisors should realize the importance of trust. Practitioners should apply some trust-enhancing strategies (Zhu & Akhtar, 2014). For example, they should inform their current supervisors about the detrimental impacts of abusive supervisors' behaviors and give them training and seminars on both this issue and good leadership practices. On the other hand, the results revealed that managers should develop positive relationships with their employees, value their opinions, allow them to express their creative ideas without hesitation, involve them in decision-making mechanisms, and give them autonomy in their work. Thus, supervisors earn the trust of their employees. In a supportive work environment, employees who trust their supervisors focus more on their jobs, deliver high-quality work, feel safe when presenting their new ideas, and engage in more creative activities (Mayer et al., 1995; Edmondson, 1999).

Finally, managers can use some strategies for stimulating employees' creativity based on PCB. As such, organizations and supervisors should avoid PCB and deliver what they promised their employees during the recruitment process. Otherwise, employees may feel that their organization and managers are deceiving them, leading them to stop working and acting in their best interest (Lehner et al., 2014).

5.2 Limitations

Although our study has the theoretical and practical contributions mentioned above, it also has some limitations. First, because of the cross-sectional nature of the study, we could not confirm the direction of causality. For example, employees with low

TIS may decrease scores on the abusive supervisor scale. Therefore, future research should use longitudinal research designs. Second, we collected data on variables (abusive supervision, individual creativity, TIS, and PCB) at a single point in time, which may cause common-method variance (Podsakoff et al., 2003). Common-method variance is accepted as one of the main causes of systematic measurement error. Common-method bias can have a serious impact on empirical research results, with potentially misleading results. This systematic error prevents the emergence of relationships between variables and can increase or decrease the strength of the relationship excessively (Chang et al., 2010). Future research may collect data for abusive supervision, TIS, and individual creativity from different points in time to reduce common-method variance.

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DESIGNING HYBRID ORGANIZATIONAL MODELS FOR IMPROVING THE PERFORMANCE OF CONSTRUCTION BUSINESS SYSTEMS

Abstract

Purpose: The aim of this paper is to investigate the occurrence and characteristics of hybrid organizations in the Croatian construction industry and their impact on operational flexibility and enterprise performance.

Methodology: The characteristics of hybrid organizations were described through the following variables: "*Relational Governance*" (RM), "*Level of Information Sharing*" (LIS), and "*Subcontractor Network Design*" (SND). Their significance is tested by a regression model of relationships with target variables "*Operational Flexibility*" (OF) and "*Enterprise Performance*" (EP). A total of 137 construction enterprises in Croatia participated in the research.

Results: The significant positive impact of "*Relational Governance*" (RG) and "*Subcontractor Network Design*" (SND) on "*Operational Flexibility*" (OF) is observed. Furthermore, the significant positive impact of "*Level of Information Sharing*" (LIS) on "*Subcontractor Network Design*" (SND) is observed in a subsequently set regression model.

Conclusion: The results of the analysis indicate that Croatian construction companies create long-lasting hybrid organizations with their subcontractors. These organizations are significantly based on a mechanism of collaboration, which proves to be key to operational flexibility in achieving good business performance.

Keywords: Hybrid organizations, relation governance, information sharing, subcontractor network, operational flexibility

1. Introduction

There is a plethora of approaches and no consensus on the definition of the essential dimensions that determine the design of hybrid organizations. This paper promotes the idea that hybrid organizations should be established in line with the primary objectives of the business model–achieving superiority in performance. The foundation of performance excellence relies on satisfying the hybrid organization's operational flexibility requirements, which are crucial for achieving competitive advantage,

particularly in an uncertain, changing, and competitive environment. The Croatian construction sector was thus the focus of the survey, since the specifics of the industry are crucial for validating any theories about the elements affecting the formation of an organization.

The paper consists of six parts. The introduction presents the idea and context of the survey. The second part explains the concept of a hybrid organization and the research model. Parts three and four present the data collection approach and the results of factor analysis, while the fifth part elaborates on the results obtained by testing research model hypotheses. The final part discusses the interpretation of the results, implications, and research limitations.

2. Research model and theoretical perspective

Contemporary economic theory of organization identifies the market, coordinated through pricing mechanisms, and enterprises with their hierarchy, coordinated through commands, as two extremes on the continuum of organizational models. Between these extremes, there exist transaction organization structures, called hybrids, that deviate from the standard microeconomic textbooks (Stanković Moćan, 2019). Many of these business formations are based on agreements, but unified ownership of entities is not excluded in order to create a basis for harmonized sharing and exchange of technologies, products, services, and capital, which establishes a management structure that fuses aspects of price mechanisms and hierarchy.

The questions surrounding the formation, existence, and limits of firms have long been overlooked by economic theory. A firm is a tightly sealed black box of management and ownership, according to the neoclassical view, and its only aim is to maximize financial benefit. In an attempt to address the theoretical backdrop in the reality, scientists have started to critically assess the neoclassical theory framework. This serves as the basis for the development of several corporate theories, each of which examines hybrid organizational systems from a different angle. Examples of these theories include the relational view, transaction cost theory, and resource dependence theory. In the study of economic organization, transaction cost theory acknowledges the contractual idea. According to Williamson (1989, p. 139), limited rationality and opportunism assumptions help to discern among impractical and feasible types of contracting. Efficiency, or minimizing resource allocation costs, dictates how the transaction is managed. When investments between parties are specific enough to create contractual hazards without supporting the integration and considerable uncertainties require closer coordination than can be provided by markets, the result is a long-term or hybrid contractual partnership (Menard, 2008, p. 297). In situations when maintaining connections holds a significant value and partners' identities are important, transaction cost theory associates hybrids or long-term contractual relationships with transactions defined by idiosyncratic investments.

Resource dependency theory places a strong emphasis on the social context or environment. Understanding the context of an action is necessary before one can comprehend enterprise activities (Pfeffer & Salacnik, 2003, p. 1). The social context constrains the behavior of organizations, but it also provides possibilities through connections to different organizations, influencing, as well as supporting, the choices that organizations make. In accordance with this idea, companies form hybrid relationships with their environment to collect resources, stabilize results, and avoid control from the environment. Mutual dependency explains why independent entities must establish hybrid interactions with other companies. Firms will inevitably try to remain as independent as they can, which will result in significant expenses and hazards. Companies are prone to form hybrid organizations to jointly use scarce resources in an effort to decrease and control them.

In relational contracting, which builds on resource theory, relationships between organizations are a crucial resource. In order to increase an enterprise's value, hybrid relationships enable access to and utilization of valuable resources beyond the organization. These resources must be uncommon, challenging to duplicate, and few in quantity. Relational rents are made possible through relational contracting between organizations. Relational rent is a surplus over the average profit obtained jointly in an exchange connection that the respective companies are unable to realize (Dyer & Singh, 1998). Relational contracting places a strong emphasis on partner trust. Relational rents are also protected by the distinctive socio-complex institutional context that emerges in hybrid interactions. It is challenging to imitate; and thus, through its formal and

informal principles, it controls opportunism and promotes cooperation.

In order to accomplish the goals of this work, a conceptual model of HO was developed on the basis of the collaboration that hybrid organizations in the construction sector lack.

HOs built on enterprise collaboration look for ways to continuously develop and enhance the profitable delivery of goods and services to clients via the value and supply network. In order to accomplish shared and individual goals, this interdependent management calls for unification and pooling of knowledge as well as a greater degree of joint de-

cision-making, setting of objectives, and sharing of information (Zacharia et al., 2009).

The lead contractor has to organize the upstream business network and actions, develop a system of communication that shall allow the movement and information sharing, and effectively control the connections with the subcontractor network for a business model in the construction sector to succeed. Thus, in this research model, "RG", "LIS", and "SND" are characteristics emphasized in the research as the key factors determining effectiveness in collaborative hybrid organizations. The model also assumes links to dependent variables "OF" and "EP", which are subjected to the following causal analysis test:

Figure 1 Research model
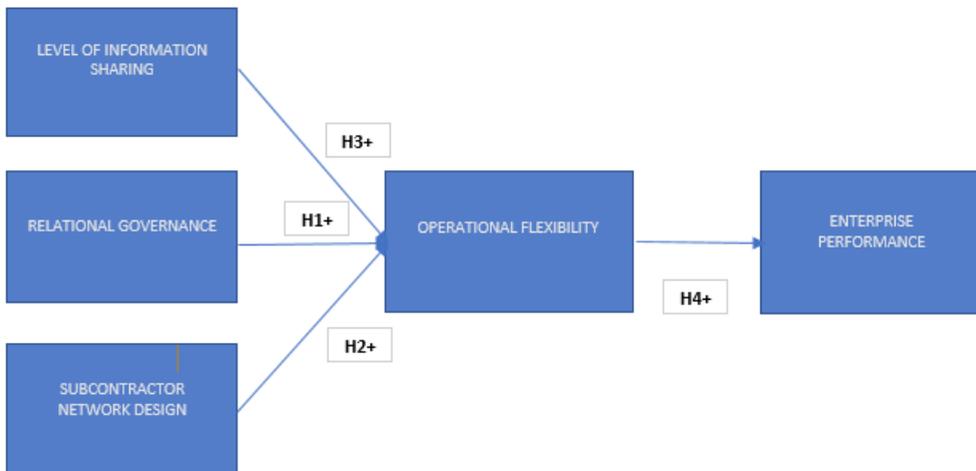
Source: Author

The model assumes that three independent variables–characteristics of a hybrid organization– affect operational flexibility. Operational flexibility can be defined as one of the essential components of the success of complex construction projects, and can be assumed to be more successful if implemented through forms of cooperation defined in the literature by the term "hybrid organization". Since operational flexibility is dominantly a technical category, a separate (fourth) hypothesis also tests the assumption that operational flexibility will have a positive impact on the economic performance of firms in the construction industry. The measurement of all variables was obtained using a 5-point Likert rating scale (with 1 = strongly disa-

gree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree).

2.1 Relational governance

Creating procedures for preserving and managing relational transactions is the fundamental goal of the majority of relational governance related research. Unlike a discrete transaction, which is short and has clear beginning and ending points, a relational transaction has a history, lasts longer, and represents a continuous process (Dwyer et al., 1987, as cited in Morgan & Hunt, 1994). Relational governance assumes the employment of tools by supply chain partners or hybrid organizations to preserve relationships on the basis of shared ob-

jectives. Examples of these mechanisms include relational norms and joint actions (Heide & John, 1992; Josi & Campbell, 2003, as cited in Wang & Wei, 2007). Through relational norms, which are essentially conjoined expectancies that transaction partners would support one another during their partnership, it influences opportunistic conduct (Larson, 1992, p. 96, as cited in Josi & Campbell, 2003). These activities aim to realize, develop, and sustain a successful relational transaction. They are grounded in formal contractual, legal, and informal psychological processes. If these processes are balanced, long-term cooperation is achieved (Handfield & Bechtel, 2002; Ring & Van de Ven, 1994). They can be observed as a set of rules which can reduce or eliminate relation risk and facilitate firm's cooperation and environmental innovation (Zhao et al., 2021; Duan et al., 2022, as cited in Sun et al., 2023). The framework of cooperative interorganizational interactions is developed by the relational management of personal relationships formed between transaction parties. A higher level of collaboration and stronger interorganizational interactions are characterized by a greater degree of trust (Johnston et al., 2004; Zaheer & Venkatraman, 1995), commitment (Kanter, 1994), by joint decision-making, and by setting common goals (Lee & Choi, 2003; Zacharia et al., 2009).

A numeric indicator containing 21 statements was used for operationalization of the "RG" variable. A total of 12 statements were derived from Wang and Wei (2007), customized for the construction sector, and then enhanced with 9 additional assertions.

2.2 Level of information sharing

In a hybrid organization, the term "LIS" refers to the quantitative component of successful information exchange between transaction partners. It denotes the degree of information exchanged between parties that can support each other's efforts (Heide & Miner, 1992, p. 275, as cited in McEvily & Marcus, 2005). A hybrid network which is successful includes information exchange, and according to Moberg et al. (2002), it is divided into strategic and operational. Short-term quantitative data that reduce order delays, influence inventory levels, or customer satisfaction are shared in operational information exchange. Sensitive qualitative long-term data about business strategies that improve collaboration between network partners are covered by strategic information sharing. Indepth partnerships typically involve the exchange

of information on profitability, costs of production, strategic objectives, and organizational practices (Uzzi, 1997). Companies must share information to make use of a variety of resources that they lack within their own organization for the flow of goods and services, or the very building process, to be effective and productive. Reducing stock and making optimal use of resources are possible if information flow in the supply chain is given priority over the flow of goods (Graham & Hardaker, 2000, as cited in Sezen, 2008). Partners in the supply chain might function as a single unit when vital and confidential information is routinely shared (Stein & Sweat, 1998). Information sharing improves all three dimensions of supply chain learning which have a direct influence on flexibility performance (Huo et al., 2020). It becomes more detailed by deepening connections within the network of the main contractor and subcontractors. Participants in deeper relationships readily share knowledge about possible dangers and possibilities because they are committed to seeing their partner succeed and to preserving their relationship (McEvily & Marcus, 2005).

In this paper, the "LIS" variable was operationalized using a numerical indicator of five statements taken from Li et al. (2006) and tailored to the construction industry.

2.3 Subcontractor Network Design

The "SND" variable is one of the key elements affecting operational flexibility of the organization. It refers to the procedure of creating relationships, structuring and selecting subcontractors within hybrid networks (Stanković Moćan, 2019). There is no unique way to define this variable, and several scientists use various dimensions (Sezen, 2008). According to Choi and Kim (2008), structure can be defined by the number of suppliers and the tightness or looseness of their relationships. Thus, Sammadar et al. (2006) identify the network's vertical structure (the number of levels), horizontal structure (the number of channels), and location. Chopra and Meindl (2004), as cited in Sezen (2008), imply that decisions regarding the number of subcontractors, their closeness, selection, assessment, capacity planning, contract drafting, and response to disputes are all integral parts of supplier network design. Close and immediate contracting with subcontractors indicate flatter and thinner structures. Primary contractors turn to main suppliers, which decreases their number and streamlines the structure. This is shown by the process of subcontractor selection and their long-term cooperation (Stanković Moćan, 2023). In the construc-

tion business, main contractors frequently rely on a large number of multi-level subcontractors, with their relationships mostly based on the lowest cost of work. Such practices do not foster continuous cooperation and coordination between the main parties (Spekman, 1988). Many businesses in various sectors search for less complex relationships to enhance customer service and save overall logistical expenses (Kumar, 1996, as cited in Moberg et al., 2002), and have narrowed the base of suppliers to a group of certified ones (Inman & Hubler, 1992, as cited in Ndubisi et al., 2005). As a result of this cooperation, businesses are able to identify suppliers with the greatest potential for collaboration, which reduces the overall number of suppliers. This process is known as supply base optimization (Bhote, 1987, as cited in Handfield & Bechtel, 2002). Key subcontractor selection is an essential step in narrowing down the pool of subcontractors. Relationships with these subcontractors are marked by open communication, mutual trust, dedication, joint problem solving, and shared planning (Spekman, 1988; Handfield & Nichols, 2002, pp. 15-17). Contracting one type of business with only one subcontractor (single sourcing) leads to less uncertainty and cost reduction due to economies of scale, as well as to increased cooperation and communication. Long-term connections with fewer subcontractors define cooperative relationships, which lead to a more straightforward and flattened supply chain structure. Due to the potential for retribution, extending the duration of repetitive transactions–i.e., forging long-term connections with a subcontractor network–decreases the likelihood of opportunistic behavior. According to game theory, in long-term interactions, there is an incentive for cooperation since parties share the expectation that the transactions would be repeated (Axelrod, 1984; Kreps, 1990; Telser, 1987, as cited in Sako, 1992, p. 46). For the purpose of this paper, the "SND" variable was operationalized using a numeric indicator consisting of ten statements supported by ongoing interactions with subcontractors, specific criteria for their selection, and proximity to and direct contact with them.

2.4 Operational flexibility

"OF" refers to the capacity of a focal firm to supply flexible services in the current partnership system with flexibility in terms of timelines, quality, processes, and expenses. It represents the ability to fight unanticipated fluctuations based on organizational structures or existing goals and changes in the environment (Alolayyan et al., 2022). The hybrid organization is larger than the focal company, thus its flexibility must exceed the enterprise's internal flexibility capacity. To do this, it must incorporate components of intra- and inter-organizational flexibility (Stevenson & Spring, 2007). A combination of the skills of the main contractor and its current suppliers benefits the client and has a direct impact on them.

Supply chain flexibility is one of the main responses to increasing market uncertainty and competitiveness (Merschmann & Thonemann, 2011). It enables companies to respond to frequent changes in their environment, such as customer demands, delivery locations, changes in government policies, emergence of new technologies, design changes, product demand volumes, etc. Such changes in demand and supply disruptions cause an effective adaptation of the flexible supply chain, which maintains customer satisfaction (Stevenson & Spring, 2007). With greater flexibility in offerings, partners in the supply chain achieve greater adaptability, allowing resources to be better explored and utilized (Wang & Wei, 2007).

For the purpose of this paper, the "OF" variable was operationalized using a numeric indicator consisting of 5 own statements and 4 statements taken from Wang and Wei (2007) and adapted for the construction industry.

2.5 Enterprise performance

The narrowest concept of business performance is oriented toward the use of financial indicators assumed to reflect the fulfillment of economic goals and refer to financial execution (Hofer, 1983; Venkatraman & Ramanujam, 1986, as cited in Yamin et al., 1999). However, measuring only financial indicators is insufficient because modern dynamic and uncertain markets require the measurement and monitoring of other, non-financial indicators. Therefore, the broader concept should include operational (non-financial) business performance indicators as well (Yamin et al., 1999). Operational performance, financial performance, and customer satisfaction were chosen as the three performance measuring dimensions for this model.

Customer satisfaction is defined as the level to which customers feel they have received products and services worth the price they have paid (Tracey et al., 1996, as cited in Fantazy & Salem, 2016), and it reflects the performance of the main contractor and subcontractors.

Operational performance is indicated by success in terms of product quality, service levels, and timely execution of work (Eckstein et al., 2014), while financial indicators reflect an enterprise performance. The ultimate goal of the manufacturer and its suppliers is to deliver the best product and achieve the highest level of customer satisfaction (Chu et al., 2012).

The "*Enterprise Performance*" variable was operationalized using 11 statements tailored to the construction industry. Three of them were obtained from Eckstein et al. (2014), 2 from Krohmer et al. (2002), and 1 from Chu et al. (2012) and Jin et al. (2013). Return on investment (ROI), return on assets (ROA), increased sales (the number of new contracts), and increased market share have been added to them.

2.6 Relationship between relational governance and operational flexibility

Enterprises can achieve flexibility by structuring and coordinating their external and internal resources (Fredericks, 2005). Relational governance is positively related to flexibility, the source of which are existing suppliers, while the other source of possible adaptability of producers (Harrigan, 1988; Porter, 1985, as cited in Josi & Campbell, 2003) or partner flexibility (Stevenson & Spring, 2009) is limited due to the reduced number of alternative suppliers. A greater reliance on trust in the good intentions of the other party reduces the need for formal documents, thereby reducing transaction costs and increasing managerial flexibility (Friedman, 1991, as cited in Ring & Van de Ven, 1994). The level of collaboration influences the process of determining the flexibility of existing structures, since close long-term relationships allow for greater willingness of suppliers to cope with change (Stevenson & Spring, 2009). Enterprises rely on the fair distribution of annuities, which motivates them to create additional value beyond the original contract (Dyer, 1997) or provide a flexible response.

Based on the analyzed empirical research by Handfield and Bechtel (2002), Ferguson et al. (2005), Roath and Sinkovics (2006), Cousins et al. (2006), Wang and Wei (2007), and Chu et al., (2012), it is assumed that:

H1 "OF" has been positively impacted by "RG".

2.7 Relationship between subcontractor network design and operational flexibility

Upstream activities and their configuration play a significant role in determining the flexibility of a hybrid organization. Before deciding on the selection and management of suppliers, the manufacturer (the main contractor) must identify the type of flexibility they want to achieve (Ndubisi et al., 2005) in order to benefit from a closer relationship with the supplier. Single sourcing decreases uncertainty and expenses due to economies of scale and increases communication and cooperation, so subcontractors are more willing to change their business operating methods to adapt to the requirements of the main contractor (Benton & McHenry, 2010, pp. 72-73) and the end consumer. Economies of scale and size reduce both ex ante and ex post negotiation costs by offering more options for correcting transaction irregularities (Dyer, 1997), i.e. the subcontractor is willing to act at their own expense, knowing that it will be reimbursed through another transaction. Fewer subcontractors will result in simpler networks and reduce transaction complexity, increasing supply chain responsiveness, flexibility (Handfield & Bechtel, 2002), and efficiency because maintaining relational relationships with all subcontractors would be too costly for the main contractor (Benton & McHenry, 2010, p. 52). Thin structures allow direct contact with partners in a hybrid organization, which increases connectivity and transparency of product and information flow by enabling better performance control (Zhang et al., 2014). The flexibility of the development of a new product can be improved by selecting and managing suppliers and configuring the supply network (Buganza et al., 2010).

Existing empirical knowledge and research by Sezen (2008), Gosling et al. (2009), and Zhang et al. (2014) indicates that:

H2 "OF" has been positively impacted by "SND".

2.8 Relationship between the level of information sharing and operational flexibility

The flexibility of the value chain depends on the level at which information is shared through interorganizational information systems (Golden & Powell, 1999). By sharing information and acting together as one body (Stein & Sweat, 1998), partners can better understand the needs of the end consumer and therefore respond more quickly to market changes (Li et al., 2006). Coordination and sharing of information increase the ability of the supply chain to respond to sudden changes in environments with demand volatility (Lee et al., 2000, as cited in Sezen, 2008). It enables supply chain transparency and reduction of forecast errors (Zhou & Benton, 2007). Gosain et al. (2005) found that broad information sharing is detrimental to

supply chain flexibility, suggesting that the focus should be on the caliber of the information shared (time and knowledge).

A review of empirical research by Wang and Wei (2007), Zhou and Benton (2007), Fawcett et al. (2007), Sezen (2008), Jin et al. (2014), and Wu et al. (2014) indicates:

H3 *"OF" has been positively impacted by "LIS".*

2.9 Relationship between operational flexibility and enterprise performance

Enterprises with greater operational flexibility, lower costs, and higher quality will be able to respond quickly to changes in customer requirements. They will also meet the required quality standards more easily, perform activities on time, and achieve greater customer satisfaction, ultimately leading to better performance. Flexibility improves the performance of enterprises, especially those operating in dynamic and uncertain environments. Vickery et al. (1997) indicate in their research that production flexibility significantly affects financial and marketing performance. External integration with suppliers and customers is positively associated with time-based performance. These are ultimately linked to the financial performance of the enterprise and market share (Droge et al., 2004). Benton & McHenry (2010, p. 52) agree with the aforementioned claim, pointing out that strong and healthy relationships with subcontractors provide a source of capability that enables lower costs, higher quality, and the opportunity to achieve a greater market share.

The benefits arising from supply chain flexibility are seen in the creation of meaningful strategies that improve the overall performance of the enterprise (Duclos et al., 2003).

Based on existing empirical research by Merschmann and Thonemann (2011), Omar et al. (2012), Eckstein et al. (2014), and Mandal (2015) it is assumed that:

H4 *"EP" has been positively impacted by "OF".*

3. Instrument and structure of the research sample

In order to test the research hypotheses, an empirical study was conducted on certain construction enterprises in the Republic of Croatia. The construction industry is cyclical, labor-intensive, project-based, highly fragmented and competitive, and characterized by offering jobs with the lowest cost model recurring throughout the supply chain.

This paper deals only with enterprises engaged in construction, excluding those involved in building material production, design, technical testing, analysis, and supervision. The Amadeus database list of Croatian construction companies served as the basis for the sample. The database contained 1,623 businesses, 200 of which were selected because their management was thought to be prepared to take part in the study. They were either emailed or personally contacted. After completing the survey, participants were asked to share it with their colleagues at other construction companies. A total of 132 survey questionnaires were collected, even though a significant portion of respondents were reluctant to participate. The review of the collected survey questionnaires revealed that two questionnaires were incomplete and were thus excluded from further analysis. In addition, seven questionnaires were received from the same company, so those from the respondent in the higher position within the hierarchy were selected for further statistical analysis.

The research instrument used to gather primary data consists of two components.

The results from the first section of the survey were employed for the quantitative analysis of the conceptual model. It operationalizes the variables "RG", "LIS", "SND", "OF", and "EP".

Questions 14-23 in the second section of the survey were used to gather general data about the participants (name and position within the enterprise), the enterprises (establishment year, number of employees, and headquarters), and information about the core field of the enterprise (building or infrastructure facilities, supply chain position, and corporate geography).

The respondents who completed the questionnaire were primarily members of senior management (board members, sector directors, department heads), making up 62.6% of the sample. The majority of the companies were headquartered in Zagreb (26.0%), followed by Karlovac County (19.5%), Primorje-Gorski Kotar County (7.3%), Split-Dalmatia County (6.5%), Osijek-Baranja County (6.5%), and Zagreb County (5.7%).

Table 1 Function of respondents in enterprises

Function	F	%
Sen. Mng.	77	62.6
Mid. Lev. Mng.	32	26.0
Low. Lev. Mng.	14	11.4
Σ	123	100.0

Source: Author

Table 2 Distribution of enterprise headquarters

Headquarters	F	%
Zagreb	32	26.0
Karlovac County	24	19.5
Primorje-Gorski Kotar County	9	7.3
Split-Dalmatia County	8	6.5
Osijek-Baranja County	8	6.5
Zagreb County	7	5.7
Istria County	6	4.9
Brod-Posavina County	5	4.0
Bjelovar-Bilogora County	4	3.2
Vukovar-Syrmia County	4	3.2
Zadar County	4	3.2
Požega-Slavonia County	3	2.4
Varaždin County	3	2.4
Šibenik-Knin County	2	1.6
Dubrovnik-Neretva County	1	.8
Koprivnica-Križevci County	1	.8
Krapina-Zagorje County	1	.8
Sisak-Moslavina County	1	.8
Σ	123	100.0

Source: Author

Table 3 Legal structure of the enterprise

Legal entity	F	%
LLC	94	76.4
JSC	24	19.5
Other	5	4.1
Σ	123	100.0

Source: Author

Table 4 Size of the enterprise (number of employees)

Enterprise size (number of employees)	F	%
0-40	40	32.5
40-100	42	34.1
100+	41	33.3
Σ	123	100.0

Source: Author

Table 5 Status of the contractor in the value chain structure

Contractor status in the value chain	F	%
Lead contractor	84	68.3
Subcontractor	39	31.7
Σ	123	100.0

Source: Author

Table 6 Type of construction projects enterprises participate in

Project type	F	%
Buildings	35	28.5
Infrastructure facilities	86	70.9
Other	2	1.6
Σ	123	100.0

Source: Author

Of the total of 123 companies in the research sample, 76.4%, 19.5%, and 4.1% were limited liability companies, joint stock companies, and craft enterprises, respectively (Table 3). According to the number of employees, the sample was divided into three equal subgroups: 0-40 (32.5%), 40-100 (34.1%), and above 100 employees (33.3%), as can be seen in Table 4. A total of 68.3% of respondents declared that they primarily perform most of their business activities as main contractors, while 31.7% do so as subcontractors (Table 5).

Table 7 Location of construction projects enterprises participate in

Project location	F	%
Local	60	48.8
Croatia	53	43.1
Croatia and abroad	10	8.1
Σ	123	100.0

Source: Author

A total of 70.9% of respondents base their business primarily on infrastructure construction, while for 28.5% of respondents, building construction is the dominant activity (Table 6). Slightly less than half of the respondents perform construction work locally, in the area of their headquarters (48.8%), while 43.1% carry out projects across the Republic of Croatia, and only 8.1% engage in export activities by performing work abroad (Table 7).

4. Factor analysis

In the next step, factor analysis of the research variables was performed. The validity and reliability of the questionnaire were assessed by factor analysis and the Cronbach α test. The reliability of the measurement scales is acceptable since for all Cronbach's constructs α > 0.7. Kaiser-Meyer-Olkin's measure of sampling adequacy was 0.909 for "*Relational Governance*", 0.829 for "*Subcontractor Network Design*", 0.732 for "*Level of Information Sharing*", 0.913 for "*Operational Flexibility*", and 0.872 for "*Enterprise Performance*", which indicates that factor analysis will be useful. Furthermore, the Bartlett test examines the hypothesis that the correlation matrix is an identity matrix, which would indicate that the variables are unrelated and unsuitable for detecting latent structures. For all observed variables, the p-value was 0.00.

Factor analysis produced four factors of the variable "*Relational Governance*": the first, "Confidence", which includes five items (with factor loadings ranging from .636 to .752); the second, "Commitment", which includes two items (with factor loadings ranging from .554 to .787); the third, "Coordination", which includes five items (with factor loadings ranging from .563 to .720); and the fourth, "Joint problem solving", which includes five items (with factor loadings ranging from .534 to .816).

The "*Subcontractor Network Design*" variable consists of two factors: the first, "Bond intensity", which includes six items (with factor loadings ranging from .422 to .800), and the second, "Selection criteria", which includes four items (with factor loadings ranging from .411 to .737).

The "*Level of Information Sharing*" and "*Operational Flexibility*" variables did not exhibit a latent structure. Factor loadings of "*Level of Information Sharing*" and "*Operational Flexibility*" range from .606 to .884 and from .647 to .746, respectively.

Factor analysis of the "*Enterprise Performance*" variable produced two factors: "Operating performance", which includes seven items (with factor loadings ranging from .735 to .870), and "Financial performance", which includes four items (with factor loadings ranging from .762 to .949).

5. Research results

The testing of models and hypotheses was performed using the multiple linear regression method (hypotheses H1, H2, and H3) and the simple linear regression method (hypothesis H4). The influence of factors resulting from the previously conducted factor analysis on the variables representing "Relational Governance" and "Subcontractor Network Design" was tested before testing the model that includes all independent variables. After evaluating the model, it can be concluded that the independent variables do not have a significant impact on the dependent variable, as indicated by the value of the coefficient of determination.

Since the excluded factors of the variables "Relational Governance" and "Subcontractor Network Design" were not significant and the level of reliability of the group variables is high (.940) and (.847), they were tested without factors in a linear multiple regression model.

Due to the problem of multicollinearity, the standardization of dependent and independent variables was performed.

The analysis of the standardized model indicates that the standardized independent variable "Level of Information Sharing" was not a significant variable in the model (p = .6078). The standardized independent variables "Relational Governance" and "Subcontractor Network Design" are significant model variables (p = .000, p = .0036), and their coefficients are positive. The interpretation of the model is 67.40%.

Table 8 Estimated model of standardized variables OF, RG, LIS and SND

VARIABLE					
OF	β	p	r		
RG	**0.670659**	**0.0000**	0.777	Coefficient of determination R²	0.674043
LIS	-0.039056	0.6078	0.559		
SND	**0.228237**	**0.0036**	0.660		

Source: Author

Here, the fourth hypothesis was tested using a single linear regression model. The standardized independent variable "Operational Flexibility" is a significant variable in the model (p = .000), and its coefficient is positive. The interpretation of the model is 37.20%.

Table 9 Estimated model of standardized EP and OF

VARIABLE					
EP	β	p	r		
OF	**0.578463**	**0.0000**	0.667	Coefficient of determination R²	0.372062

Source: Author

Following the rejection of hypothesis H3, a new model was developed (Figure 2). This model investigates the direct impact of the independent variables "*RG*", "*LIS*", and "*SND*", without the mediation of the "*Operational Flexibility*" variable.

Table 10 Estimated model of standardized variables EP, RG, LIS, and SND

VARIABLE					
EP	β	p	r		
*R*G	**0.197794**	**0.0237**	0.657	Coefficient of determination R²	0.591533
*LI*S	**0.184159**	**0.0051**	0.605		
SND	**0.474340**	**0.0000**	0.701		

Source: Author

In this model, the independent variables "*RG*" (p = .0237), "*LIS*" (p .0051), and "*SND*" (p = .0000) were significant, and their coefficients were positive. Although all three variables are significant, it can be seen that the "*SND*" variable has the strongest impact on "*EP*". The interpretation of the model is 59.15%.

Table 11 Summary of all coefficients of determination

	Model 1	Model 2	Model 3
RG	0.670659	-	0.197794
LIS	-0.039056	-	0.184159
SND	0.228237	-	0.474340
OF	-	0.578463	-
R²	**0.674043**	**0.372062**	**0.591533**

Source: Author

As can be seen in Table 11, the interpretation of models 1, 2, and 3 is 67%, 37%, and 59%, respectively.

6. Conclusion

The regression model results shows that both variables, "*RG*" and "*SND*", are significant. However, it can be seen that the "*RG*" variable has a stronger influence on "*OF*". Thus, construction enterprises should prioritize relational governance practices when managing transactions, and then dedicate themselves to subcontractor network design to attain operational flexibility and improve business performance. Relational governance needs to be built on cooperation, dedication, trust, and mutual problem-solving to provide a foundation for subcontractor network integration. The subcontractor network or the whole supply channel must be well and appropriately designed so that it can be quickly adapted to meet every requirement of the end consumer. By ensuring both relational governance and network design processes, enterprises will be able to use their specific resources efficiently, thus achieving a competitive advantage and improved business outcomes. Contrary to the author's predictions and earlier theoretical research, the assumption of a positive impact of "*LIS*" on "*OF*" was not supported. Although information is exchanged among members of a hybrid organization, this communication does not exclusively lead to operational flexibility. Even though the third hypothesis was not supported by this sample, it remains significant and may be supported by a different sample of enterprises engaged in construction. Moreover, a closer examination of the sample reveals that senior management constitutes the majority of respondents, which may imply that the information provided reflects higher-level perspectives and therefore does not directly influence the operational level of the firm. The significance of "*LIS*" is reflected in a later model, where, together with the "*RG*" and "*Subcontractor Network Design*" variables, it significantly and favorably affects business performance of construction companies in the Republic of Croatia.

According to the findings of this study, construction enterprises in the Republic of Croatia form tight, continuous hybrid organizations with their subcontractors. These organizations are often based on a collaborative mechanism that proves to be key to achieving operational flexibility. Such supply networks are flexible in terms of meeting the requirements of individual construction projects, which ultimately leads to positive changes in the quality of business performance.

Recommendations for future research are based on the limitations of the conducted research. The first limitation of this study is related to the sample size and the data collection technique, which restrict the ability to extrapolate the research findings to the entire population, while leaving room for certain specific conclusions to be drawn.

Furthermore, the fact that the constructs were assessed using respondents' views poses another limitation. The research relied on the assessment of a single respondent within each organization, which may result in a skewed and subjective representation of the situation. This issue is especially evident when measuring company performance, as in that case, each manager essentially evaluates themselves and their work. Therefore, future research should consider measuring company performance using more appropriate and objective performance indicators.

This research tested the impact of a collaborative hybrid organization, so future research could focus on some other determinants of hybrid organizations, particularly the role of power.

Empirical research has investigated the relationships between model variables and thus confirmed and expanded existing knowledge. Both the positive effects of collaborative hybrid organizational structures on operational flexibility and the benefits of operational flexibility in relation to enterprise performance were observed. The confirmed hypotheses also clarify how the process of forming a hybrid organization and exploiting their specifics improves company performance, which has not been explained in the literature so far.

Owners and managers of construction enterprises should consider organizing transactions in a hybrid manner, in light of empirical findings on the benefits of collaborative hybrid organizations. In other words, enterprises should strategically approach the design and management of their subcontractor networks, aiming for effectiveness rather than just efficiency.

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THE ROLE OF AI IN THE CROATIAN FRANCHISE SECTOR: ADOPTION PATTERNS AND PERCEIVED BENEFITS

Abstract

Purpose: This research delves into the intersection of franchising and AI adoption in Croatia, with the aim of comprehending how AI technologies are harnessed to bolster business strategies and competitiveness within the franchise sector. Within the dynamic franchising landscape, integrating AI is pivotal for reshaping business operations and strategies. The study investigates how AI facilitates collective success within franchise networks, thereby augmenting their competitive edge.

Methodology: Conducted in November 2023, the research surveyed 76 Croatian franchisors, with 35 respondents completing the questionnaire. Findings were meticulously analyzed, considering franchise sales status and business sectors.

Results: Croatian franchisors exhibit optimism regarding AI's potential to revolutionize operations but grapple with a significant knowledge gap concerning its implementation and benefits. Despite no statistical variance in AI adoption based on franchise sales or sectors, the majority acknowledges its competitive advantage. Nevertheless, many remain ambivalent about AI's impact on franchise sales, underscoring the imperative for education and support.

Conclusions: Croatian franchisors necessitate tailored education and support to surmount AI implementation challenges. Customized services can facilitate navigating the complexities of AI integration, with franchisors serving as leaders in introducing AI to their franchise network for the collective benefit. Further research is indispensable to pinpoint specific challenges and opportunities for maximizing AI benefits in the franchising sector.

Keywords: Franchising, artificial intelligence (AI), competitive advantage, digital transformation

1. Introduction

The franchise sector is pervasive, offering opportunities for new entrepreneurs to launch businesses with the support of experienced franchisors. This model distributes risks and reduces financial and operational burdens for franchisors while enabling franchisees to leverage their entrepreneurial ambitions (Kukec, 2023). In the digital era, artificial intelligence (AI) transforms franchising by enhancing competitive advantages through data analytics, au-

tomation, and intelligent decision-making (Boulay & Stan, 2013).

This study explores how AI shapes franchising in Croatia, aiming to understand how franchisors use AI to boost their strategies and competitiveness. The research includes data from November 2023, involving 76 Croatian franchisors, with 35 that completed the survey. Results indicate that 40% have not sold their first franchise, and 60% have, across six business sectors.

The paper observes Croatian franchisors' optimism about AI's transformative potential in business, while also highlighting a significant knowledge gap regarding its implementation and benefits. There is no statistical difference in AI adoption among franchises or sectors, but most franchisors recognize its competitive advantage. Many are still unsure if the lack of AI knowledge is an obstacle to franchise sales, suggesting a need for more education and support in AI integration.

Following the introduction, the paper will review global and Croatian franchising economic impact and AI's role in entrepreneurship and franchising. It will then outline the research methodology, present findings, discuss results, and address the study's limitations. The conclusion will offer future research suggestions, aiming to shed light on the multifaceted economic role of franchising and the growing influence of AI.

2. Literature review

The literature review underscores the diverse nature of franchising and its potential for significant economic and social benefits on a global scale, while also highlighting the pivotal role of AI in securing a competitive advantage for this sector's robust growth and implications on global economy.

2.1 Franchise industry's potential and economic significance

Franchising is prevalent and advantageous, offering a reliable route to success with lower risks than starting a business from scratch. It provides robust support and knowledge transfer, crucial during a business's start-up and growth phases (Boulay & Stan, 2013). Franchising spans over 300 sectors (International Franchise Association, 2023), adapting to diverse global markets and local customs. Notably, it accounts for over 50% of global retail sales,

with a new franchise location opening worldwide every 8 minutes (Makan, 2020).

The franchise sector's diversity and dynamics cover various types and motivations, relationships between franchisors and franchisees, and multiple business sectors (Kukec, 2019). It intersects with psychology, sociology, entrepreneurship, etc., providing a unique opportunity to leverage AI for competitive advantage (Stanworth et al., 2004). Economically, China, the US, Brazil, and Taiwan lead in franchising, with a vast brand array (Acadia, 2022; International Franchise Association, 2023; International Trade Administration, 2023; Taiwan Chain Stores and Franchise Association, 2023). Meanwhile, India takes the spotlight as the global leader in the number of franchise systems, with 10,000 registered, of which 4,600 are active, and an estimated annual growth rate of 30% expected by 2025 (The Economic Times, 2023).

In Europe, countries such as France, Germany, Italy, the United Kingdom, and Spain still stand as most developed franchise markets (Kukec et al., 2023).

Nonetheless, it is worth noting that franchising is experiencing swift expansion, not only within well-established markets, but also within emerging regions like China, India, Taiwan, South Korea, Eastern Europe, and beyond. It stands as a symbol of globalization, transcending borders and cultures. This business model carries a rich legacy in the economic and political chronicles of developed nations and bears substantial relevance for every economy (Welsh & Alon 2004). It plays a pivotal role in terms of job creation, fostering economic modernization, facilitating the exchange of knowledge and technology, promoting sustainable entrepreneurship development, and bolstering government revenues through taxes and customs duties (Alpeza et al., 2015).

Franchising is increasingly seen as a key strategy for global expansion, utilizing international and local resources to boost competitiveness and market entry, particularly in emerging economies (Alon et al., 2021). More than creating jobs, franchising influences the number of sales outlets, mostly franchisee-owned, fostering new entrepreneurial ventures and economic growth (Ghani et al., 2022). With a success rate of over 92% within the first two years and 85% after five, franchising offers a sustainable business model (FranNet, 2021). The global franchise market, valued at $3.71 trillion in 2019 (Gitnux, 2023), is projected to grow annually

by 9.58% from 2022 to 2027 (Research and Markets, 2023). Franchising significantly enhances economic, social, and infrastructural development in host countries (Lanchimba et al., 2024).

Recent digitalization has transformed businesses, prompting new cooperative forms, product development, service offerings, and market relationships. This shift necessitates companies, including those in franchising, to adopt new strategies to maintain market competitiveness. Franchising, with its global network involving multiple companies, has had to rapidly adapt to these changes, leading to the rise of new e-business models within the sector (Rachinger et al., 2019; Chen, 2019). The structure of franchising, which connects numerous entities, requires the integration of new technologies to meet market demands.

The strategic inclusion of AI in business and franchising is crucial. AI's impact is broad, generating significant data across franchise networks, benefiting franchisors, franchisees, clients, and suppliers alike (Ledro et al., 2023). AI's role enhances decision-making, optimizes operations, and supports the sustained growth and competitiveness of the franchise sector.

2.2 Franchising in Croatia

Franchising in Croatia began in 1969 with Diners Club Adriatic operating under Diners Club International across the former Yugoslav market. The significant entry of McDonald's in the early 1990s introduced franchising as a viable business model to Croatian entrepreneurs (Alon et al., 2010). The sector expanded with various European and international franchises entering the market. In 2002, the establishment of the Croatian Franchise Association[1] and the creation of Franchising Centers in Zagreb and Osijek in 2003 significantly supported the sector's development (Kukec, 2019).

Over the past two decades, Croatia's franchising sector has evolved slowly but steadily, recently flourishing into a dynamic component of the national economy (Alpeza et al., 2015). Today, the sector shows strong growth with a significant increase in franchised businesses, contributing to employment and economic modernization. Since 2020, there has been a notable 168% growth in domestic brands (Colak Franchise Consulting Group, 2023), with 248 franchise brands on the market, 28% of which are domestic (Kukec, 2023).

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[1]   www.fip.com.hr

Support from the Croatian Franchise Association and the Franchising Center in Osijek has been crucial in developing this landscape, enhancing Croatia's appeal as a destination for franchisors and boosting the interest among local entrepreneurs in franchising opportunities (Erceg, 2012).

2.3 Artificial intelligence - a brief history and global growth

AI's history dates back to the mid-20th century, evolving from rule-based systems to incorporating machine learning and neural networks. These advancements enable AI to analyze extensive data and support complex decision-making, making it a vital tool for businesses (Council of Europe, 2023). Despite its profound impact across sectors, the exploration of AI within entrepreneurship, including franchising, remains largely unexplored. This presents a significant opportunity for pioneering research and insights. The field of AI in entrepreneurship is in its early stages, holding considerable potential to transform traditional business models. Nevertheless, it suffers from a lack of comprehensive studies on its benefits, particularly in franchising (Obschonka & Audretsch 2020).

In franchising, AI is instrumental, providing franchisors with data-driven insights that enhance decision-making, streamline supply chain management, bolster marketing, and improve customer service. However, overcoming challenges like data opacity and availability is essential for effective AI implementation. Developing tailored AI capabilities and preparing for the complex nature of data access are crucial steps for integrating AI seamlessly into franchise systems (Weber et al., 2022).

AI significantly enhances the personalization of customer experiences in the franchise sector. It customizes marketing to individual preferences, boosting customer satisfaction and loyalty (Savyc, 2023). Beyond mere data aggregation, AI autonomously analyzes customer preferences and behaviors throughout the franchise network, enabling real-time marketing strategy adjustments and personalized customer interactions. AI-driven technologies, such as chatbots and virtual assistants, also elevate customer support services, ensuring consistent quality across locations and enhancing brand reputation and customer loyalty (Haan, 2023).

Franchise networks are increasingly leveraging AI and machine learning, benefiting significantly due

to their unique structural nature. As a collective network under a unified brand and standardized business model, franchises enable machine learning algorithms to quickly gather data across all locations, swiftly developing insights and identifying key correlations.

AI's role is transformative in predicting demand and optimizing inventory management for retail franchises. It ensures optimal inventory levels at each location, minimizing stockouts and surplus, thus enhancing financial efficiency. This capability not only boosts franchise profitability but also improves customer satisfaction, providing a competitive edge within the industry (Haan, 2023).

In May 2023, an online survey was conducted among 600 American business owners already utilizing or intending to adopt AI within six months. The survey revealed that businesses anticipate AI to enhance communication (46%), generate website content (30%), debug code (41%), translate data (47%), and summarize information (53%). Additionally, half of the respondents (50%) expect Chat-GPT to enhance decision-making and facilitate multilingual content creation (44%) (Haan, 2023).

Table 1 shows the research results depicting the usage of AI in business, with customer service ranking first, followed by cybersecurity and personal assistant, and CRM, while recruitment and audience segmentation in marketing rank last, with 26% and 24%, respectively.

Table 1 Use of AI in businesses

	Use of AI	%
1	Customer service	56
2	Cybersecurity	51
3	Personal assistant	47
4	CRM	46
5	Inventory management	40
6	Content production	35
7	Product recommendations	33
8	Accounting	30
9	Supply chain management	30
10	Recruitment	26
11	Audience segmentation	24

Source: Haan (2023)

AI significantly enhances the franchise sector by automating routine tasks, boosting efficiency, and allowing teams to focus on strategic business aspects. It facilitates personalized customer interactions and delivers insights for informed decision-making and proactive planning. AI-powered chatbots improve customer service by reducing wait times, while its analytical tools offer personalized recommendations, increasing customer engagement and loyalty. Furthermore, AI aids in forecasting trends, identifying risks, and developing mitigation strategies, enhancing competitiveness and continuous improvement (Franchise UK, 2024).

Globally, AI is rapidly expanding with significant investments in research and development from the United States, China, and the European Union, driving innovations that impact franchising. Automation and data analysis have become central to franchise management, vital for maintaining efficiency and competitiveness in the sector (Savyc, 2023).

As AI evolves, its integration into franchise operations becomes increasingly critical, particularly due to its ability to disseminate knowledge and enhance competitiveness across franchise networks. When franchisors implement AI, the technology benefits all franchisees, fostering a network-wide sharing of expertise and improved business practices. This network effect means that AI can have a more profound impact in franchising than in other sectors due to its complex structure (Shepherd & Majchrzak, 2022).

However, Westenberger et al. (2021) highlight that unrealistic expectations of AI can lead to project failures. Challenges include not only these expectations but also unsuitable use cases, organizational constraints, insufficient resources, and technological hurdles, presenting significant obstacles to successful AI integration.

Given that Croatia's franchise sector is relatively nascent, with many domestic franchises only starting to emerge and expand both locally and internationally in the past three years, this research focuses on evaluating the awareness, experience, and utilization of AI among Croatian franchises. The goal is to determine how AI contributes to developing a competitive edge for these businesses. This assessment aims to accelerate and improve the growth of franchise networks operated by Croatian franchisors.

3. Methodology

In this research, categorical data are presented using absolute and relative frequencies. Data are represented numerically by the mean and standard deviation, and graphically by tables. Differences between categorical variables were tested using the chi-square test with Fisher's correction. All p-values are two-tailed. The significance level was set at 0.05. Statistical analysis was performed using the SPSS[2] statistical software.

Research was conducted in November 2023. A total of 76 Croatian franchisors were included in the study, with 35 respondents completing the questionnaire, i.e. 46%. Of these responses, the data revealed that 40% of franchisors have not yet sold their first franchise, while 60% have.

3.1 Limitations of the research

This study faces notable constraints stemming from its modest sample size and a response rate of only 46%, potentially compromising its representativeness of the broader population of Croatian franchisors, thus impacting the generalizability of the findings.

Additionally, the limited timeframe of the research (November 2023) restricts its ability to track changes over time or establish causal relationships between variables.

2   SPSS version 26.0, SPSS Inc., Chicago, IL, USA.

Moreover, reliance on questionnaire responses raises concerns about self-report bias, where respondents may tailor their answers to meet perceived expectations rather than express genuine opinions or behaviors. Furthermore, the study may overlook pertinent factors or variables that could influence outcomes, such as unexplored distinctions between franchisors who have and have not sold their initial franchise.

4. Findings and insights

Table 2 compares results of whether respondents have sold a franchise with their use and recognition of AI in business contexts. It provides insights into their understanding, expectations, use, and perceptions of AI's competitive advantage among Croatian franchisors.

Fisher's exact test was used to evaluate the statistical significance of response differences between two groups: those who have sold their first franchise and those who have not. These differences may stem from various factors. For example, franchisors who have sold a franchise may have gained more exposure to AI's practical applications and benefits through their operational experiences, leading to better understanding and greater utilization and recognition of AI. Additionally, successful franchisors are likely to invest more in AI technologies to improve their business operations, enhancing their familiarity and integration of AI within their franchise systems.

Table 2 Comparison of the results of whether respondents have already sold a franchise or not

		Have you sold the first franchise						p*
		Yes		No		Total		
		N	%	N	%	N	%	
Assess the extent to which the following could help you in selling your franchise: Greater knowledge about AI as a support for the quality and growth of your network	The least	2	9.5%	2	14.3%	4	11.4%	0.799
	2	6	28.6%	2	14.3%	8	22.9%	
	3	7	33.3%	5	35.7%	12	34.3%	
	4	5	23.8%	3	21.4%	8	22.9%	
	The most	1	4.8%	2	14.3%	3	8.6%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Assess your experiences and expectations of the franchise business model: I expect that the use of AI will greatly assist me in operating the franchise.	I completely disagree	1	4.8%	0	0.0%	1	2.9%	0.412
	I disagree	3	14.3%	4	28.6%	7	20.0%	
	I do not know	7	33.3%	5	35.7%	12	34.3%	
	I agree	8	38.1%	2	14.3%	10	28.6%	
	I completely agree	2	9.5%	3	21.4%	5	14.3%	
	Total	21	100.0%	14	100.0%	35	100.0%	

| | | Have you sold the first franchise | | | | | | p* |
| | | Yes | | No | | Total | | |
		N	%	N	%	N	%	
Assess the extent to which you use AI in your franchise operations overall.	Very little	5	23.8%	7	50.0%	12	34.3%	0.151
	Moderate	5	23.8%	2	14.3%	7	20.0%	
	Substantial	8	38.1%	2	14.3%	10	28.6%	
	A lot	1	4.8%	3	21.4%	4	11.4%	
	Very much	2	9.5%	0	0.0%	2	5.7%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Assess the extent to which you consider the use of AI could be a competitive advantage in the growth and quality of your franchise network	Very little	0	0.0%	1	7.1%	1	2.9%	0.833
	Moderate	1	4.8%	1	7.1%	2	5.7%	
	Substantial	10	47.6%	6	42.9%	16	45.7%	
	A lot	5	23.8%	4	28.6%	9	25.7%	
	Very much	5	23.8%	2	14.3%	7	20.0%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Assess the extent to which you use AI in various segments of your franchise business:								
Marketing	Very little	2	9.5%	4	28.6%	6	17.1%	0.220
	Moderate	8	38.1%	1	7.1%	9	25.7%	
	Substantial	4	19.0%	2	14.3%	6	17.1%	
	A lot	4	19.0%	3	21.4%	7	20.0%	
	Very much	3	14.3%	4	28.6%	7	20.0%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Generating any kind of text	Very little	4	19.0%	3	21.4%	7	20.0%	0.934
	Moderate	4	19.0%	1	7.1%	5	14.3%	
	Substantial	4	19.0%	4	28.6%	8	22.9%	
	A lot	4	19.0%	3	21.4%	7	20.0%	
	Very much	5	23.8%	3	21.4%	8	22.9%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Business control of the franchisees	Very little	9	42.9%	6	42.9%	15	42.9%	0.274
	Moderate	7	33.3%	1	7.1%	8	22.9%	
	Substantial	3	14.3%	3	21.4%	6	17.1%	
	A lot	1	4.8%	1	7.1%	2	5.7%	
	Very much	1	4.8%	3	21.4%	4	11.4%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Finances	Very little	8	38.1%	5	35.7%	13	37.1%	0.388
	Moderate	4	19.0%	1	7.1%	5	14.3%	
	Substantial	7	33.3%	3	21.4%	10	28.6%	
	A lot	1	4.8%	1	7.1%	2	5.7%	
	Very much	1	4.8%	4	28.6%	5	14.3%	
	Total	21	100.0%	14	100.0%	35	100.0%	

| | | Have you sold the first franchise | | | | | | p* |
| | | Yes | | No | | Total | | |
		N	%	N	%	N	%	
Communication with clients	Very little	6	28.6%	4	28.6%	10	28.6%	0.876
	Moderate	7	33.3%	3	21.4%	10	28.6%	
	Substantial	2	9.5%	1	7.1%	3	8.6%	
	A lot	4	19.0%	3	21.4%	7	20.0%	
	Very much	2	9.5%	3	21.4%	5	14.3%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Training new franchisees	Very little	9	42.9%	5	35.7%	14	40.0%	0.863
	Moderate	6	28.6%	4	28.6%	10	28.6%	
	Substantial	1	4.8%	2	14.3%	3	8.6%	
	A lot	3	14.3%	1	7.1%	4	11.4%	
	Very much	2	9.5%	2	14.3%	4	11.4%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Generating potential franchisees and increasing franchise sales	Very little	9	42.9%	4	28.6%	13	37.1%	0.385
	Moderate	5	23.8%	2	14.3%	7	20.0%	
	Substantial	1	4.8%	4	28.6%	5	14.3%	
	A lot	4	19.0%	2	14.3%	6	17.1%	
	Very much	2	9.5%	2	14.3%	4	11.4%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Predicting future business trends based on KPIs	Very little	6	28.6%	4	28.6%	10	28.6%	0.370
	Moderate	7	33.3%	3	21.4%	10	28.6%	
	Substantial	2	9.5%	4	28.6%	6	17.1%	
	A lot	5	23.8%	1	7.1%	6	17.1%	
	Very much	1	4.8%	2	14.3%	3	8.6%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Selecting an ideal location	Very little	9	42.9%	4	28.6%	13	37.1%	0.890
	Moderate	5	23.8%	4	28.6%	9	25.7%	
	Substantial	3	14.3%	2	14.3%	5	14.3%	
	A lot	1	4.8%	2	14.3%	3	8.6%	
	Very much	3	14.3%	2	14.3%	5	14.3%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Improving customer service	Very little	6	28.6%	4	28.6%	10	28.6%	0.300
	Moderate	7	33.3%	1	7.1%	8	22.9%	
	Substantial	2	9.5%	3	21.4%	5	14.3%	
	A lot	2	9.5%	4	28.6%	6	17.1%	
	Very much	4	19.0%	2	14.3%	6	17.1%	
	Total	21	100.0%	14	100.0%	35	100.0%	
Based on your experience so far, to what extent are the following statements obstacles to selling your franchise: Lack of knowledge and difficulty in using AI within the franchise business model.	I completely disagree	1	4.8%	1	7.1%	2	5.7%	0.303
	I disagree	5	23.8%	1	7.1%	6	17.1%	
	I do not know	10	47.6%	4	28.6%	14	40.0%	
	I agree	2	9.5%	4	28.6%	6	17.1%	
	I completely agree	3	14.3%	4	28.6%	7	20.0%	
	Total	21	100.0%	14	100.0%	35	100.0%	

* Fisher's exact test

Source: Author

The results indicate that P-values greater than 0.05 suggest that there is no significant difference in the level of knowledge about AI between respondents who have sold their first franchise and those who have not. This suggests that the experience gained during the marketing and selling process of the franchise is not necessarily related to a greater or lesser understanding of AI technologies.

Interestingly, in response to the question of whether lack of knowledge or difficulty in using AI within the franchise model is an obstacle to selling a franchise, 47.1% of respondents said they partially agree or do not know whether it is an obstacle or not, while 37.1% of respondents mostly agree or completely agree that it is an obstacle. Those results indicate a significant uncertainty among respondents regarding the impact of AI knowledge and usability challenges on franchise sales, with nearly half undecided or ambivalent. Meanwhile, over a third of the participants acknowledge these challenges as a clear barrier to selling a franchise. This suggests a need for further education and support in integrating AI into franchising to mitigate perceived obstacles because a much wider survey on 600 businesses in the USA revealed that AI will contribute to communication (46%), website content generation (30%), code debugging (41%), data translation (47%), and information summary (53%). Additionally, half of the respondents (50%) expect ChatGPT to enhance decision-making and facilitate multilingual content creation (44%) (Haan, 2023). If Croatian providers do not educate themselves and include AI in their franchise operations, including education of their franchisees, there is a great chance that they would lose their competitive advantage in the market, as competitors from other countries will likely surpass them in the market competition.

No statistically significant difference exists in AI expectations between the two respondent groups, indicating uniform optimism about AI's potential to enhance their franchise business across varying levels of franchising experience. Notably, 42.9% of participants anticipate that incorporating AI will significantly benefit their franchise operations.

When we look at the use of AI in business, here too, P-values show that there is no statistically significant difference between those who have and have not sold their first franchise. This means that, based on the collected data, franchisors are inclined to explore and apply AI regardless of whether they have already gone through the process of marketing and selling a franchise.

Table 3 reveals the primary applications of AI by Croatian franchisors, counting on those participants who rated their usage of AI applications in business: substantial, a lot, and very much. Here marketing leads the way (82.8%), followed by text generation (80.1%). Specifically, 62.9% of these franchisors employ AI to generate potential franchisee leads and boost franchise sales. Notably, AI's least frequent use among franchisors is for monitoring franchisee operations (57.1%).

Table 3 What Croatian franchisors mostly use AI for

1.	Marketing	82.8%
2.	Generating any kind of text	80.1%
3.	Communication with the clients Predicting future business trends based on KPIs Improving customer service	71.5% 71.4% 71.4%
4.	Finances Selection of an ideal location Generating potential franchisees and increasing franchise sales	62.9% 62.9% 62.8%
5.	Training new franchisees	60%
6.	Business control of the franchisees	57.1%

Source: Author

When we compare the results with the previously mentioned American study, we notice significant differences in the application of artificial intelligence (AI) between Croatian franchises and American entrepreneurs. While American entrepreneurs primarily use AI to enhance customer service, with security and personal assistants, Croatian franchisors rely more on AI for marketing and text generation, with customer service ranking third (71.4%). Additionally, compared to American entrepreneurs, Croatian franchisors use AI to a lesser extent for monitoring franchise operations (Haan, 2023).

Based on these results, Croatian franchisors should consider adjusting their AI usage strategy to better suit franchise specific needs and goals. Considering the dominant use of AI in marketing, it might be beneficial to explore additional AI capabilities in improving customer service or operational processes to increase efficiency and competitiveness. Furthermore, franchisors should carefully consider

the skeptical attitude toward AI in franchise sales and explore its potential for generating potential franchisees. The ability to adapt and implement AI according to the specific needs of the franchise business could be crucial for achieving competitive advantage and successful growth.

Regarding the perception of AI as a competitive advantage, the lack of statistically significant differences suggests that experience in selling the franchise does not affect how respondents view the role of AI in creating a competitive advantage in the market.

A total of 91.4% of respondents rate AI's potential as a competitive advantage for franchise operations between 3 and 5, reflecting a strong belief in its ability to enhance competitiveness. High ratings highlight AI's transformative potential, seen not just as a technological tool but as a strategic asset. This aligns with insights emphasizing AI's role in increasing efficiency, allowing strategic focus and enhancing customer interactions for better satisfaction and loyalty. AI's analytical capabilities also facilitate informed decision-making and proactive planning in franchises (Franchise UK, 2024).

As to inquiries about whether increased understanding of AI, as a support mechanism for enhancing the quality and expansion of franchisor networks, would benefit their businesses, 22.9% of respondents expressed their doubt, and 34.3% admitted uncertainty, potentially indicating a knowledge gap. Meanwhile, 42.9% are confident that such knowledge would be advantageous.

Although it could be assumed that the experience of selling a franchise may influence attitudes and practices related to AI due to the acquired experience and better recognition of the opportunities that AI can bring in the process, the results of the analysis show that there are no statistically significant differences among respondents in this regard. While Croatian franchisors generally exhibit a positive outlook on AI, with many acknowledging its potential to serve as a competitive advantage, there

remains a critical need for bridging the knowledge gap. Enhancing understanding and competencies in AI could further unlock its potential, enabling franchisors to fully leverage AI for operational efficiency, customer engagement, and business growth. This entails not only individual learning and experimentation but also industry-wide efforts to share insights, best practices, and success stories of AI integration in franchising.

Table 4 analyzes AI's perception and application across various sectors in the Croatian franchise industry, noting that each sector might utilize AI differently. For instance, the wellness sector sees AI as highly beneficial for customer experience and personalization, potentially boosting sales. Conversely, the entertainment sector sees less potential for AI to enhance operations and sales due to fewer applicable uses. Sectors like wellness and food & beverage/tourism, where AI can enhance customer engagement, marketing, and operations, tend to view AI more favorably. In contrast, sectors like entertainment, with limited AI applications, often perceive its impact as minimal.

The perceived barriers to AI adoption could vary across sectors too, influencing franchisors' willingness to invest in AI technologies. For example, the retail sector may see a lack of AI knowledge as a significant barrier to franchise sales, possibly due to the complex nature of retail operations and the need for data-driven decision-making. In contrast, the service sector may not perceive AI knowledge as crucial for franchise sales, potentially due to the nature of their business operations or a lack of understanding of AI's potential benefits.

The organizational culture and mindset supporting innovation and technology adoption could also play a role. Sectors with a more progressive attitude toward technology adoption may be more inclined to explore and invest in AI solutions, while sectors with a more traditional approach may be more cautious or skeptical.

Table 4 Comparison of the results related to the business sector

		Franchise sector												p*
		WELLNESS		EDUCATION		F&B TOURISM		ENTERTAIN-MENT		RETAIL		SERVICES		
		N	%	N	%	N	%	N	%	N	%	N	%	
Assess the extent to which the following could help you in selling your franchise: / Greater knowledge about AI as a support for the quality and growth of your network	The least	0	0.0%	1	14.3%	0	0.0%	3	50.0%	0	0.0%	0	0.0%	0.148
	2	0	0.0%	3	42.9%	2	18.2%	1	16.7%	1	33.3%	1	50.0%	
	3	4	66.7%	1	14.3%	5	45.5%	0	0.0%	1	33.3%	1	50.0%	
	4	2	33.3%	2	28.6%	2	18.2%	2	33.3%	0	0.0%	0	0.0%	
	The most	0	0.0%	0	0.0%	2	18.2%	0	0.0%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Assess your experiences and expectations of the franchise business model: / I expect that the use of AI will greatly assist me in operating the franchise.	I completely disagree	0	0.0%	0	0.0%	1	9.1%	0	0.0%	0	0.0%	0	0.0%	0.783
	I disagree	2	33.3%	1	14.3%	1	9.1%	2	33.3%	0	0.0%	1	50.0%	
	I do not know	1	16.7%	3	42.9%	5	45.5%	1	16.7%	1	33.3%	1	50.0%	
	I agree	3	50.0%	2	28.6%	3	27.3%	2	33.3%	0	0.0%	0	0.0%	
	I completely agree	0	0.0%	1	14.3%	1	9.1%	1	16.7%	2	66.7%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Assess the extent to which you use AI in your franchise operations overall.	Very little	3	50.0%	0	0.0%	2	18.2%	2	33.3%	3	100.0%	2	100.0%	0.259
	Moderate	1	16.7%	2	28.6%	4	36.4%	0	0.0%	0	0.0%	0	0.0%	
	Substantial	1	16.7%	3	42.9%	3	27.3%	3	50.0%	0	0.0%	0	0.0%	
	A lot	1	16.7%	1	14.3%	2	18.2%	0	0.0%	0	0.0%	0	0.0%	
	Very much	0	0.0%	1	14.3%	0	0.0%	1	16.7%	0	0.0%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	

Question	Response	WELLNESS N	WELLNESS %	EDUCATION N	EDUCATION %	F&B TOURISM N	F&B TOURISM %	ENTERTAINMENT N	ENTERTAINMENT %	RETAIL N	RETAIL %	SERVICES N	SERVICES %	p*
Assess the extent to which you consider the use of AI could be a competitive advantage in the growth and quality of your franchise network	Very little	1	16.7%	1	16.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0.734
	Moderate	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1	0.0%	1	50.0%	
	Substantial	3	50.0%	3	50.0%	3	42.9%	6	54.5%	1	33.3%	1	50.0%	
	A lot	1	16.7%	1	16.7%	3	42.9%	3	27.3%	1	33.3%	0	0.0%	
	Very much	1	16.7%	1	16.7%	2	14.3%	2	18.2%	1	33.3%	0	0.0%	
	Total	6	100.0%	6	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Assess the extent to which you use AI in various segments of your franchise business: Marketing	Very little	1	16.7%	1	16.7%	1	14.3%	2	9.1%	0	33.3%	1	50.0%	0.954
	Moderate	1	16.7%	1	16.7%	3	42.9%	0	27.3%	1	0.0%	1	50.0%	
	Substantial	1	16.7%	1	16.7%	2	14.3%	2	18.2%	0	33.3%	0	0.0%	
	A lot	2	33.3%	2	33.3%	3	14.3%	2	27.3%	1	0.0%	1	33.3%	
	Very much	1	16.7%	1	16.7%	2	14.3%	2	18.2%	1	33.3%	1	33.3%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Generating any kind of text	Very little	0	0.0%	1	14.3%	3	27.3%	0	33.3%	0	0.0%	1	50.0%	0.887
	Moderate	1	16.7%	1	28.6%	1	9.1%	1	0.0%	1	33.3%	0	33.3%	
	Substantial	2	33.3%	2	28.6%	2	18.2%	0	0.0%	1	33.3%	1	33.3%	
	A lot	2	33.3%	1	14.3%	3	27.3%	1	16.7%	0	0.0%	0	0.0%	
	Very much	1	16.7%	1	14.3%	2	18.2%	1	50.0%	1	33.3%	1	33.3%	
	Total	6	100.0%	7	100.0%	11	100.0%	3	100.0%	3	100.0%	2	100.0%	
Control of franchisee operations	Very little	3	50.0%	2	28.6%	4	36.4%	3	50.0%	1	33.3%	2	100.0%	0.987
	Moderate	1	16.7%	2	28.6%	3	27.3%	1	16.7%	1	33.3%	0	0.0%	
	Substantial	1	16.7%	2	28.6%	2	18.2%	1	16.7%	0	0.0%	0	0.0%	
	A lot	1	16.7%	1	14.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	
	Very much	0	0.0%	0	0.0%	2	18.2%	1	16.7%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	

(Franchise sector)

		Franchise sector												p*
		WELLNESS		EDUCATION		F&B TOURISM		ENTERTAIN-MENT		RETAIL		SERVICES		
		N	%	N	%	N	%	N	%	N	%	N	%	
Finances	Very little	3	50.0%	2	28.6%	2	18.2%	4	66.7%	0	0.0%	2	100.0%	0.138
	Moderate	0	0.0%	3	42.9%	1	9.1%	0	0.0%	1	33.3%	0	0.0%	
	Substantial	2	33.3%	1	14.3%	6	54.5%	1	16.7%	0	0.0%	0	0.0%	
	A lot	0	0.0%	1	14.3%	0	0.0%	0	0.0%	1	33.3%	0	0.0%	
	Very much	1	16.7%	0	0.0%	2	18.2%	1	16.7%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Communication with clients	Very little	1	16.7%	2	28.6%	2	18.2%	3	50.0%	0	0.0%	2	100.0%	0.656
	Moderate	3	50.0%	3	42.9%	3	27.3%	0	0.0%	1	33.3%	0	0.0%	
	Substantial	0	0.0%	1	14.3%	2	18.2%	0	0.0%	0	0.0%	0	0.0%	
	A lot	2	33.3%	0	0.0%	2	18.2%	2	33.3%	1	33.3%	0	0.0%	
	Very much	0	0.0%	1	14.3%	2	18.2%	1	16.7%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Training new franchisees	Very little	2	33.3%	2	28.6%	4	36.4%	3	50.0%	1	33.3%	2	100.0%	0.853
	Moderate	2	33.3%	2	28.6%	4	36.4%	1	16.7%	1	33.3%	0	0.0%	
	Substantial	0	0.0%	2	28.6%	0	0.0%	1	16.7%	0	0.0%	0	0.0%	
	A lot	2	33.3%	0	0.0%	2	18.2%	0	0.0%	0	0.0%	0	0.0%	
	Very much	0	0.0%	1	14.3%	1	9.1%	1	16.7%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Generating potential franchisees and increasing franchise sales	Very little	2	33.3%	2	28.6%	5	45.5%	2	33.3%	0	0.0%	2	100.0%	0.892
	Moderate	1	16.7%	2	28.6%	1	9.1%	2	33.3%	1	33.3%	0	0.0%	
	Substantial	1	16.7%	2	28.6%	1	9.1%	0	0.0%	1	33.3%	0	0.0%	
	A lot	2	33.3%	1	14.3%	2	18.2%	1	16.7%	0	0.0%	0	0.0%	
	Very much	0	0.0%	0	0.0%	2	18.2%	1	16.7%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	

Statement	Response	WELLNESS		EDUCATION		F&B TOURISM		ENTERTAIN-MENT		RETAIL		SERVICES		p*
		N	%	N	%	N	%	N	%	N	%	N	%	
Predicting future business trends based on KPIs	Very little	2	33.3%	2	33.3%	3	28.6%	3	27.3%	2	33.3%	1	50.0%	0.865
	Moderate	2	33.3%	2	33.3%	3	28.6%	3	27.3%	1	16.7%	1	50.0%	
	Substantial	1	16.7%	1	16.7%	0	28.6%	0	0.0%	1	33.3%	0	0.0%	
	A lot	1	16.7%	1	16.7%	4	14.3%	4	36.4%	0	0.0%	0	0.0%	
	Very much	0	0.0%	0	0.0%	1	0.0%	1	9.1%	1	16.7%	0	0.0%	
	Total	6	100.0%	6	100.0%	11	100.0%	11	100.0%	3	100.0%	2	100.0%	
Selecting an ideal location	Very little	2	33.3%	2	33.3%	5	28.6%	2	45.5%	0	33.3%	2	100.0%	0.153
	Moderate	4	66.7%	3	66.7%	0	42.9%	1	0.0%	1	16.7%	0	0.0%	
	Substantial	0	0.0%	2	0.0%	2	28.6%	0	18.2%	1	0.0%	0	0.0%	
	A lot	0	0.0%	0	0.0%	2	0.0%	1	18.2%	0	16.7%	0	0.0%	
	Very much	0	0.0%	0	0.0%	2	0.0%	2	18.2%	1	33.3%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Improving customer service	Very little	1	16.7%	2	16.7%	3	28.6%	2	27.3%	0	33.3%	2	0.0%	0.750
	Moderate	1	16.7%	2	16.7%	3	28.6%	1	27.3%	1	16.7%	0	33.3%	
	Substantial	3	50.0%	1	50.0%	0	14.3%	0	0.0%	1	0.0%	0	33.3%	
	A lot	0	0.0%	1	0.0%	3	14.3%	2	27.3%	0	33.3%	0	0.0%	
	Very much	1	16.7%	1	16.7%	2	14.3%	1	18.2%	1	16.7%	0	33.3%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	
Based on your experience so far, to what extent are the following statements obstacles to selling your franchise: Lack of knowledge and difficulty in using AI within the franchise business model.	I completely disagree	0	0.0%	1	0.0%	0	14.3%	1	0.0%	0	16.7%	0	0.0%	0.803
	I disagree	0	0.0%	0	0.0%	2	0.0%	2	18.2%	1	33.3%	1	50.0%	
	I do not know	3	50.0%	4	50.0%	4	57.1%	2	36.4%	0	33.3%	1	50.0%	
	I agree	2	33.3%	1	33.3%	2	14.3%	0	18.2%	1	0.0%	0	0.0%	
	I completely agree	1	16.7%	1	16.7%	3	14.3%	1	27.3%	1	16.7%	0	0.0%	
	Total	6	100.0%	7	100.0%	11	100.0%	6	100.0%	3	100.0%	2	100.0%	

Franchise sector

* Fisher's exact test

Source: Author

The data reveal nuanced views on AI's potential as a support for quality and growth, its expected usefulness in franchise operations, its current use, and its perceived competitive advantage. Despite the lack of statistically significant differences across sectors (p>0.05), the detailed responses highlight sector-specific insights, suggesting a varied landscape of AI adoption and perception that could inform targeted strategies for AI integration and education within each sector.

Upon examining the results pertaining to the evaluation of how an increase in AI knowledge, rated on a scale of 1-5, can aid in franchise sales, the analysis demonstrates that one hundred percent of respondents from the wellness sector rated it between 3-5. Following suit, in the F&B and tourism sector, 81.9% of respondents rated it between 3-5, while respondents from the entertainment sector rated it the lowest at 33%. These results suggest that the wellness and F&B/tourism sectors see greater potential in utilizing AI to boost their franchise sales through increased AI knowledge.

Regarding their agreement with the statement that a lack of AI knowledge is a barrier to franchise sales, respondents from the retail sector largely agree (66.6%), followed by those from the wellness sector (50%), and F&B/tourism sectors (45.5%). Respondents from the service sector are unanimous in disagreeing or being uncertain (i.e. 100%).

Fisher's exact test did not show any statistically significant difference between sectors (p>0.05) in relation to the questions posed. This suggests that, despite variations in the perception and utilization of AI across sectors, these differences are not statistically significant. The lack of statistical significance may indicate a widespread, yet uneven, awareness and acceptance of AI technologies among Croatian franchises.

These results suggest a variable, but generally positive, orientation toward AI among Croatian franchises, emphasizing the need for further research and education to fully leverage the potential of AI across different sectors.

4.1 Implications

This research highlights the urgent need for educational programs and resources to help Croatian franchisors understand and implement AI effectively. Specialized training and support from franchise organizations and consultancy firms could improve AI integration by offering AI readiness assessments and customized training.

Further research should explore AI adoption challenges and opportunities in the Croatian franchising context to develop strategies that maximize AI benefits while minimizing risks. Addressing these needs can enhance innovation and growth in the franchising sector.

5. Conclusion

In conclusion, the interconnected approach to AI adoption in franchising in general exemplifies a transformative paradigm shift, where advancements in operational efficiency, customer service, and data-driven decision-making reverberate throughout the entire franchise networks. This collective learning experience can not only elevate individual franchise units but also shape the broader landscape of the franchise industry, fostering continuous improvement and enhancing competitiveness.

The impact of AI extends beyond individual franchise units, fundamentally reshaping the dynamics of the franchising sector. By strategically utilizing AI technologies, franchisors and franchisees can collectively enhance customer experiences, streamline operations, and improve market responsiveness. Each franchise location thus becomes an integral component of data-collecting that makes a dynamic and thriving network, rather than a mere standalone entity.

The findings of this paper underscore the prevailing optimism among Croatian franchisors regarding AI's potential to revolutionize their business operations. However, a substantial knowledge gap persists concerning the implementation and benefits of AI. While there is no statistical discrepancy in AI adoption between those who have and have not sold their first franchise, or regarding the sectors they are operating in, a majority of Croatian franchisors acknowledge AI's potential competitive advantage. Nonetheless, a significant proportion remains undecided about the obstacles AI may present in franchise sales, highlighting the urgent need for additional education and support in AI integration.

In essence, this paper emphasizes the imperative of bridging the existing knowledge gap to unlock the full potential of AI for enhancing operational efficiency, fostering customer engagement, and driving sustainable growth within the Croatian franchise sector. Only through concerted efforts to overcome these challenges can franchisors harness the transformative power of AI to navigate an increasingly complex and competitive business landscape.

5.1 Future research

Future research should delve deeper into the longitudinal impact of AI on franchise operations and customer service to understand its enduring effects. Specific questions that need addressing could include: How does AI adoption influence the long-term operational efficiency and customer satisfaction within the franchise sector? What are the sector-specific barriers to AI adoption and how can they be effectively mitigated? It is crucial to conduct studies that track the evolving impact of AI over time, offering a clearer picture of its long-term benefits and challenges.

It would also be interesting to research the extent to which educational programs can bridge the AI knowledge gap among Croatian franchisors and franchisees and what the results of such educational programs would be. Comparative analysis of AI integration in franchising across different cultural and regulatory landscapes would provide valuable insights into how cultural and regulatory differences affect AI adoption strategies in franchising and what the best practices are for AI integration across various franchise markets.

These areas of investigation could significantly contribute to the development of tailored AI strategies that cater to diverse franchise environments, promoting effective integration and maximizing AI's potential benefits for this industry.

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THE MEDIATING ROLE OF CO-WORKER SUPPORT IN THE RELATIONSHIP BETWEEN OCCUPATIONAL STRESS AND EMPLOYEE PERFORMANCE: A STUDY OF AIRPORTS

Abstract

Purpose: This study aims to examine the relationship between occupational stress and employee performance of ARFF (Airport Rescue and Firefighting) officers working at airports in the transportation sector, with a particular focus on the role of co-worker support in this relationship.

Methodology: The research was evaluated in detail using statistical analysis tools such as SPSS, AMOS and Process Hayes, based on data collected from surveys completed by 415 ARFF officers.

Results: The findings revealed a negative relationship between occupational stress and employee performance, while a positive relationship was identified between co-worker support and employee performance. Furthermore, co-worker support was found to play a partial mediating role in the effect of occupational stress on employee performance, i.e., co-worker support helps to reduce the impact of stress on employee performance. These findings indicate that reducing occupational stress levels and increasing co-worker support among ARFF officers can have a positive impact on employee performance.

Conclusion: The research results emphasize the importance of co-worker support in improving job performance of employees in public institutions operating in the transportation sector. In addition, the study discusses academic and practical implications and offers suggestions for future research.

Keywords: Occupational stress, employee performance, co-worker support

1. Introduction

Public institutions have the responsibility to continually maintain the services they provide to the community at a high level of quality. In fulfilling these duties, they strive for continuous improvement and renewal. The most effective factor in achieving these objectives is the institution employees. However, employees may encounter professional risks

and other challenges while performing their duties. Occupational stress is one such challenge that is frequently examined, as emphasized by the Mental Health Foundation (2018). Occupational stress can trigger many negative consequences originating from the organization, such as tension, physical and mental pressure. Therefore, institution employees are required to continually improve themselves and take appropriate measures to enhance service quality and cope with these challenges.

Employee performance is a complex concept encompassing an individual's process of carrying out a specific task or responsibility, often including measurable elements such as time, speed, and efficiency (Zeb et al., 2019). High employee performance is highly important for both organizations and individuals. High performance increases the effectiveness of business processes, provides a competitive advantage, and ensures better customer satisfaction. Therefore, both individuals and institutions should strive to improve employee performance.

In every organization, there exists a structure where employees interact with colleagues who perform similar tasks. This interaction underscores the importance of support provided by co-workers, which has a significant impact on employees' commitment to the organization and their job performance (Chiaburu & Harrison, 2008). Particularly, since co-workers have the capacity to shape the social atmosphere of the workplace, the support they offer positively influences individuals' motivation and satisfaction, thereby enhancing overall job performance (Schneider, 1987). In this context, it has been found that employees who receive support from co-workers demonstrate higher organizational commitment compared to those who do not receive such support (Rousseau & Aubé, 2010). Therefore, co-worker support is a crucial factor that not only enhances individual performance but also strengthens organizational commitment. As evidenced by literature reviews, co-worker support is crucial for employees. Among employees who interact daily in the workplace, co-worker support includes elements such as sharing knowledge and expertise, providing encouragement and support, and assisting in tasks (Zhou & George, 2001). Depending on the context, co-worker support may not only be limited to interaction among colleagues but

may also provide a basis for solidarity and collective resistance with management. In this context, co-worker support among colleagues can shape the dynamics of work life and influence relationships with management.

This study aims to examine the impact of occupational stress experienced by employees in public institutions on their performance and the role of co-worker support. The study focuses on topics such as occupational stress, employee performance, and co-worker support. This study could be a significant resource for improving the quality and effectiveness of institutions' services and contribute to the literature for future research.

2. Conceptual framework

2.1 Occupational stress

Individuals' personality traits and coping abilities determine how they respond when faced with stress. Stress can result in various responses at physical, psychological, and behavioral levels, along with the stressors individuals encounter in their lives. These responses can be influenced by genetic factors, lifestyle, parenting styles within the family, and the individual's overall psychological state (Langton et al., 2016). Stress in the workplace arises due to various reasons, with psychosocial factors being among the most significant ones. These factors can influence the nature of work, its quality, and workplace relationships (Güney, 2000). Nowadays, factors such as intense competition and rapid globalization have made occupational stress increasingly prevalent, affecting both businesses and employees. This condition can adversely affect employees' occupational performance. Occupational stress is a prominent form of stress encountered by adult individuals (Sahoo & Kharat, 2017).

Research indicates that workplace stress is associated with a range of health issues. For example, a study conducted by Blanc-Lapierre et al. (2017) revealed that over 50% of analyzed cancer cases were linked to occupational stress. Additionally, occupational stress was found to be associated with hypertension or high blood pressure (Landsbergis et al., 2013). Another study by Kyaw-Myınt et al. (2015) yielded significant findings regarding the effects of occupational stress not only on mental health but also on respiratory and skin symptoms related to chemical and physical hazards. These

studies emphasize the widespread effects of occupational stress. In this context, living under constant stress can adversely affect both physical and mental health, which can significantly impact work productivity. Therefore, developing effective coping strategies for stress and taking steps to reduce its effects are vital for maintaining healthy brain function and overall quality of life.

2.2 Employee performance

Employee performance is a complex concept involving the process of individuals carrying out specific tasks, often encompassing measurable factors such as time, speed, and efficiency (Zeb et al., 2019). Research emphasizes the significance of employee performance as a crucial resource for organizational leaders due to its potential to build or destroy profitability and reputation in the corporate sector. High employee performance enhances the effectiveness of organizational processes, provides a competitive advantage, and increases customer satisfaction. Moreover, employees who successfully fulfill their roles enhance the company's reputation and contribute to its growth. Researchers agree that employee performance is a process (Yozgat et al., 2013).

The existence of two separate dimensions, task performance and contextual performance, plays a significant role in evaluating employee performance (Borman & Motowidlo, 1993). Task performance requires the fundamental prerequisites of individuals' abilities and knowledge within the business, while contextual performance refers to actions that make individuals, teams, and organizations more effective and successful (Yıldız & Neşe, 2018). Contextual performance, influenced by personal qualities and sincerity, supports the fulfillment of tasks and responsibilities (Özdevecioğlu & Kanıgür, 2009). Consequently, evaluating employee performance necessitates a comprehensive approach.

Two significant studies relevant to evaluating public sector employee performance are those by Rudolph (2023) and Roxbury (2022). Rudolph's research examines the relationship between the educational achievements and job performance of employees in the public sector. This study proposes an alternative, non-monetary approach to assessing the performance of public employees, going beyond traditional monetary measurement methods. The underlying idea is that the success of employees in public institutions is generally not directly related

to market conditions. Therefore, understanding the connection between the educational level of government employees and user satisfaction is critically important for organizations to provide more effective services (Rudolph, 2023).

On the other hand, Roxbury examines the effects of customer service training on employee performance. This study includes a needs assessment conducted to address the issues of inadequate customer service and employee training observed in a specific public agency. This assessment highlights deficiencies in the customer experience within the organization, shedding light on performance issues faced by employees (Roxbury, 2022).

Both studies contribute significantly to the evaluation of public sector employee performance. Rudolph's research delves into the relationship between educational level and learning achievements, emphasizing the impact of education, while Roxbury's work reveals the positive effects of customer service training on employee performance. In this context, both studies illustrate how crucial it is to enhance employee performance to improve service quality in public institutions and ensure customer satisfaction.

2.3 Co-worker support

It offers a valuable perspective that collaboration and support among co-workers in the workplace can help employees overcome job-related challenges and meet their emotional needs. As noted by Çoban (2005), this support is crucial not only for professional matters but also for coping with the stresses and challenges of daily life. Support among colleagues encompasses elements such as sharing knowledge and expertise, providing encouragement and assistance, and aiding tasks (Zhou & George, 2001). According to Şirin and Yücel (2020), this support involves assisting each other both in work-related matters and emotionally. Social relationships in the workplace can significantly contribute to employees' job satisfaction, productivity, and overall well-being (Hodson, 1997).

Kaul and Lakey (2003) highlight the connection between positive social relationships and physical and mental health, emphasizing the potential impact of co-worker support on overall well-being beyond the workplace. However, there exists a contrasting view suggesting that the behaviors of colleagues may be associated with politics or per-

sonal development and may not always align with a constructive work attitude. From this perspective, co-worker support can be perceived as a weakness or dependency, especially in a political or competitive environment (Babin & Boles, 1996). Findings suggesting that co-worker support can enhance job performance emphasize the importance of positive social relationships in the workplace.

Building on this foundation, a study conducted by Baumeister (2023) examines the positive interaction techniques employed by co-worker support mentors in law enforcement organizations to foster resilience in police officers. The study also explores how a positive police culture contributes to the effectiveness of co-worker support programs. Assia's (2020) study, on the other hand, highlights limited knowledge about the learning and development processes of young adults serving in co-worker support roles despite the benefits of colleague support programs in mental health services among young adults. These studies represent important steps in understanding how co-worker support can be effective in various contexts and sectors.

Co-worker support may generally have a positive rather than negative impact. In this context, the role of co-worker support should be considered significant for both individual and organizational success in the workplace.

2.4 Hypothesis development

2.4.1 The relationship between occupational stress and co-worker support

Employees are required to fulfill their duties in the workplace under the influence of various factors, among which stress stands out as a significant element that can affect both employee performance and their overall well-being. Stress can arise from a range of factors such as job demands, time pressure, work relationships, and job expectations, and can negatively impact the physical and psychological health of employees. In this regard, colleague support can play an important role in coping with stress. Support among colleagues can take various forms, including moral encouragement, practical advice, collaborative problem-solving, and emotional support. This support among colleagues can help reduce stress for employees and enhance employee performance. The study by Walker & Pe-

terson (2021) showed that co-worker support can play a significant role in individuals' recovery process. Co-worker support systems can contribute to individuals' recovery by increasing their hopes and positively influencing psychosocial outcomes.

As emphasized by Ng and Sorensen (2008), co-worker support includes sharing work-related issues, providing moral support and encouragement, and assisting each other in the workplace. A study by Shirom et al. (2011) found that employees who receive co-worker support experience improved quality of life, reduced stress levels, and better overall health. These findings indicate that co-worker support has a significant impact not only in the workplace but also on overall quality of life and health. Therefore, creating a supportive environment among colleagues in the workplace and promoting this support can contribute to employees' stress coping mechanisms and a healthier work environment. Based on these studies, the following hypothesis is formulated:

H1: There is a negative and significant relationship between occupational stress and co-worker support.

2.4.2 The relationship between occupational stress and employee performance

Occupational stress is a significant factor directly affecting employee performance. As stated by Çepni (2023), employees may face various negative consequences due to the impact of work-related and non-work-related stress. These consequences include discomfort, psychological problems, suicide, unhappiness, decreased productivity, lack of motivation, decreased self-confidence, and fear of failure. Particularly, job stress can significantly affect employee performance. With increasing stress, employees may struggle to perform their tasks effectively. They may experience difficulty in focusing under stress, diminished decision-making abilities, and decreased job performance. Additionally, employees under constant stress may lose their motivation and interest in their work. This situation can generally lead to a decrease in productivity and employee performance. The study conducted by Mbambe (2021) evaluates the effects on healthcare workers' performance, while the study by Tran (2022) investigates the effects of transformational leadership, job satisfaction, and work-life balance

on job performance. Rootes (2020) examines the impact of emotional intelligence on occupational stress among private security personnel, while Balboa (2020) investigates the effects of teacher stress on employee performance and identifies factors contributing to teacher attrition. These studies represent important steps in understanding the impact of occupational stress on employee performance and in creating a healthier and more productive work environment. Based on these studies, the following hypothesis is formulated:

H2: There is a negative and significant relationship between occupational stress and employee performance.

2.4.3 The relationship between co-worker support and employee performance

Performance is a highly critical concept in the business world and generally reflects an individual's or an organization's ability to achieve specific goals. This concept is used to assess how effectively an employee fulfills their tasks and is typically defined as the completion of a task under certain conditions and a person's behavioral style. Employee performance fundamentally relates to the actions and behaviors of an employee in the workplace (Jackson & Frame, 2018). In the workplace, support among colleagues establishes a strong network of solidarity among individuals working in an organization. This support not only involves the sharing of professional knowledge and skills but also extends to providing emotional and non-work-related support among co-workers. Solidarity among colleagues helps employees overcome work-related challenges and meet their emotional needs. Support among employees in daily interactions in the workplace, as noted by Zhou and George (2001), includes elements such as sharing knowledge and expertise, providing encouragement and support, and assisting in tasks. This support helps employees perform their jobs more effectively and cope better with work-related stress, but it also makes a positive contribution to the overall morale and productivity of the workplace. In this context, the following hypothesis is formulated based on the studies considered:

H3: There is a positive and significant relationship between co-worker support and employee performance.

2.4.4 Mediating effect of co-worker support on the relationship between occupational stress and employee performance

Understanding the impact of workplace co-worker support mechanisms on individuals' ability to cope with occupational stress and, consequently, their job performance is critically important in today's business environment. However, the existing literature lacks sufficient studies on the mediating role of co-worker support in the relationship between occupational stress and employee performance, as well as the interactions between these dynamics. This gap presents an opportunity to gain a deeper understanding of co-worker support dynamics in the workplace.

Our research aims to make a significant contribution to the literature in this field. By focusing on the H4 hypothesis, we will examine the relationship between occupational stress and employee performance through the mediating role of co-worker support. Investigating how co-worker support enhances employees' abilities to cope with occupational stress and positively influences their job performance will be one of the main focal points of our study.

Our findings could contribute to the development of strategies aimed at strengthening co-worker support mechanisms in the workplace. In this context, we aim to enhance employees' coping abilities, thereby improving overall performance. Thus, we believe our research will provide a valuable contribution to the literature.

H4: Co-worker support mediates the relationship between occupational stress and employee performance.

2.4.5 Research model and hypotheses

This research is designed to focus on the impact of occupational stress on employee performance, aiming to explore the mediating role of co-worker support. Based on the formulated hypotheses, a model has been developed. This model suggests that occupational stress directly affects employee performance, while co-worker support influences this relationship as a mediating variable. In other words, co-worker support demonstrates a mediating effect in the relationship between occupational stress and employee performance.

Figure 1 Research model
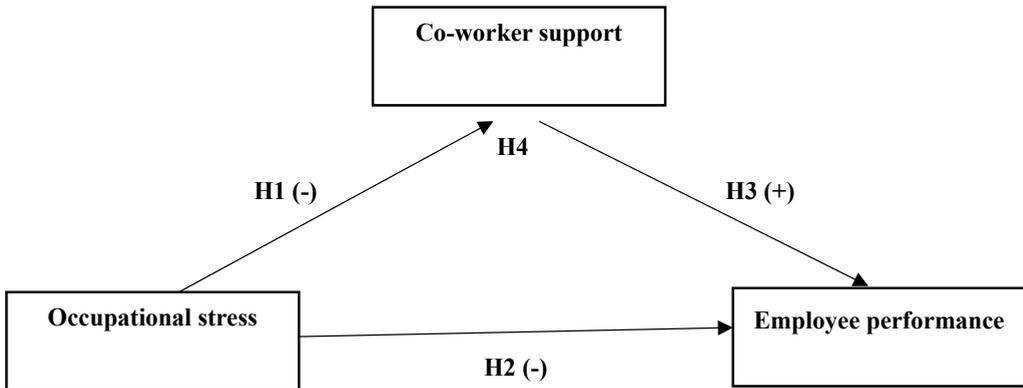
Source: Authors

3. Method

3.1 Sample and procedure

This research represents a study covering ARFF (Airport Rescue and Firefighting) officers serving in different airports within the transportation sector. Data was collected from a total of 432 employees in these institutions, and after excluding incomplete or erroneous surveys, 415 surveys were analyzed. The face-to-face survey method was used during the data collection process. The survey content was formulated in clear language understandable by the participants. It was assumed that these questions were answered sincerely by the employees, reflecting their true thoughts and attitudes. This approach was adopted to ensure the reliability and meaningfulness of the data and it is believed that the research results reflect the real experiences and opinions of ARFF officers in the sector.

3.2 Measures

The survey consists of four main sections. The first section includes demographic questions aimed at gathering information on participants' marital status, education level, gender, years of work experience in the workplace, age, and position.

3.2.1 Occupational stress scale

The second section contains the "Occupational Stress Scale," adapted to Turkish from the scale developed by Cohen and Williamson (1988), consisting of a total of 14 questions.

3.2.2 Employee performance scale

The third section includes the "Employee Performance Scale," adapted to Turkish from the scale developed by Kirkman and Rosen (1999), used by Sigler and Pearson (2000), consisting of four items in this study.

3.2.3 Co-worker support scale

The fourth and final section includes the "Co-worker Support Scale" developed by Zhou and George (2001), containing four questions. The components of this survey were carefully selected to provide in-depth information about important factors such as participants' perception of occupational stress, performance, and co-worker support, aiming to achieve the objectives of the study.

3.3 Purpose and importance of the study

This research aims to explore airport employees' perceptions of occupational stress in performing their duties and to assess its impact on personnel performance. Specifically, understanding the potential effects of occupational stress on employee performance and evaluating the role of support and solidarity provided by co-workers within the institution are important objectives. The significance of this study lies in the limited literature on similar research conducted in airport operations. Therefore, the findings are expected to make a significant contribution to policy-making in airport operations and the development of strategies to sustainably improve employee performance. Additionally, the

results of this research can contribute to identifying effective measures aimed at creating a healthy work environment and enhancing employee well-being.

3.4 Empirical findings

As part of the research, an initial examination was conducted on the demographic characteristics of the participants to determine whether the participant cohort exhibited homogeneity or heterogeneity across various demographic parameters. Subsequently, diverse statistical methodologies were employed to analyze the scales used. The analyses were conducted using the AMOS software. The

reliability of the scales was assessed, and internal consistency criteria were utilized to gauge the reliability of the scales. Correlation analyses were conducted to explore the interrelations among the principal variables of the study, while the magnitude of these associations was investigated. Finally, regression and bootstrap analyses were performed using the AMOS software to delve deeper into the relationships between occupational stress, co-worker support, and employee performance, and to assess the causal links between these variables. This analysis aimed to test the primary hypotheses of the study and unveil potential interactions among the variables.

Table 1 Demographic and sociological characteristics

Variables		Frequency	Percentage
Gender	Male	144	82.3
	Female	31	17.7
Marital status	Married	97	55.4
	Single	78	44.6
Education status	High school	5	2.9
	Associate degree	81	46.3
	Bachelor's degree	75	42.9
	Postgraduate	14	8.0
Age	20-25	30	17.1
	26-30	59	33.7
	31-35 36-40 41+	38 28 20	21.7 16.0 11.4
Experience in years	1-5 6-10 11-15 16-20 21+	120 1 26 16 12	68.6 0.6 14.9 9.1 6.9
Job	ARFF officer ARFF chief - ARFF manager	153 21	87.9 12.1

Source: Authors

Table 1 presents sociological and demographic characteristics that reflect various characteristics of the individuals participating in the study in detail. In terms of gender distribution, 82.3% of the participants are male, while 17.7% are female, indicating that the surveyed profession is predominantly male. Regarding marital status, we see that 55.4% of the participants are married, while 44.6% are single.

Concerning educational level, it is observed that the majority of participants hold associate degrees (46.3%), while a significant proportion are graduates (42.9%). When examined by age groups, 33.7% of the participants fall within the 26-30 age range. Regarding years of service, 68.6% of the participants have been employed for 0-5 years, indicating that ARFF officers are predominantly young and newly

employed. As expected, 87.9% of the employees are ARFF officers in terms of job classification.

The demographic profile obtained from the table provides an important foundation for understanding occupational stress, performance, and support mechanisms. The effects of a young and educated workforce on the profession, the role of co-worker support elements, and gender imbalance offer insights into the dynamics within the sector. These findings are crucial for developing effective stress management strategies in the workplace.

Table 2 Reliability (Cronbach's alpha) and Kaiser-Meyer-Olkin (KMO) values of the scales

	Cronbach's alpha	Kaiser-Meyer-Olkin (KMO)
Occupational stress	0.856	.914
Employee performance	0.873	.843
Co-worker support	0.936	.796

Source: Authors

Table 2 presents a detailed overview of the reliability and suitability of the scales, which are fundamental criteria for the research. The Cronbach's alpha values calculated for occupational stress, employee performance, and co-worker support are 0.856, 0.873, and 0.936, respectively. These values indicate that each scale demonstrates high internal consistency and provides reliable measurements. The Kaiser-Meyer-Olkin (KMO) values were also evaluated as an important criterion. The calculated KMO values are 0.914, 0.843, and 0.796 for occupational stress, employee performance, and co-worker support, respectively, demonstrating that the data is suitable for factor analysis and that the inclusion of each variable in the analysis is valid. In conclusion, both Cronbach' alpha and KMO values provide strong evidence supporting the reliability and suitability of the measurements in this study. These findings indicate that the research is based on reliable foundations and that the results can be interpreted robustly.

Table 3 Normality values of variables

	Min.	Max.	Average	Skewness	Kurtosis
Occupational stress	1.00	5.00	3.316	.773	-.668
Co-worker support	1.00	5.00	1.480	-.853	-.335
Employee performance	1.00	5.00	5.570	-1.129	1.339

Source: Authors

In terms of the normality values of the variables presented in Table 3, the minimum value of occupational stress is 1, the maximum value is 5, and the average value is 3.316. Skewness value is 0.773 and kurtosis value is -0.668. These results suggest that the data is slightly skewed to the right but is generally close to a normal distribution. Similarly, in terms of co-worker support, the minimum value was 1, the maximum value was 5, and the average value was 1.480. The skewness value and the kurtosis value are -0.853 and -0.335, respectively. This indicates that the data is slightly skewed to the left but is generally close to a normal distribution. Finally, the minimum value of the employee performance variable is 1, its maximum value is 5, and its average value is 5.570. The skewness value was -1.129 and the kurtosis value was 1.339. These results show that the data are highly skewed to the left but are generally close to a normal distribution.

Confirmatory factor analysis

At this stage of the research, a model comparison was carried out in which relevant factors were analyzed using various approaches to identify the most suitable model. As a result of these analyses, the most appropriate model was selected. This process was performed using confirmatory factor analysis.

Table 4 Comparison of the models used

Models	X^2 (df)	RMSEA	CFI	SRMR	NFI	TLI	Model comparison Δx^2 (Δ df)
Measurement model, three-factor model	509.27(191)	.078	.926	.067	.900	.912	
Model 1, one-factor model[a]	216.64(209)	.150	.626	.107	.604	.587	**292.63 (18)**
Model 2, two-factor model[b]	172.39(208)	.133	.711	.096	.685	.679	**336.88 (17)**
Model 3, two-factor model[c]	140.02(208)	.118	.772	.095	.744	.747	**369.25 (17)**
Model 4, two-factor model[d]	139.34(208)	.091	.774	.107	.746	.749	**369.93 (17)**

Notes: n=415; The significance value for all models is p<.05; x2, Chi-square discrepancy; df, degrees of freedom; RMSEA, root mean square error of approximation; CFI, comparative fit index; SRMR, standardized root mean square residual; Δx2, Chi-square difference; Δdf, difference in degrees of freedom.
Measurement Model, Three-Factor Model, Model Analyzing Occupational Stress, Employee Performance, and Co-Worker Support
[a]Harman's Single-Factor Model 1, all factors combined into a single factor
[b]Two-Factor Model 2, Occupational Stress and Co-Worker Support combined into a single factor.
[c]Two-Factor Model 3, Co-Worker Support and Employee Performance combined into a single factor.
[d]Two-Factor Model 4, Occupational Stress and Employee Performance combined into a single factor.
Source: Authors

Table 4 was used to evaluate the fit of measuring variables under different factor structures. First, when examining the fit indices of the three-factor measurement model referred to as the "Measurement Model, Three-Factor Model", it appears to fit the data well. The X^2 (df) value is given as 509.27 (191), and fit indices such as RMSEA, CFI, SRMR, NFI, and TLI are at acceptable levels. This indicates that the measurement model fits the data appropriately. When evaluating the one-factor (Model 1) and two-factor models (Model 2, Model 3, Model 4), which serve as alternative models, it is observed

that the fit indices of the one-factor model are quite poor. The high X^2 (df) value and insufficient RMSEA, CFI, NFI, and TLI values indicate that this model does not fit the data appropriately. Two-factor models perform better than the three-factor model, but they are not at the desired level. The fit indices of these models do not contain results that can replace the measurement model. Therefore, it is recommended to use a three-factor measurement model as it best explains the data, while the other alternative models fail to provide an adequate fit.

Table 5 Correlation analysis of occupational stress, employee performance, and co-worker support

Variables	Occupational stress	Employee performance	Co-worker support
Occupational stress			
Employee performance	-.535** .000		
Co-worker support	-.493** .000	.541** .000	

**p<0.01; *p<0.05 are significant at the level of 1% and 5%, respectively.
Source: Authors

The correlation analyses in Table 5 clearly demonstrate the relationships between the main variables of the study. Firstly, the negative and highly

significant relationship between occupational stress and employee performance (r=-0.535**, p<0.01) is noteworthy. This finding indicates that as occu-

pational stress increases, employee performance decreases, revealing a strong negative relationship between occupational stress and employee performance. Similarly, another negative and highly significant relationship between occupational stress and co-worker support (r=-0.493**, p<0.01) further reinforces this relationship. On the other hand, a positive and highly significant relationship between co-worker support and employee performance (r=0.541**, p<0.01) is remarkable. This result demonstrates that as co-worker support increases, employee performance increases as well. Therefore, these analyses support the conclusion that as employees' perceptions of occupational stress in-

crease, their performance decreases, but increasing co-worker support can improve their performance.

Testing of hypotheses

In this section, the hypotheses that form the basis of the research are tested using regression analyses, and the results are presented in the tables below. These analyses aim to evaluate the relationships between occupational stress, employee performance, and co-worker support, providing in-depth insights into how these variables interact within the workplace context. Firstly, the research model using AMOS will be presented, followed by regression analyses.

Figure 2 Research model - AMOS
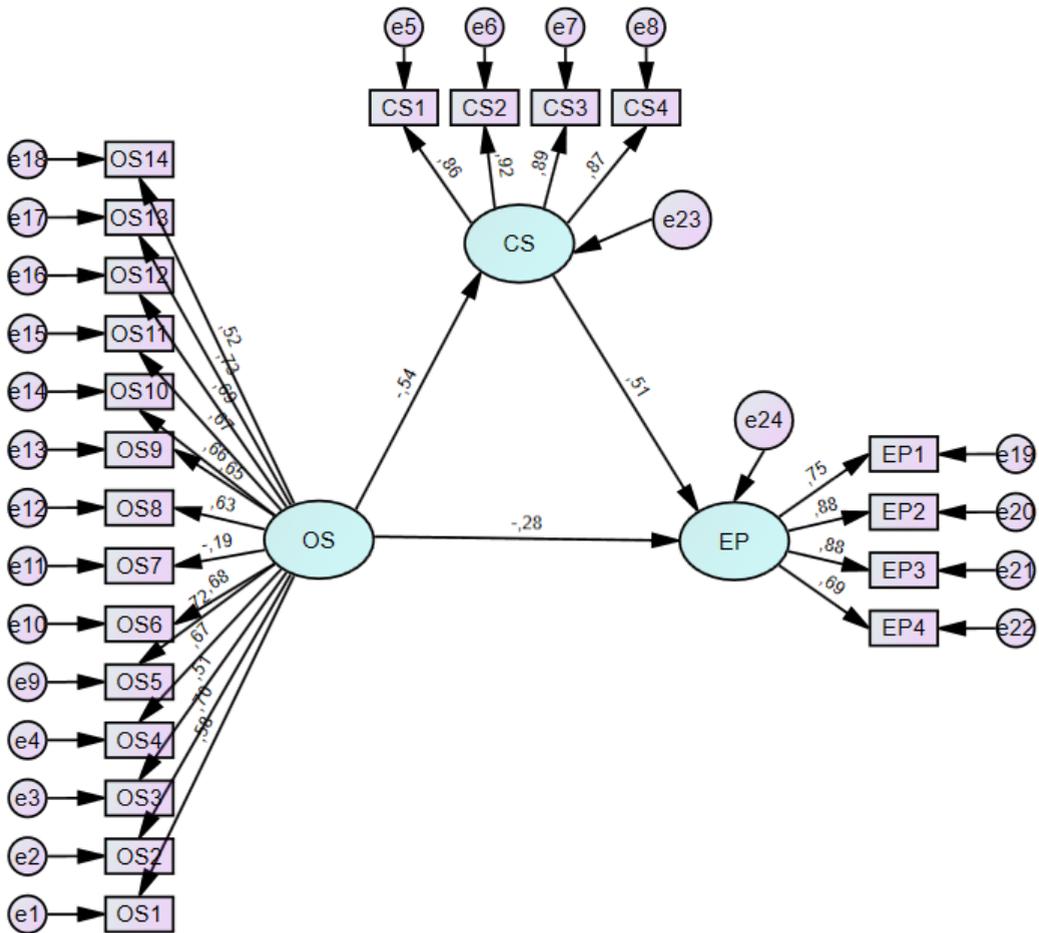
Source: Authors

Table 6 Occupational stress, employee performance, and co-worker support

Structural relationships	Regression coefficients	Std. regression coefficients	Critical ratio (C.R.)	R^2	P	Hypotheses	Hypotheses results
EP < --- CS	.432	.656	10.860	.178	***	H1	Supported
EP < --- OS	-.442	-.517	-8.670	.378	***	H2	Supported
CS < --- OS	-.632	-.419	-8.696	.359	***	H3	Supported

Bootstrap					
Structural relationships	Prediction	Standardized prediction	Lower bound	Upper bound	P
EP < --- CS	.656	.048	.563	.739	***
EP < --- OS	-.517	.001	-.630	-.392	***
CS < --- OS	-.632	.092	-.883	-.473	***

*** p<0.01; *p<0.05 are significant levels.
EP = Employee performance, CS = Co-worker support, OS = Occupational stress
Source: Authors

In Table 6, the research hypotheses were tested using regression and bootstrap analyses with the AMOS software. The results revealed that employee performance exhibited moderate associations with co-worker support and occupational stress, as reflected by R^2 values of 0.178 and 0.378, respectively. It was observed that an increase in co-worker support significantly correlated with an increase in employee performance (β = 0.432, p < 0.01), while an increase in occupational stress correlated with a decrease in employee performance (β = -0.442, p < 0.01). Moreover, it was identified that occupational stress had the most substantial impact on employee performance (β = -0.632). This outcome underscores the detrimental impact of workplace stress on employees' professional efficacy, accounting for 37.8% of the variance in employee performance. Furthermore, co-worker support was found to both enhance employee performance (17.8%) and alleviate occupational stress (35.9%). Consequently, in work environments characterized by robust co-worker support, employees experience reduced stress (63.2%) and exhibit improved performance (43.2%). In light of these findings, hypotheses H1, H2, and H3 are supported.

Table 7 Co-worker support mediates the relationship between occupational stress and employee performance

Variables	Effect	Occupational stress	Co-worker support	Employee performance	Hypothesis	Hypothesis results
Co-worker support	Direct Indirect Total	-.493 .000 .496	.000 .000 .000	.000 .000 .000	H4	Supported
Employee performance	Direct Indirect Total	-.237 -.230 -.467	.466 .000 .466	.000 .000 .000		

Bootstrap

Variables	Effect	Occupational stress	Co-worker support	Employee performance
Co-worker support	Lower bound Upper bound	.000 .000	.000 .000	.000 .000
Employee performance	Lower bound Upper bound	-.301 -.168	.000 .000	.000 .000

Source: Authors

Table 7 delves into the mediating effect of co-worker support on the relationship between occupational stress and employee performance. The findings presented here provide compelling evidence for a significant mediation effect. As expected, occupational stress exhibits a direct negative impact on employee performance (β = -.237, p < .000). However, this detrimental effect is mitigated by the presence of a supportive co-worker. The analysis reveals that co-worker support significantly buffers the negative influence of occupational stress on employee performance (β = -.230, p < .000). Furthermore, bootstrap analysis reinforces the evidence for mediation. The confidence interval for the indirect effect of occupational stress on employee performance ranges from -0.301 to -0.168. This implies that the buffering effect of co-worker support is statistically significant and not attributable to a random sampling error. In conclusion, the results from Table 7 support Hypothesis H4, indicating that co-worker support significantly mediates the relationship between occupational stress and employee performance.

4. Discussion

This study investigates the mediating role of co-worker support in the relationship between occupational stress and employee performance. Our primary hypothesis posits that co-worker support mediates this effect, supported by demographic, confirmatory factor, correlation, and regression analyses. The participant demographic data reveal a predominantly male group (82.3%), with 55.4% married and 46.3% holding an associate degree. These figures suggest that ARFF (Airport Rescue and Firefighting) personnel are primarily young and newly hired, with 87.9% classified as ARFF officers. Reliability and validity assessments indicate high internal consistency of the scales, as confirmed by the Kaiser-Meyer-Olkin criterion. Normal distribution analyses indicate a slight right skewness for occupational stress and a significant left skewness for co-worker support and employee performance. Correlation analyses reveal a significant negative relationship between occupational stress and performance (-0.535**), and a positive relationship between co-worker support and performance (0.541**). Regression analyses confirm that increased co-worker support enhances performance (β = 0.432, p < 0.01), while higher occupational stress decreases it (β = -0.442, p < 0.01). Finally, the

study demonstrates that co-worker support significantly mitigates the negative impact of occupational stress on performance, thereby validating our hypothesis.

The findings of our research clearly highlight the positive impact of co-worker support on employee performance. Demirhan et al. (2014) emphasize that managerial support shows a positive and significant relationship with job satisfaction. Similarly, Kurt's (2013) study explores the relationships between perceived co-worker support and employee performance, revealing that both managerial and co-worker support significantly affect job performance. The negative relationship between occupational stress and employee performance holds a significant place in the existing literature. Demerouti and Bakker (2011) note that workplace stress can lead to burnout, subsequently negatively impacting employee performance. Moreover, findings supporting the notion that co-worker support enhances job performance while reducing occupational stress are corroborated by research conducted by Chiaburu and Harrison (2008). In conclusion, both co-worker support and managerial support are crucial for enhancing employee performance and effectively managing stress.

5. Conclusion and recommendations

This research comprehensively examines the effects of occupational stress on employee performance and the role of co-worker support in this relationship, yielding significant findings. Our first finding reveals a negative relationship between occupational stress and employee performance, which supports numerous studies in the existing literature. Notably, Kahn and Byosiere (1992) emphasized the adverse effects of stress on individual job performance and argued that these findings should be considered within an organizational context. Furthermore, Sonnentag and Frese (2013) highlighted the negative impact of workplace stressors on performance in a recent review, underscoring the importance of stress management strategies.

Our second finding illustrates the negative relationship between occupational stress and co-worker support, reaffirming the significance of social support mechanisms in the workplace. De Clercq et al. (2020) conducted two time-lagged surveys across six organizations in Pakistan and found a connection between reduced stress levels and co-worker

support. Andrews et al. (2007) noted that co-worker support relationships in the workplace enhance employees' abilities to cope with stress. Manning et al. (1996) argued that co-worker support can mitigate the negative health effects of stress.

Thirdly, a positive and significant relationship was identified between co-worker support and employee performance. This finding emphasizes that as support from co-workers increases, employee performance generally improves. Demerouti and Bakker (2011) demonstrated that co-worker support enhances motivation in the workplace.

Lastly, the mediating role of co-worker support underscores the importance of social support mechanisms in alleviating the effects of stress. Co-worker support may moderate the relationship between laissez-faire leadership and perceived stress among employees. Previous studies have found a positive correlation between laissez-faire leadership and stress. In this context, when employees receive support from co-workers while working under a laissez-faire leader, they may mitigate the negative relationship, thereby reducing perceived stress. Karasek and Triantis (1982) tested the buffering effects of co-worker support using data from a national survey conducted in the U.S. in 1972. The authors reported that employees experienced lower psychological strain in high-stress job situations when co-worker support was strong. These studies indicate a direct link between co-worker support and reduced stress levels among employees and demonstrate that co-worker support acts as a moderator in relationships related to employee outcomes. These findings contribute to our understanding of the effects of stress factors in the workplace on employee performance and emphasize the need for management strategies to include stress-reducing measures. Additionally, they highlight the importance of strengthening solidarity and support relationships in the workplace, which can help improve employee performance and cope with stress.

This study examines the mediating role of co-worker support in the impact of occupational stress on employee performance. The research was conducted using a survey method, with data collected from ARFF (Air Rescue and Fire Fighting) personnel working at an airport. Airports operate 24/7 to ensure uninterrupted air traffic at both national and international levels, necessitating a "zero-error" approach to ensure the safety of passengers' lives. In this context, the safe operation of airports is vital

not only for operational success but also for the overall safety of the community. ARFF personnel undertake extremely risky duties, such as responding to aircraft emergencies and saving passengers' lives. However, it has been observed that this occupational group works under intense stress, which can negatively affect their performance. Successfully performing their duties is crucial for both their health and passenger safety. Therefore, understanding the relationship between ARFF personnel's step-coping abilities and their performance is of great importance, particularly when co-worker support is provided, as it is expected to enhance performance in fulfilling their critical responsibilities. Literature reviews indicate that no similar study has addressed the mediating role of co-worker support in the relationship between occupational stress and employee performance, specifically among ARFF personnel at airports. As such, this research fills a significant gap in the literature.

This research not only contributes to the literature but also provides valuable insights into strategies for reducing stress and enhancing performance among ARFF personnel within airport environments and related institutions. It suggests that the continuous 24/7 operation of airports necessitates increased flexibility in the shift schedule of ARFF personnel, and that flexible working hours could help them achieve a better work-family balance and reduce stress levels. Implementing part-time work on less busy days may enable individuals to manage their family and personal responsibilities more effectively. Additionally, regular sports events and social activities are believed to support employees' physical and mental health, increasing motivation and strengthening team cohesion. Psychological support services are also suggested to enhance stress-coping abilities, contributing to better management of emotional challenges. Individual counseling and group therapy can maintain employees' mental health, improving job performance and overall quality of life. Finally, team-building activities that foster collaboration and solidarity can strengthen interaction among colleagues, reduce stress, and promote a more positive workplace environment.

Recommendations for future research

Several avenues for future research in this field warrant consideration. First, the impact of stress

management programs on employee performance could be explored further, investigating the content and effectiveness of these programs. Additionally, measuring and enhancing co-worker support in workplaces presents another opportunity for research, focusing on different types of support and their effectiveness. The role of organizational culture also merits investigation, particularly in terms of how a positive culture can reduce stress and enhance co-worker support. Furthermore, research could examine how employees' demographic characteristics—such as gender, age, and ethnic background—affect perceptions of occupational stress, co-worker support, and performance, evaluating

the impact of diversity and equality policies on stress management. Finally, the role of technology should be explored, specifically how advancements like remote work and digital communication tools influence occupational stress and support dynamics. These recommendations aim to provide deeper insights into various perspectives, ultimately facilitating the development of more effective workplace strategies. This study, which investigates the relationships among occupational stress, employee performance, and co-worker support, contributes a fresh perspective to the existing literature, particularly by highlighting the mediating role of co-worker support in this context.

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MORE MONEY DOES NOT MEAN MORE BIG MACS – ANALYSIS OF PHYSICIANS' PURCHASING POWER IN EUROPEAN COUNTRIES

Abstract

Purpose: One of the major determinants of the well-being of citizens is the purchasing power of their income. Recently, there has been a significant outmigration of physicians from countries with low GDP per capita to those with high GDP per capita. This movement is often driven by the perception that higher nominal salaries provide better purchasing power parity (PPP). This research paper employs the Big Mac Index to examine whether PPP is higher in countries with higher GDP per capita than in countries with lower GDP per capita.

Methodology: Data were collected for this study via Google and PubMed search engines, using words like "physician purchasing power parity", "physician salary in 2020", and "the Big Mac Index in 2020". Then, the salaries adjusted for PPP and the Big Mac Index were used to calculate the number of Big Macs that can be purchased.

Results: The highest number of Big Macs could be bought in Turkey, the country with the lowest GDP on our list. The number of Big Macs far exceeds the maximum that can be bought in high-GDP countries such as Germany, the Netherlands, and Ireland. In Hungary, a country with a low GDP, a comparable number of Big Macs could be bought as in Germany, the Netherlands, and Ireland.

Conclusion: Thus, high nominal salaries in countries with a high GDP per capita do not necessarily translate into greater PPP. Physicians should reconsider outmigration if it is purely for economic reasons. Outmigration is a demanding effort that can result in financial disappointment.

Keywords: Purchasing power parity, medical doctors, salaries, economic migration

1. Introduction

In this paper, we will analyze the purchasing power of physician salaries across various European countries. The Big Mac Index will be used to calculate the total number of Big Macs a physician can buy. Today, many physicians decide that they want to follow the money and earn more for the work they do. This is especially true in the European Union (EU). One of the main principles of the EU is freedom of

movement, and more physicians migrate to the EU than any other highly regulated profession (Hervey, 2017). In general, they choose to move from countries that have a low gross domestic product (GDP) per capita to countries with a high GDP per capita (Hervey, 2017). GDP per capita is a measurement in economics that expresses a country's economic production per person, and it is evaluated by dividing a nation's GDP by its population (Hayes, 2022). Countries with a high GDP per capita are usually those that are industrial and developed. The migration of healthcare professionals is particularly evident from Eastern and Southern Europe (Hervey, 2017). For example, Hervey (2017) states that doctors in Estonia make €600 a month, and that many physicians in that country believe that their salary is insufficient to cover their monthly expenses. In addition, Hervey (2017) states that health expenditure per capita is different in every country, and because of this, not every country can reward its graduates equally. Western European countries, such as Luxemburg, Denmark, and Germany spend the highest monetary amount per capita on health, nearly €4,000 per year, while Eastern European countries spend much less, from €816 in Romania to €1,371 in Hungary (Hervey, 2017). Hervey (2017) believes that this results in large salary differences for doctors in Eastern European countries compared to Western European countries. Salaries in Western European countries, i.e. those with a higher GDP per capita, can be four to five times higher than in Eastern European countries (Hervey, 2017). Okeke (2013) found that, in general, economic conditions contribute to the increase in healthcare workers relocating from developing countries. The author found that a one percentage point reduction in GDP per capita leads to an increase in physician relocation by between 3.4 and 3.6 percent in the next period (Okeke, 2013). Moreover, Okeke (2013) found evidence that after the implementation of a salary increase program in Ghana, according to which doctors' salaries rose by between 75% and 150% over a six-year period, the migration of doctors to foreign countries dropped by approximately 10%. Such significant reduction in the migration of doctors was not observed in African countries that did not implement a similar wage increase program (Okeke, 2014). Furthermore, Okeke (2014) calculated the wage elasticity of migration to be between -0.06 and -0.13 in Ghana since the implementation of the program. On average, a 0.15% increase in regional earnings per capita is associated with a 10% increase in the newcomer population (OECD, 2022). Underdeveloped nations are becoming the leading suppliers of newcomer physicians. For example, 20% of migrant physicians in the United Kingdom (UK) originate from Africa, while 30% of newcomer doctors in the United States come from India and Pakistan (Vujicic, 2004). The extent of population migration from any country depends on both the supply and demand for newcomers and the mechanism through which supply responds to demand.

Vujicic (2004) stated that an individual is likely to move out if

$$Wf - Wd - C > Z,$$

where C is the direct monetary value of relocation, Wf and Wd represent foreign and domestic income, respectively, while Z is the compensating differential for staying in the source country. If the non-monetary job attributes are considered, the formula becomes

$$U(Wf, Jf) - U(Wd, Jd) - C > Z,$$

where J represents the conditions of employment, such as opportunities for advancement, safety, prestige, housing, transportation, and lack of stress (Vujicic, 2004).

According to Eurostat (2023a), in 2022, Luxembourg and Ireland documented the largest GDP per capita in the EU. Luxembourg's GDP stood at 161% above the average GDP per capita in the EU, followed by Ireland (134%). In contrast, Bulgaria had the lowest GDP per capita, at 41% below the EU average. Luxembourg's high GDP per capita is largely attributed to a large number of foreign residents who work in the country and contribute to its GDP. However, these foreigners are not counted as part of Luxembourg's resident population, and their consumption expenditure is recorded and documented by the financial institutions of their national countries of origin (Eurostat, 2023a).

Furthermore, Eurostat (2023a) reports that Ireland ranks as the second-highest EU Member State in terms of GDP per capita. A significant portion of this figure is attributed to foreign contract manufacturing associated with assets owned by large multinational companies. A noteworthy proportion of these earnings ultimately returns to the owners of the companies in their native countries (Eurostat, 2023a).

As reported by Eurostat (2023a), Denmark, the Netherlands, Austria, and Belgium each had a GDP per capita more than 20% above the EU average.

In most Eastern European nations, such as Poland, Romania, and Estonia, between 50% and 60% of doctors or final-year medical students consider and plan to leave their home country to work abroad (Hervey, 2017). In Estonia, this trend has led to severe shortages, with some areas lacking family physicians within a 100-kilometer radius. Romania, which has the lowest healthcare expenditure per capita at €816, has already lost half of its doctors, while 10% of the population reported going without healthcare services. The healthcare systems of the newest EU Member States suffer most from the physician exodus (Hervey, 2017).

The UK and the EU countries have made restrictions on the number of physicians that can be recruited from each country, because the physician workforce in those countries could otherwise be completely diminished. Croatia is among the affected countries, having lost 570 doctors—approximately 5% of its total physician workforce—to relocation within the EU since joining the bloc in 2013. As Hervey (2017) noted, this trend continues, with more physicians leaving or planning to leave.

This paper demonstrates that a high GDP per capita does not inevitably correspond with a high purchasing power parity (PPP) for physicians. To assess the net PPP, we will subtract personal income tax from the published PPP salaries for the year 2020. Based on these results and the Big Mac Index, we will calculate the total number of Big Macs that can be purchased in each country.

2. Big Mac Index

In line with the statements of Dyvik (2023), the Big Mac Index is a tool created by The Economist to measure differences in currency values across countries. The value of a Big Mac hamburger is the standard used by the Big Mac Index (BMI) to estimate if the currency of a country is over- or undervalued. According to Dyvik (2023), this new development by The Economist has facilitated the process of computing and estimating exchange rates for the currencies of various countries and their purchasing power parities (PPPs). The index measures the currency of each country and compares it to the price of the Big Mac hamburger, which can be bought at McDonald's restaurants in

countries around the world. The Economist transforms the average national price of a Big Mac into U.S. dollars two times a year, using the exchange rate at that moment. The argument is that the Big Mac is a standardized product sold globally, and therefore, its price is expected to be the same in every country. Thus, in line with Dyvik's (2023) assertions, the variations in the Big Mac price calculated in U.S. dollars reflect the differences in the purchasing power of each currency.

PPP is based on the idea that goods should have the same price in different countries across the globe when adjusted for exchange rates at the time. PPP is the ratio of prices in national currencies of the same good or service across countries (Investopedia Team, 2023). The PPP formula is:

$$S = \frac{P1}{P2},$$

where S is the exchange rate of currency 1 to currency 2, P1 is the cost of good X in currency 1 and P2 is the cost of good X in currency 2 (Eurostat, 2023b).

However, many different elements in the economies of countries determine their PPP. Such elements, according to Dyvik (2023), are tax rates, wage regulations, the level of market competition, and whether components need to be imported. They all contribute to price variations across countries and to inflation. Since the Big Mac is produced using roughly identical ingredients in all countries, the BMI stays away from one of the crucial challenges commonly related with absolute PPP. On the other hand, there is also likely to be a difference between the domestic fundamental costs of the materials used to make a Big Mac and those in foreign countries. These price differences can also fluctuate with inflation, demonstrating that the proportion reflected in the indexes is influenced by both relational inconsistencies and monetary principles (Clements et al., 2007). Clements et al. (2007) stated that exchange rates are more volatile than prices and this is a well-known empirical regularity. The Big Mac prices demonstrate this regularity very well (Clements et al., 2007). Therefore, it is not surprising that significant and sustained deviations of exchange rates from the BMI have been observed. However, the Big Mac prices tend to lag behind overall inflation and exhibit a significant level of adhesiveness over a 1-year horizon (Portes & Atal, 2014). Moreover, according to Portes and

Atal (2014), the Big Mac Index has some predictive capability for certain groups of high-income countries as they gravitate towards a PPP rate. On the other hand, in line with the authors' statements, for a considerable group of emerging markets the currencies deviated from the uniformity and the BMI has no forecasting power. Thus, the BMI must be augmented before it has significant real potential because small and large over- and underestimations of currency values based on the BMI published by The Economist cannot be accepted as a dependable measure of mispricing (Clements et al., 2007). According to Clements et al. (2007),

$$S = \frac{P}{P^*},$$

where P is the domestic currency cost of a box of merchandise at home, and P^* is the cost of the same box in a foreign country, while S is the spot exchange rate (the domestic currency cost of a unit of foreign currency). Thus, instead of the absolute PPP in the above-mentioned form, it really holds the following form:

$$S = B \frac{P}{P^*},$$

where B is the bias that equals B = 1/K, where K is a constant of integration. In logarithmic terms, the bias becomes a lowercase b and equals b = -k (Clements et al., 2007). In line with the statements of Clements et al. (2007), the lowercase k is the long-run or equilibrium value of the real exchange rate. Lowercase letters denote logarithmic values of the variables and so the spot exchange rate equals s = p − p*, while with the adjusted bias it equals s = b + p − p* (Clements et al., 2007). Clements et al. (2007) state that when the bias is allowed, the BMI follows the exchange rates proficiently over the medium and longer-term in agreement with the relative PPP theory. Still, even when the bias is accounted for, the adaptation to divergences from consistency tends to be fully completed over a period of three to six years. As Clements et al. (2007) stated, the bias-adjusted BMI shows better predictability than the random walk model in all but the one-year horizons. Thus, it has significant forecasting ability concerning future currency values. However, it continues to face significant resistance when predicting currency values within a 1-year horizon (Clements et al., 2007; Portes & Atal, 2014).

3. The politics of physician salaries in the EU and other countries

Indeed (2023) states that, in general, the market impacts salaries. Other job-related factors–like the availability of a position, the demand for the position, the number of available candidates for the position, or the number of people seeking education for the position–impact how high the salary will be. Large companies will try to offer fair compensation to their employees, considering what is required to successfully perform a specific job. Companies offer salaries based on their budget and the funds allocated for each role. According to Indeed (2023), data from market surveys are often used to determine salary ranges. In the U.S., Mr. Collins, a chief officer at the Medical Group Management Association in Englewood, Colorado, says that 99% of the time, reimbursement aligns with the marketplace (Darves, 2011). According to Darves (2011), there are several physician compensation models. The most common is the straight salary or minimum income guarantee, often seen in large academic settings or large corporate and physician-owned practices. In this model, the reimbursement level is preset, so physicians know exactly how much they will earn. Another model is equality or equal shares, in which the remaining earnings after expenses are distributed equally among the group's doctors. In the production or productivity-based compensation model, the doctors are paid based on a proportion of billings or collections, or according to the resource-based relative value scale (RBRVS) units assigned to specific procedures or types of patient visits. In this case, both fixed and variable practice costs are distributed among the doctors. The capitation or productivity plus capitation model involves distributing prepaid healthcare premiums uniformly to contracted provider groups to cover specialty services for a defined enrollee population.

As stated by the OECD (2024b), in many European countries, healthcare is primarily financed through government spending and compulsory health insurance, based on financial agreements. Governments determine the amount and structure of physician salaries by regulating fees or setting salaries for physicians working in the public sector. Hervey (2017) reports that health spending per capita varies significantly across countries, which in turn leads to differences in physician salaries. The salary influences the attractiveness of general practice and various specializations (OECD, 2024c). The

OECD (2024c) reports that the salary of a doctor represents average gross annual income, typically excluding practice expenses for self-employed doctors (except in Belgium where these expenses are included). In some countries, the distinction between employed and self-employed doctors is blurred, as employed physicians are also allowed to have a private practice. Some self-employed doctors receive only a portion of their reimbursement through salaries. In addition, the OECD (2024c) reports that there are many limitations in terms of remuneration data, which can lead to underestimation. These limitations include payments for overtime work, bonuses, income from private practices, the fact that data in some countries may relate only to the public sector, in which doctors tend to be paid less than those working in the private sector, and informal payments, which can be common in some countries. As stated by the OECD (2024c), in the majority of nations, the compensation for doctors has increased since 2010; however, the rate of increase has differed among countries, with Hungary experiencing a particularly strong rise. The Hungarian government substantially raised the salaries of both specialists and general practitioners over the past decade. This policy aimed to reduce doctor emigration and, consequently, address healthcare personnel shortages the country was facing. According to the OECD (2024c), in some countries, the remuneration of doctors decreased over the past decade. This is especially true for Portugal, Slovenia, and the UK. In Portugal, salaries declined between 2010 and 2012 and, although they have risen since then, they remained lower in 2020 than in 2010. In the UK, salary reductions affected not only doctors but also nurses and other NHS staff, as noted by the OECD (2024c).

Recently, Croatia has implemented a new salary system for employees in the government and public service sectors. The goal was to increase salaries, make these jobs attractive to new, young, and talented employees, and ultimately boost future employment rates. Prior to the introduction of this new system in June 2023, the government raised the lowest salaries by €100, €80, or €60 for 214,000 government and public sector employees. In October 2024, the basic salary will be increased by 5%. As a result, the basic salary is expected to have risen by 40% since 2016, according to the Ministry of Justice of the Republic of Croatia (2024). The new salary coefficient for specialist physicians will rise to 3.82,

which translates into a gross monthly salary of up to €3,618. This represents an increase of €585, or 19.3%, in the gross salary of specialist physicians, compared to the gross salary of specialists in 2022 (Osijek Express, 2024). By comparison, non-specialist physicians will receive a gross salary increase by €355, or 14.7%, with their new salary coefficient set at 2.920 (Osijek Express, 2024).

Loguidice (2021) states that the cost of living in a country is defined by the funds required to attain and maintain a certain level of comfort within a location, and that it covers basic living expenses, such as housing, food, taxes, and healthcare. The average purchasing power of physicians is related to this cost of living. According to Loguidice (2021), the United States and France had the highest cost of living indices, while Mexico and Spain reported both lower remuneration and lower cost of living indices. Male physicians earned more than their female counterparts in all countries. Gender-based income disparities were the smallest in the United States and Spain, and the largest in Mexico (Loguidice, 2021).

In 2020, 26% of doctors reported a decrease in income compared to the previous year, with the main contributing factor being COVID-19 (Loguidice, 2021). As reported by Loguidice (2021), in the United States, the proportion was even higher, with 41% of physicians experiencing a salary decrease and only 22% reporting an increase. The most likely cause was isolation protocols for infected patients, which led to delays in the treatment of non-emergent conditions. In contrast, in the United Kingdom, income increased by 34%, which was attributed to career development, reimbursement increases through bands based on years of service, and a national reimbursement increase.

According to Loguidice (2021), the average net worth for all families in the United States was $746,820, with the median net worth at $121,760. The net worth of U.S. physicians is higher than the net worth of physicians in other countries.

4. Materials and methods

This comparative review paper examines the PPPs related to the cost of buying a Big Mac in 2020 for physician specialists within different European countries. The PPPs of countries with low GDP per capita (especially those belonging to the former Eastern Bloc of Europe) were compared to the PPPs

of countries with high GDP per capita (the Western Bloc of Europe), and also among themselves. The Google and the PubMed search engine were used with keywords like "physician PPP" and "physician salary in 2020", as well as "Big Mac Index in 2020". The personalized income tax was calculated using the available tax brackets for 2020, which were collected from webpages such as the OECD Library, Expat Info, Orbitax, or the respective countries' specific revenue and custom webpage. These webpages were developed and are maintained by credible tax specialists covering countries worldwide. The method described by Kagan (2023) was used to calculate individual income tax rates from the tax brackets. For practical purposes, other taxes, such as social security taxes, were not used in these calculations. The tax rates, personal income tax brackets, and calculations of the personal income tax rates are available in Appendix B attached to this paper. The results of this paper were analyzed using Excel and ranked from highest to lowest based on the number of Big Macs that could be purchased.

Yanatma (2023) analyzed and recorded the gross annual and PPP-adjusted salaries of physicians in Europe. Ziggurat Realestatecorp (2020) published the Big Mac Index in 2020, and their table can be found in Appendix A attached to this paper. The Euro to US Dollar Spot Exchange Rates for 2020 (Exchange Rates.org.uk, 2020) were used to convert euros to dollars. The average exchange rate in 2020 was 1 EUR/1.142 USD (Exchange Rates.org.uk, 2020a-i). In 2024, the OECD published a gross domestic product indicator by which countries can be ranked by the magnitude of their GDP (OECD, 2024a). The OECD webpage (2024a) allows for the rankings by magnitude of GDP to be analyzed by year (OECD, 2024a). Their graph for 2020 can be found in Appendix A attached to this paper. The GDP magnitudes of the countries analyzed by Yanatma (2023) were taken from this graph and ranked from highest to lowest in Table 1 in the results section of this paper (Yanatma, 2023; OECD, 2024a; Table 1).

In this paper, the number of Big Macs was calculated for each country based on their respective PPP-adjusted salaries. Only the countries analyzed by Yanatma (2023) were included in the calculations. The calculation procedure was carried out in the following steps:

1. The PPP-adjusted salary was converted from euros to dollars using the spot exchange rate in 2020 (Exchange Rates.org.uk, 2020a-i),

2. Income tax rates were calculated based on the tax brackets of each country using the method described by Kagan (2023). If the country used a flat tax rate, that tax rate was used instead. If necessary, the domestic currency of the country was converted to euros prior to the calculation,

3. The net PPP salary was calculated by subtracting the personal income tax in U.S. dollars from the PPP in U.S. dollars,

4. The Big Mac Index in 2020 (Ziggurat Realestatecorp, 2020) was used to determine the price of a Big Mac in 2020 for each analyzed country,

5. The number of Big Macs was obtained by dividing the net PPP by the price of a Big Mac. An Excel spreadsheet was used to rank the results from highest to lowest.

5. Results

After applying the methodology, Table 1 and Table 2 were constructed. In Table 1, countries are ranked from the highest to the lowest GDP per capita in 2020. In Table 2, countries are ranked by the number of Big Macs that can be purchased, from highest to lowest. Next to the number of Big Mac that can be purchased, the GDP rank of each country from Table 1 is listed. The net PPP amounts and the personal income tax rate of each country are also listed.

Table 1 Countries ranked from the highest to the lowest GDP per capita in 2020 according to the OECD (2024)

	Country	GDP per capita 2020 ($/capita; ranked from largest to smallest)
1.	Ireland	97,165.00
2.	Norway	67,117.00
3.	Denmark	62,544.00
4.	Netherlands	61,067.00
5.	Germany	57,905.00
6.	Sweden	57,690.00
7.	Belgium	55,729.00
8.	Iceland	55,626.00
9.	Finland	53,658.00
10.	France	49,181.00
11.	UK	48,006.00
12.	Italy	44,202.00
13.	Czech Republic	43,913.00
14.	Slovenia	42,033.00
15.	Lithuania	41,168.00
16.	Estonia	40,116.00
17.	Spain	38,976.00
18.	Poland	35,891.00
19.	Portugal	35,875.00
20.	Hungary	35,016.00
21.	Slovak Republic	34,989.00
22.	Latvia	33,726.00
23.	Greece	29,088.00
24.	Turkey	28,678.00

Source: OECD (2024a)

According to Table 1, Ireland has the highest GDP per capita among the listed countries, while Turkey has the lowest GDP per capita.

Table 2 Countries ranked by the number of Big Macs that can be purchased and GDP per capita in 2020

Country	PPP salary (€)	PPP salary ($)	Tax income (%)	Net PPP salary ($)	Price of Big Mac ($)	Number of Big Macs	GDP per capita rank
1. Turkey	85,878.00	98,072.68	32.79	65,914.65	2.04	32,311.10	24
2. Netherlands	13,5479.00	154,717.02	36.27	98,601.16	4.79	20,584.79	4
3. UK	11,0553.00	126,251.53	32.37	85,383.91	4.28	19,949.51	11
4. Germany	13,6010.00	155,323.42	39.10	94,591.96	4.79	19,747.80	5

Country	PPP salary (€)	PPP salary ($)	Tax income (%)	Net PPP salary ($)	Price of Big Mac ($)	Number of Big Macs	GDP per capita rank
5. Ireland	12,1743.00	139,030.51	34.20	91,482.07	4.79	19,098.55	1
6. Hungary	54,054.00	61,729.67	15.00	52,470.22	2.89	18,155.78	20
7. Finland	90,044.00	102,830.25	15.94	86,439.11	4.79	18,045.74	9
8. Spain	81,127.00	92,647.03	16.90	76,989.69	4.79	16,073.00	17
9. Czech Republic	58,594.00	66,914.35	15.00	56,877.20	3.80	14,967.68	13
10. Iceland	101,137.00	115,498.45	45.64	62,784.96	4.40	14,269.31	8
11. France	76,524.00	87,390.41	22.60	67,640.18	4.79	14,121.12	10
12. Norway	68,339.00	78,043.14	4.07	74,866.78	5.55	13,489.51	2
13. Sweden	71,869.00	82,074.40	6.48	76,755.98	5.76	13,325.69	6
14. Belgium	100,318.00	114,563.16	44.76	63,284.69	4.79	13,211.83	7
15. Italy	79,123.00	90,358.47	34.37	59,302.26	4.79	12,380.43	12
16. Denmark	109,897.00	125,502.37	55.90	55,346.55	4.58	12,084.40	3
17. Slovenia	62,709.00	71,613.68	30.07	50,079.45	4.79	10,455.00	14
18. Estonia	52,652.00	60,128.58	20.00	48,102.87	4.79	10,042.35	16
19. Poland	35,734.00	40,808.23	33.07	27,312.95	2.79	9,789.59	18
20. Slovak Republic	44,967.00	51,352.31	20.04	41,061.31	4.79	8,572.30	21
21. Greece	46,003.00	52,535.43	26.39	38,671.33	4.79	8,073.35	23
22. Portugal	48,008.00	54,825.14	32.56	36,974.07	4.79	7,719.01	19
23. Lithuania	36,146.00	41,278.73	20.00	33,022.99	4.79	6,894.15	15
24. Latvia	33,835.00	38,639.57	21.23	30,436.39	4.79	6,354.15	22

Sources: 1. Yanatma (2023); 2. Ziggurat Realestatecorp (2020); 3. Exchangerates.org.uk. (2020a-i); 4. OECD (2021a-o); 5. Pwc (2021); 6. Skatturinn (2021); 7. Trading Economics (2021); 8. Orbitax (2021); 9. Neotax (2021); 10. Kagan (2023); 11. iCalculator™ IT (2021); 12. HM Revenue & Customs (2021); 13. Get Golden Visa (2021); 14. Expatax (2021); 15. Expat Info (2021); 16. Citizens Information (2024)

Analyzing the PPP in terms of buying a Big Mac in Table 2, Turkey has the strongest PPP, because the largest quantity of Big Macs can be purchased there. The number of Big Macs that can be purchased in Turkey is significantly higher than in the other countries listed. On the other hand, Table 1 shows that Turkey has the lowest GDP per capita of all the countries listed.

Hungary ranks sixth, not far behind Ireland, and has a similar PPP to Finland, which ranks ninth in terms of the size of its GDP. Despite ranking 20th in terms of the GDP size, Hungary can purchase a similar number of Big Macs as Ireland, which ranks first in terms of its GDP size. The Czech Republic ranks ninth and has a better PPP than Iceland, France, Norway, Sweden, Belgium, Italy, Denmark, and Slovenia, all of which rank higher or similarly in terms of their GDP compared to the Czech Republic. The Czech Republic's PPP is twelve places higher than that of the Slovak Republic, placing it in the top of the middle third, while the Slovak Republic is in the middle of the bottom third of the table. However, the Slovak Republic has a higher PPP than Portugal and Greece. Estonia ranks 18th, lower than the Scandinavian and Central- Western EU countries, but higher than Portugal (a Western country), Greece, Poland, and the other Baltic countries. It is located at the top of the lowest third of the PPP rankings, and is above the Slovak Republic. Lithuania and Latvia are both at the bottom of the table. Latvia has the lowest PPP in terms of buying a Big Mac.

6. Discussion

Turkey is undoubtedly the country with the strongest PPP, even surpassing all the Western countries listed, yet it has the lowest GDP per capita among them (Tables 1 and 2). One can purchase more Big Macs in Turkey than in any other country, with a significant difference. For example, the net PPP salary is by $28,677.31 higher in Germany than in Turkey, yet the Turkish physician's salary allows for the purchase of 12,563.3 more Big Macs than in Germany. Similarly, 11,726.21 more Big Macs can be bought in Turkey than in the Netherlands, and 12,361.49 more than in the UK. This divergence becomes even more pronounced when the Turkey's PPP is compared with other countries on the list. Thus, despite Turkey having the lowest GDP in Table 1, its PPP compared to Western economies is high. Hungary, another country with a low GDP, also ranks highly in terms of PPP strength. Hungary ranks sixth in terms of purchasing power of Big Macs (Table 2), yet it is a country with the fifth lowest GDP per capita (Table 1). Therefore, it is not surprising that a similar number of Big Macs can be purchased in Hungary–a country with a low GDP–as in Germany and Ireland, which are countries with high GDPs (Table 1, 2). One of the reasons for the high PPPs in both Turkey and Hungary are their strong mixed economies (CFI team, 2024). A mixed economy, as described by the CFI team (2024), combines elements of a planned economy with a market economy. In other words, the state is allowed to intervene to help the citizens live better lives, in case of problems on the free market, such as inflation. According to CFI (2024), a mixed economic system provides a lot of benefits to a society, such as well-organized appropriation of resources, stimulus for modernization and effective production, and the support of the government (Investopedia Team, 2024). For example, the government can intervene to prevent prices from rising or falling below affordable levels for the population. Indeed, Turkey's businesses are known to use price controls to fix prices when the government warns of rising inflation (English, 2023). For example, in January 2023, the Turkish Finance and Treasury Minister publicly encouraged price-fixing to combat inflation (English, 2023). At that time, Turkey's leading supermarket chains fixed prices for thousands of products, promising that it would protect the budget of customers and help the country's economy (English, 2023). The Minister congratulated them (English, 2023). It is likely that the price of a Big Mac was also reduced to make it more affordable for the general population. As shown in the tables, the price of a Big Mac in Turkey at $2.04 was the lowest, less than half of the EU's average price of around $4.79, even though, as noted by Yanatma (2023), the nominal salary of specialists in Turkey was among the lowest.

Similarly, Hungary also uses price fixing to shield households from inflation (Reuters, 2022). During the new wave of inflation in 2022, the government imposed upper limits on prices for milk, sugar, flour, sunflower oil, pork leg, and chicken breast, and announced that it could potentially further extend these price caps (Reuters, 2022).

7. Conclusion

This paper has demonstrated that possessing more money does not necessarily mean possessing more goods, as PPP does not always correlate with the amount of money possessed. Therefore, physicians should reconsider making migration decisions based exclusively on economic criteria, as outmigration can be costly in terms of time and energy, and may eventually be financially disappointing. Credible economic journalists and other experts served as the sources for this study. The Big Mac Index was used to calculate the number of Big Macs that can be purchased with the respective physician salaries in each of the countries, allowing for a comparison of the PPPs in high and low GDP countries. According to Dyvik (2023), PPP is affected by different elements such as tax rates, wage regulations, market competition, and the type of economic system of a country. Turkey's and Hungary's mixed economic systems regulate prices well, enabling physicians with relatively low salaries to potentially purchase the highest quantities of Big Macs. There are, however, limitations to the implemented methodology. First, the number of Big Macs purchased may not be consistent over time, especially in the short term, and particularly in emerging economies such as those from the former Eastern European Bloc. Clements et al. (2007) stated that exchange rates are volatile and can significantly affect the Big Mac Index, especially in emerging economies. Thus, the random walk model of the Big Mac Index has no short-term forecasting power in emerging economies, although it has a significant degree of stickiness in developed economies in the one- year

term. On the other hand, as stated by Clements et al. (2007), the incorporation of the bias into the Big Mac Index increases the forecasting power over the medium and long term. Therefore, according to Clemens et al. (2007), we can be certain that if all economic mechanisms in the countries remain the same, the same PPP strength will be repeated in three- and six-year cycles. Another limitation in this paper is the fact that only the individual, personal income tax amounts were deducted from the purchasing parity salaries of physicians in the respective countries. Other taxes such as social security, property, or taxes on goods in different countries were not subtracted due to practical reasons. Such taxes could potentially change PPP. The inclusion of social security taxes could significantly reduce the purchasing power of physicians, because more money would be subtracted from their salaries and given to the governments. This raises important questions: How much would the purchasing power of a physician decrease with the addition of social security taxes, and what causes social security taxes to be higher in some countries and lower in other countries? In addition, what causes taxes on properties and goods to differ between countries, and how much impact would they have on the purchasing power of physicians? Furthermore, other elements, such as benefits from the government, for example, the payment of medical tuition or healthcare insurance by the state, can also impact PPP. Broader studies are needed to answer these questions. Subtractions and additions of social security taxes, the taxes impacting the everyday cost of living, the benefits provided by the government such as university tuition payments and healthcare insurance payments, will need to be carried out for each country. In addition, it would be beneficial to clarify the mechanisms causing the differences in the taxes, benefits, and the cost of living. Such studies would likely require the use of Big Data automated technology, but they could ultimately provide a more detailed understanding of the differences in PPP between countries with low and high GDP per capita, as well as reveal mechanisms that countries could employ to increase the PPP of their citizens.

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INSTITUTIONS AND ECONOMIC GROWTH: AN EXAMINATION OF THEIR CORRELATION IN BOSNIA AND HERZEGOVINA

Abstract

Purpose: Institutions play an important role in stimulating economic growth of the country. They create frameworks for economic activity through restrictions that shape human interaction. Economic growth is a complex process influenced by many factors, including the quality of institutions. The main goal of this paper is to examine the correlation between institutions and economic growth in Bosnia and Herzegovina (hereinafter referred to as B&H).

Methodology: The paper applies both descriptive and inferential statistics, along with various scientific research methods. It examines the correlation between selected indicators and conducts regression analysis to establish the relationship between indicators of economic growth and the institutional quality in Bosnia and Herzegovina during the period from 2002 to 2022. The central research question is: Does institutional quality determine economic growth in B&H? Specifically, which elements of institutional quality have a positive impact, and which have a negative impact on GDP? Additionally, which elements have the strongest correlation with changes in GDP in B&H?

Results: Results show that institutional quality is declining, while economic growth exhibits modest positive trends. Correlation analysis revealed a statistically significant relationship between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption and Economic Growth in B&H, while regression analysis further determined that Regulatory Quality has the greatest impact on economic growth in B&H.

Conclusion: One of the key challenges for economically, politically, socially, and religiously complex, small, and open countries like Bosnia and Herzegovina is the development of adequate, efficient, transparent, and corruption-free institutions.

Keywords: Institutions, economic growth, economic development, Bosnia and Herzegovina

1. Introduction

Bosnia and Herzegovina is an upper middle-income country struggling with a range of economic issues. The key economic issues can be briefly summarized as follows: high unemployment, low productivity, migration of the working population, foreign trade imbalances, low investments, and weak institutions. In addition, the country faces significant political, social, and, perhaps most importantly, corruption-related issues (both in the private and public sectors). It remains an open question how to accelerate economic growth so that the country could catch up with those making better progress. In this paper, we begin by analyzing institutions, which are one of the key mechanisms for achieving increased economic growth.

Economic growth is related to an increase in the quantitative indicators of an economy's success, i.e. an enhancement in the amount of goods and services produced, or real income in the total or per capita amount in a certain period. It can be simply defined as "an increase in material output per capita" (Van den Berg, 2017, p. 28). The phenomenon of economic growth can only be realistically understood in its historical dimension, considering its long-term stagnant state. Until recently, economic development was considered through the category of economic growth, and even today, they are often treated as synonyms. Nevertheless, the term economic development implies social and economic changes, while economic growth implies improvements in the level of material production within the existing social system. Economic growth is therefore a *sine qua non* for economic development. Both economic growth and economic development are considered as a key goal for every country, including Bosnia and Herzegovina, as they imply improvement in living standards, as well as reduction in inequality and poverty. Besides, the focus of this research is on economic growth.

What was once considered a topic of limited importance in the past, institutions today represent one of the most popular topics in economics. Under the influence of a broader interest in institutions in the economy, which emerged with the rise of New Institutional Economics in the 1980s, institutions began gaining prominence in the early 1990s as a framework for explaining international divergences in economic development, even in a place like the World Bank or the International Monetary Fund.

Already in the 1990s, institutions positioned themselves at the center of debates on economic development (Chang, 2010). In attempting to define institutions, it is perhaps simplest to begin with the definition according to which institutions represent "the rules of the game in society, that is, limitations designed by people that shape interactions between people" (North, 1990, p. 3). According to North, institutions encompass both formal and informal rules and restrictions related to codes, norms of behavior and conventions, which are imposed by individuals or social groups (North, 1990, p. 36). Institutions are a broad term, and the focus of this paper is on economic institutions, which can be defined as "formally determined rules according to which economic interactions between economic subjects take place with the aim of reducing uncertainty in these interactions" (Halebić, 2009, p. 193).

Many factors influence economic growth and institutions-economic growth nexus is increasingly significant in economic analyses. The question of why and how institutions matter for economic growth and development has been examined in the research of Adam Smith, David Landes, Douglass North (a Nobel Prize winner in 1993), and Daron Acemoglu (a Nobel Prize winner in 2024). Their definitions, conceptualization and conclusions have contributed to the recognition that institutions occupy a significant place in the economic sphere. Strong institutions are key to achieving sustainable economic growth and development. This issue is of particular importance for developing countries like Bosnia and Herzegovina.

Bosnia and Herzegovina has a complex political and institutional structure, which presents a significant challenge in the context of achieving economic growth. This complexity can have a considerable impact on the country's economic performance and may slow down economic growth. Through this research, we aim to examine in more detail the relationship between the institutional quality and economic growth of Bosnia and Herzegovina. The aforementioned analysis of the quality of institutions and economic growth covers the period from 2002 to 2022. The main research question is: Does institutional quality determine economic growth of Bosnia and Herzegovina? Specifically, which elements of institutional quality have a positive impact and which have a negative impact on GDP, and which are most strongly correlated with changes in GDP in B&H?

The results of this research will contribute to a better understanding of the relationship between institutions and economic growth, and can serve as a starting point for future policies aimed at improving institutional quality and economic growth in Bosnia and Herzegovina. Furthermore, it may complement the existing body of research on this topic and help fill gaps in the current literature.

2. Previous research

There is increasing empirical and theoretical literature related to institutions and economic growth, particularly due to the growing disparities observed between countries, which highlight the fact that some nations grow much faster than others. Throughout history, for example, divergent growth is visible between North and South Korea, China and Taiwan, West and East Germany, and so on. These examples prompt us to consider the role and significance of institutions in economic growth. A common question is whether strong institutions can facilitate more efficient economic growth and development. Currently, the prevailing view is that institutions determine economic performance. According to North (1990, 2003, 2005), institutions (both formal and informal) create the conditions necessary for economic growth, with their primary purpose being to reduce uncertainty. They represent incentive systems that shape human interaction. In addition to reducing uncertainty, institutions enable individuals to engage in various activities and solve problems effectively on a daily basis. When structuring human interaction is discussed, it refers to providing incentives and disincentives for people's behavior. A wealth of evidence supporting the strong link between institutions and economic growth has been documented in the works of the 2024 Nobel Prize laureates. Acemoglu conducted extensive theoretical and empirical analysis with a significant number of historical facts about how institutions shape economic performance. The main reason for differences in economic growth and development, he found, lies in the divergence of economic institutions. He concluded that successful economies grow faster than others due to their strong institutions (Acemoglu et al., 2005). Similarly, Acemoglu et al. (2004) emphasize the importance of institutions in accelerating economic growth focusing primarily on how they shape the structure of economic activities in society. They argue that only with corresponding property rights can individuals be motivated to invest or develop new technologies.

One of the most-cited papers in the WoS database, (Urbano et al., 2019), points out that institutions indirectly influence economic growth through entrepreneurship. It raises questions as to which institutional factors stimulate entrepreneurial initiatives and ultimately lead to economic growth. The dominance of the institutional approach to economic growth was established, particularly during the period 2012-2016.

Recent research confirms the positive correlation between institutions and economic growth. For example, Góes (2016) showed that "on average, a 1% increase in institutional quality leads to an increase in GDP per capita of 1.7% after six years" (Góes, 2016, p. 85). Acquah et al. (2023) assessed the influence of institutions on the level and growth rate of GDP per capita in the period 1980-2015. They documented the positive and statistically significant impact of increasing the quality of institutions on the rate of economic growth. One of the main conclusions relates to the fact that institutions are especially important in low- and middle-income countries, and that not all institutions are equally important for economic development. Radulović (2020) investigated the influence of institutional quality countries in Southeastern Europe during the period from 1996 to 2017. He pointed out that a long-term institutional quality - an economic growth nexus has been established in EU member states, but for non-EU member states, the most significant factors include government efficiency, political stability, the absence of violent behavior or actions, regulation quality, and voice and responsibility. Similarly, Naudé (2011) emphasized that institutions matter more for long-term economic development. The same author also stated that it is still unclear how institutions determine economic growth.

Similarly to the research by Acquah et al. (2023), many authors have investigated the influence of institutions on economic growth in less developed countries. For example, Iqbal and Ali (2024) examined the influence of financial, economic, social, and political institutions on economic growth during the period 2000-2014. They concluded that institutions have a strong influence on economic growth and that for developing countries institutions are "the most important factor for an economy's growth" (Iqbal & Ali, 2024, p. 102).

Similarly, Liaqat et al. (2018) investigated the influence of institutional quality on economic growth in both developing and developed countries during the period from 1996 to 2013. They found a significant and positive impact on economic growth for both groups of countries. They also found that human capital and a reduction in corruption are major institutional tools for accelerating economic growth in developing countries. On the other hand, Chomen (2022) explored the relationship between institutions and economic growth in Sub-Saharan African countries using the System Generalized Method of Moments for 43 countries over a period of 13 years. The author found no significant relationship between institutions and economic growth in these countries.

When it comes to the analysis of institutions and economic growth in Bosnia and Herzegovina and the neighboring countries, several authors have made a significant contribution, including Efendić (2008), Halebić (2006, 2009), Buterin et al. (2018), Bađun (2005), Milenković and Vujović (2020), etc. Efendić (2008) presented findings related to institutions and economic growth in transition countries, including Bosnia and Herzegovina. The author stated that the efficiency of institutions is an important determinant of the speed at which transition countries progress toward membership in the European Union. The results showed the highest level of correlation between institutional indices and economic performance in the sample from Bosnia and Herzegovina. Thus, the institutions in Bosnia and Herzegovina can be a very important factor in supporting the achievement of better economic results. The results also showed that the efficiency of B&H institutions is below the transition average. The author also stated that if Bosnia and Herzegovina wants to improve its position in the EU integration process, it is necessary for the quality of its institutions to grow annually by about 5%. Halebić (2006) investigated the relationship between institutional quality (in accordance with the concept of new institutional economics) and economic growth (measured by GDP per capita) in Bosnia and Herzegovina during the period from 1998 to 2005. The goal of the study was to compare trends in the parameters of institutional quality and economic growth. The author concluded that institutions do not receive adequate attention in educational programs in B&H and that "the authorities should pay full attention to the issue of improving economic

institutions, their examination and measurement" (Halebić, 2006, p. 162). Buterin et al. (2018) investigated, using institutional development indicators, whether and how institutions have affected the growth of Croatia compared to some European Union member states. The results of the research demonstrated that the development of institutions had an impact on economic growth, with a focus on the analysis of the Index of Economic Freedom, the International Index of Property Rights, as well as economic growth rates. The author's recommendation is that Croatia should make significant institutional improvements, through institutional reform. Bađun (2005) aimed to demonstrate how it is both justified and important to introduce the quality of public management into the discussion about the economic progress of Croatia. By analyzing the values of indicators related to the rule of law and the quality of public administration, as well as the dynamics and nature of reforms in the judiciary and public administration, it was concluded that the holders of power in Croatia are somewhat more focused on rent-seeking than those in the European Union countries. The author stated that institutional deficiencies affect the level of GDP per capita in Croatia and that faster and more effective reforms in the judiciary and public administration, along with the suppression of corruption and the strengthening of democracy (as a mechanism for controlling power holders) would have a positive impact on future economic growth. Halebić (2009) investigated the nexus of the structure of institutions and economic growth in Bosnia and Herzegovina, Croatia, and Serbia in relation to the wealth coefficient of these countries. From the perspective of national economies, the study aimed to explore whether the institutional structure has a positive or negative effect on economic growth in the aforementioned countries, and whether improving economic institutions contributes to economic growth. The second objective was to examine, from a global economy perspective, the potential contribution of improving economic institutions to the growth or decline of these countries' relative importance in the global economy. The research established a strong correlation between economic institutions and gross domestic product, indicating equal returns based on the ratio. Milenković and Vujović (2020) emphasized that the Western Balkan countries need stable and strong institutions to achieve economic growth and sustainable development, and conversely, stable and strong institutions are

a result of such growth. The key reasons for the underdevelopment of the education and health systems, overall socioeconomic development and migration can be traced to weak institutional development and widespread corruption. Babajić et al. (2024) found a statistically significant positive relationship between GDP/pc and institutional quality variables in the Western Balkan countries. Furthermore, they pointed out that "one of the key challenges in the future is certainly building adequate, efficient, transparent and corruption-free institutions" for these countries (Babajić et al., 2024, p. 65).

From the previous literature review, it is possible to conclude that institutions have a significant impact on economic growth. However, there are also historical examples, such as China and Singapore, demonstrating that undemocratic economic systems can achieve impressive growth rates. Additionally, there are opposing views and scientific conclusions, such as those presented by Chomen (2022), Sachs (2003), Smolo (2021), and others. Sachs emphasized that institutions are an important–but not the most crucial–factor for economic growth and development. He also highlighted the significance of international and donor aid for the development of underdeveloped and poor areas (Sachs, 2003). Furthermore, Smolo (2021) examined the impact of foreign direct investment and institutional quality on the economic growth of the Western Balkans. His research showed that development of institutions has "significantly negative or no role in growth directly". The author states that "because the institutions within the sample countries are at low levels of development to make any significant impact on either growth" (Smolo, 2021, p. 47).

As demonstrated in the literature, many authors provide evidence supporting the thesis that institutions strongly influence economic growth. On the other hand, there is also research suggesting that institutions may have no effect, or even a negative effect, on economic growth. Future research will determine which side the evidence will favor. However, the fact remains that developing countries, such as Bosnia and Herzegovina, must make a significant effort to accelerate economic growth. Referring to the works of the authors who have addressed this issue, this analysis concludes that, based on the set of indicators used in this paper and the period 2002-2022, no similar research has been conducted for Bosnia and Herzegovina. Therefore, it can serve as a valuable supplement to the existing body of research on this topic and help address the gap in the literature.

3. Methodology

This paper sheds light on the role of institutions on economic growth in Bosnia and Herzegovina. We aimed to achieve the main goal of the research, using the analysis of economic institutions through the governance indicators of the World Bank (2024a) and basic indicators that represent the economic growth of a country. Through the Worldwide Governance Indicators (WGI) project, the World Bank annually publishes indicators for six dimensions of governance for member countries, according to Kaufmann and Kraay (2023), namely: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

A schematic representation of the research can be seen in Figure 1. Institutions (the independent variable) were examined using the following indicators: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption.

Figure 1 Research scheme
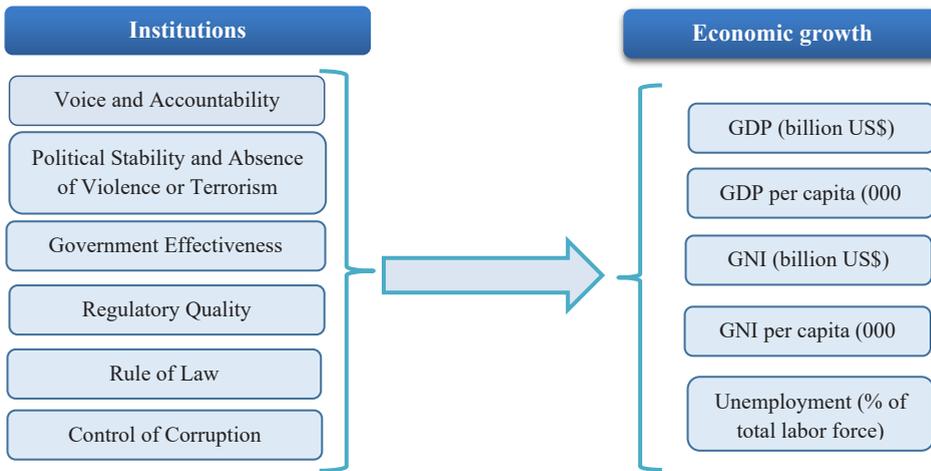
Source: Authors

"Institutional quality" refers to the efficiency, transparency, and strength of institutions within a country or region "and includes management structures, the rule of law, regulatory frameworks and the entire institutional environment that shapes economic, social and environmental results" (Ulucak, 2020). Institutional quality in this research is analyzed through the composite indicators of the six dimensions of "governance" published annually by the World Bank Group since 1996. The dimensions mentioned are generally accepted tools (e.g. research by Uddin et al., 2023, Islam & Montenegro, 2002), i.e. indicators used to assess institutional quality, and are based on hundreds of individual variables from dozens of different data sources. They represent a summarized view of institutional quality of several thousand respondents, i.e. experts from the public, private and non-governmental sectors around the world. Key dimensions refer to the following: Voice and Accountability, Political Stability and Absence of Violence/Terrorism, Government Efficiency, Quality of Regulation, Rule of Law, and Control of Corruption. These indicators are constructed on the basis of data on management perceptions, organized into six clusters, and collected from several dozen sources, such as: the World Economic Forum, the European Bank for Reconstruction and Development, Transparency International, Freedom House, the Heritage Foundation, the World Justice Project, the IHS Markit World Economic Service, etc. According to Kaufman et al. (2023), we observe all indicators of insti-

tutional quality "in the standard normal units of the governance indicator, ranging from around -2.5 to 2.5" (Kaufman et al., 2023, p. 16).

Economic growth (the dependent variable) was examined using the following indicators: GDP (billion US$), GDP per capita (000 US$), GNI (billion US$), GNI per capita (000 US$), and the unemployment rate (% of total labor force). All indicators were obtained from the World Bank (2024b) online database for the period 2002-2022.

Bosnia and Herzegovina has recorded high unemployment rates for a long period of time, which has been one of the biggest economic and social problems, which has strongly influenced the course of its economic growth and development. Although employment/unemployment indicators represent labor market indicators and "Lagging Indicators" (lagging behind changes in the economy), this research model also includes unemployment rates alongside basic economic growth indicators to investigate the impact of institutional quality on unemployment.

As mentioned above, this paper examines whether the quality of institutions determines economic growth in Bosnia and Herzegovina. The basic research question is: Does institutional quality determine economic growth of Bosnia and Herzegovina? Specifically, which elements of institutional quality have a positive impact and which have a negative impact on GDP? Additionally, which elements have the highest correlation with changes in GDP in B&H?

Descriptive and inferential statistics were used, as well as scientific research methods, the most important of which are: the methods of induction and deduction, concretization, analysis and synthesis, as well as generalization and specialization. Secondary data, sourced from the official website of one of the world's most important financial institutions (World Bank, 2024a & World Bank, 2024b), were processed. The study focused on Bosnia and Herzegovina and the research period is 2002-2022. The research also included the correlation between the selected indicators. The values of the correlation coefficients, which are listed below, were used to indicate the strength of the relationship between the dependent and independent variables (Zahirović & Okičić, 2021, p. 69):

- correlation coefficient 0.10-0.29 - low strength of connection

- correlation coefficient 0.30-0.49 - medium strength of connection

- correlation coefficient 0.50-1.00 - high strength of connection.

Since we are interested not only in the interrelationship between the indicators but also in their potential causality, multiple linear regression will be applied. One dependent variable, representing economic growth (GDP in billions of US$), will be observed, while several independent variables, representing indicators used to measure the quality of economic institutions in B&H (all 6 indicators), will be included. For the multiple linear regression model, GDP in billions of US$ was selected as the dependent variable. This variable was selected based on the correlation analysis results, which showed that GDP has the highest correlation with most of the institutional quality indicators. Certain abbreviations for indicators were used during the research, as presented in Table 1, along with the data sources.

Table 1 Abbreviated names and data sources for the indicators used

Indicator	Code	Source
Voice and Accountability	VA	World Bank
Political Stability and Absence of Violence/Terrorism	PSAVT	World Bank
Government Effectiveness	GE	World Bank
Regulatory Quality	RQ	World Bank
Rule of Law	RL	World Bank
Control of Corruption	CC	World Bank
GDP (billion US$)	GDP	World Bank
GDP per capita (000 US$)	GDP_pc	World Bank
GNI (billion US$)	GNI	World Bank
GNI per capita (000 US$)	GNI_pc	World Bank
Unemployment (% of total labor force)	UNE	World bank

Source: Authors

To create and use the multiple linear regression models, we began by developing a general linear regression model based on the following: we checked whether the conditions for using the multiple linear regression model were met specifically verifying if there was an issue of multicollinearity in the data. Multiple linear regression is a regression model that estimates the relationship between a dependent variable (GDP) and two or more independent variables. The basic research model of multiple linear regression is as follows:

$$Y_i = b_0 + b_1 x_{1i} + b_2 x_{2i} + b_3 x_{3i} + b_4 x_{4i} + b_5 x_{5i} + b_6 x_{6i} + \varepsilon,$$

where:

i – the observed period (2002-2022),

Yi – a dependent variable (GDP in billions of $),

b_0 – a constant,

b_1, b_2, b_3, b_4, b_5, and b_6 – regression coefficients with independent variables of institutional quality,

x_{1i}, x_{2i}, x_{3i}, x_{4i}, x_{5i}, x_{6i} – independent variables of institutional quality (Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption),

ε – a model error (how much variation there is in our estimate of y).

Incorporating elements from our domain of observation, the model will take the following form:

$$BDP_i = b_0 + b_1 VA_i + b_2 PSAVT_i + b_3 GE_i + b_4 RQi + b_5 RL_i + b_6 CC_i + \varepsilon.$$

Based on the obtained results, it was concluded which of the independent variable indicators had the greatest influence on economic growth in B&H

in the observed period. The SPSS software was used for data processing.

4. Results and discussion

The results of descriptive statistics for the selected indicators of dependent and independent variables are presented in Table 2. It can be seen that a period of 21 years (2002-2022) was observed with no missing values for the indicators. Data from Table 2 show that the mean values (column Mean in Table 2) of all indicators of economic institutions during the observed period had an average negative value. The Government Effectiveness indicator recorded the lowest mean value of -0.7262, with a minimum value of -1.08 in 2020 and a maximum value of -0.43 in 2013. The Voice and Accountability indicator had the highest average value of -0.0762, with a minimum value of -0.33 in 2022 and a maximum value of 0.21 in 2003.

Table 2 Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Voice and Accountability	21	-.33	.21	-.0762	.17719	.314	.501	-.939	.972
Political Stability and Absence of Violence or Terrorism	21	-.82	.02	-.4324	.20012	.582	.501	1.053	.972
Government Effectiveness	21	-1.08	-.43	-.7262	.21158	-.435	.501	-.757	.972
Regulatory Quality	21	-.61	-.04	-.2133	.17238	-1.332	.501	.687	.972
Rule of Law	21	-.66	-.13	-.3443	.15214	-.553	.501	-.526	.972
Control of Corruption	21	-.68	-.23	-.4219	.15022	-.651	.501	-1.063	.972
GDP (billion US$)	21	6.73	24.53	16.8095	4.61083	-.663	.501	.166	.972
GDP per capita (000 US$)	21	1.60	7.59	4.6510	1.57985	-.220	.501	-.171	.972
GNI (billion US$)	21	7.16	24.25	17.0276	4.39191	-.741	.501	.280	.972
GNI per capita (000 US$)	21	1.57	7.65	4.6443	1.57688	-.352	.501	-.104	.972
Unemployment (% of total labor force)	21	12.66	31.11	24.3795	5.65886	-.911	.501	-.569	.972
Valid N (list wise)	21								

Source: Authors' calculation

When it comes to economic growth indicators (i.e. the dependent variable), it can be noted that the following mean values were recorded: GDP 16.8095 billion US$, GDP/pc 4.6510 thousand US$, GNI 17.0276 billion US$, GNI/pc 4.6443 thousand US$, and that the mean value of unemployment was 24.3795%. Regarding Skewness, it can be observed

that only Voice and Accountability, and Political Stability and Absence of Violence or Terrorism have a positively asymmetric distribution, while all other indicators have a negatively asymmetric distribution. All indicators have a platykurtic distribution, because their value in the Kurtosis column is less than 3.

Table 3 Correlations

		VA (1)	PSAVT (2)	GE (3)	RQ (4)	RL (5)	CC (6)	GDP (7)	GDP_pc (8)	GNI (9)	GNI_pc (10)	UNE (11)
1) Voice and Account-ability	Pearson Correlation	1	.060	.198	-.572**	-.635**	.801**	-.773**	-.838**	-.748**	-.837**	.818**
	Sig. (2-tailed)		.797	.391	.007	.002	.000	.000	.000	.000	.000	.000
2) Political Stability and Absence of Violence or Terrorism	Pearson Correlation	.060	1	.059	-.163	-.011	-.024	-.303	-.213	-.313	-.227	.027
	Sig. (2-tailed)	.797		.800	.479	.962	.919	.181	.355	.167	.323	.907
3) Govern-ment Effec-tiveness	Pearson Correlation	.198	.059	1	.449*	.547*	.435*	.010	-.057	.022	-.025	.430
	Sig. (2-tailed)	.391	.800		.041	.010	.049	.966	.805	.924	.915	.051
4) Regula-tory Quality	Pearson Correlation	-.572**	-.163	.449*	1	.868**	-.281	.746**	.703**	.755**	.722**	-.353
	Sig. (2-tailed)	.007	.479	.041		.000	.217	.000	.000	.000	.000	.116
5) Rule of Law	Pearson Correlation	-.635**	-.011	.547*	.868**	1	-.328	.746**	.743**	.738**	.771**	-.369
	Sig. (2-tailed)	.002	.962	.010	.000		.146	.000	.000	.000	.000	.099
6) Control of Corrup-tion	Pearson Correlation	.801**	-.024	.435*	-.281	-.328	1	-.656**	-.741**	-.633**	-.710**	.937**
	Sig. (2-tailed)	.000	.919	.049	.217	.146		.001	.000	.002	.000	.000
7) GDP (bil-lion US$)	Pearson Correlation	-.773**	-.303	.010	.746**	.746**	-.656**	1	.986**	.998**	.976**	-.748**
	Sig. (2-tailed)	.000	.181	.966	.000	.000	.001		.000	.000	.000	.000
8) GDP per capita (000 US$)	Pearson Correlation	-.838**	-.213	-.057	.703**	.743**	-.741**	.986**	1	.977**	.990**	-.816**
	Sig. (2-tailed)	.000	.355	.805	.000	.000	.000	.000		.000	.000	.000
9) GNI (bil-lion US$)	Pearson Correlation	-.748**	-.313	.022	.755**	.738**	-.633**	.998**	.977**	1	.967**	-.732**
	Sig. (2-tailed)	.000	.167	.924	.000	.000	.002	.000	.000		.000	.000
10) GNI per capita (000 US$)	Pearson Correlation	-.837**	-.227	-.025	.722**	.771**	-.710**	.976**	.990**	.967**	1	-.780**
	Sig. (2-tailed)	.000	.323	.915	.000	.000	.000	.000	.000	.000		.000
11) Unem-ployment (% of total labor force)	Pearson Correlation	.818**	.027	.430	-.353	-.369	.937**	-.748**	-.816**	-.732**	-.780**	1
	Sig. (2-tailed)	.000	.907	.051	.116	.099	.000	.000	.000	.000	.000	

**Correlation is significant at the 0.01 level (2-tailed).
*Correlation is significant at the 0.05 level (2-tailed).
Source: Authors' calculation

Table 3 shows the correlation between the indicators, where Pearson's correlation was used. The obtained results indicate a statistically significant correlation between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption, with almost all indicators used as a

measure of the country's economic growth (only Rule of Law and Control of Corruption do not have a statistically significant correlation with the unemployment rate). This means that, based on the correlation analysis, it was determined that in B&H, achieving higher economic growth requires these institutional quality variables to have higher values. Voice and Accountability and Control of Corruption have a strong negative relationship with all indicators of economic growth (except with the Unemployment indicator, with which they have a strong positive relationship). Regulatory Quality and Rule of Law have a strong positive relationship with economic growth indicators of B&H (except with the Unemployment indicator, with which they have no statistically significant connection). This means that higher values of Voice and Accountability and Control of Corruption are associated with lower economic growth. This could be related to the tendency of certain investors to invest in countries where corruption is less controlled and the voice of the people is weaker, as speculative investments can be more profitable in such environments. On the other hand, any increase in Regulatory Quality and Rule of Law can also contribute to the economic growth of B&H. It is interesting that Political Stability and Absence of Violence or Terrorism and Government Effectiveness do not have a statistically significant relationship with the economic growth indicators of B&H. In terms of the relationship within the group of independent variable indicators (economic institutions), the following statistically significant correlations were found: Voice and Accountability with Regulatory Qual-

ity (a strong negative connection of -0.572), Rule of Law (a strong negative connection of -0.635), and Control of Corruption (a strong positive connection of 0.801); Government Effectiveness with Regulatory Quality (a medium strong positive relationship of 0.449), Rule of Law (a strong positive relationship of 0.547), and Control of Corruption (a medium strong positive relationship of 0.435); and Regulatory Quality with Rule of Law (a strong positive relationship of 0.868). On the indicator side of the dependent variable (economic growth), all indicators have a statistically significant connection. There is a strong positive relationship for all indicators, except with the Unemployment indicator, with which all indicators have a strong negative relationship. Similarly to the research by Acemoglu (2004, 2005), Góes (2016), Acquah et al. (2023), Iqbal and Ali (2024), Efendić (2008), Halebić (2006, 2009), Buterin et al. (2018), Bađun (2005), Milenković and Vujović (2020), Babajić et al. (2024), etc., and contrary to the findings of Sachs (2003), Smolo (2021), and Chomen (2022), our research results show that, when it comes to institutional quality indicators, Control of Corruption is inversely proportional to economic growth indicators, while the Regulatory Quality and Rule of Law indicators are directly related to economic growth indicators. It is possible to state that institutions determine economic growth of Bosnia and Herzegovina; in other words, the higher the levels of control of corruption, regulatory quality and rule of law, the faster the economic growth.

The multiple linear regression model is presented in Table 4.

Table 4 Linear regression model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.944[a]	.892	.845	1.81372

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability. Rule of Law.
Source: Authors' calculation

Based on the data presented in Table 4, it can be concluded that 89.2% of the change in the dependent variable (the R Square column), i.e. gross domestic product, is explained by selected independent variables. Adjusted R Square is 84.5%. The standard error of the estimate is 1.81372, which is smaller than the standard deviation of the depend-

ent variable, which is 4.6183. Based on the ANOVA procedure results, it is concluded that the coefficient of determination is 0.000, indicating that the statistical significance of the evaluated model and its suitability for further explanation are confirmed (Table 4).

Table 5 ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	379.141	6	63.190	19.209	.000[b]
	Residual	46.054	14	3.290		
	Total	425.195	20			

a. Dependent variable: GDP (billion US$)
b. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability. Rule of Law.
Source: Authors' calculation

In order to assess the coefficients of the estimated regression model, it is necessary to first check a potential problem of multicollinearity in the data. Looking at the Tolerance column in Table 6, we see that the value of the Rule of Law variable is 0.087, which is below the level of 0.10. Alternatively, if we examine the VIF column, its value is 11.481, which is greater than 10. This indicates that the Rule of Law variable has a multicollinearity problem, which will be addressed by removing this variable from the model and re-creating the regression model.

Table 6 Coefficients for a linear regression model (Dependent variable: GDP (billion US$))

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	13.438	2.164		6.210	.000		
	Voice and Accountability	7.711	6.236	.296	1.237	.237	.135	7.422
	Political Stability and Absence of Violence or Terrorism	-5.906	2.157	-.256	-2.739	.016	.883	1.132
	Government Effectiveness	-9.987	4.467	-.458	-2.236	.042	.184	5.430
	Regulatory Quality	5.932	4.996	.222	1.187	.255	.222	4.509
	Rule of Law	26.493	9.032	.874	2.933	.011	.087	11.481
	Control of Corruption	-10.759	5.208	-.351	-2.066	.058	.269	3.721

Source: Authors' calculation

The new model, with the Rule of Law variable omitted, is presented in Table 7. From the R Square column, it can be seen that 82.5% of the change in the GDP (a dependent variable) is explained by the changes in the selected independent variables. Adjusted R Square is 76.7%. The standard error of the estimate in the specified model is 2.22644, which is smaller than the standard deviation of the dependent variable, i.e. GDP in billions of US$, which is 4.6183.

Table 7 New linear regression model summary (without the Rule of Law variable)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.908[a]	.825	.767	2.22644

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability.
Source: Authors' calculation

The repeated ANOVA procedure shows that the new coefficient of determination is 0.000, which indicates that the statistical significance of the evaluated model and its suitability for further analysis are confirmed (Table 8). The research confirmed the statistical significance of the evaluated regression model of 14.155 (p = 0.0000), with the coefficient of determination R^2 = 0.825 and Adjusted R^2 = 76.7%.

Table 8 ANOVA (without the Rule of Law variable)

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	350.839	5	70.168	14.155	.000[a]
	Residual	74.356	15	4.957		
	Total	425.195	20			

a. Predictors: (Constant). Control of Corruption. Political Stability and Absence of Violence or Terrorism. Regulatory Quality. Government Effectiveness. Voice and Accountability.
Source: Authors' calculation

Table 9 lists the coefficients of the newly created regression model. Based on the values in the Tolerance and VIF columns, it can be seen that the multicollinearity problem is no longer present (the values in the Tolerance and the VIF column are less than 1 and less than 10, respectively). The estimated constant term is statistically significant. In addition, a statistically significant influence of the Regulatory Quality variable (B = 14.044, p = 0.015) on GDP in B&H was determined. On the other hand, no statistically significant influence of other independent variables on GDP was confirmed (Sig. values are greater than 0.05). For this reason, the obtained data do not provide sufficient evidence to conclude that a decrease in the values of institutional indicators would lead to an increase in the country's economic growth, as measured by an increase in GDP (except for the Regulatory Quality indicator, whose decrease would have a statistically significant influence on a decrease in GDP). All estimated coefficients in the model are negative, except for the Regulatory Quality variable and the constant term.

Table 9 New coefficients for a new linear regression model (Dependent variable: GDP (billion US$))

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	12.022	2.590		4.642	.000		
	Voice and Accountability	-3.620	6.009	-.139	-.602	.556	.219	4.574
	Political Stability and Absence of Violence or Terrorism	-5.020	2.621	-.218	-1.915	.075	.901	1.110
	Government Effectiveness	-.280	3.682	-.013	-.076	.940	.408	2.449
	Regulatory Quality	14.044	5.108	.525	2.750	.015	.320	3.127
	Control of Corruption	-12.168	6.366	-.396	-1.911	.075	.271	3.690

Source: Authors' calculation

Based on the obtained results, it is possible to write down the following rated model:

GDP = 12.022 - 3.620 * VA - 5.020 * PSAVT - 0.280 * GE + 14.044 * RQ - 12.168 * CC (Equation 1)

By including some estimated future values of independent variables in the model, it is possible to predict GDP for a future period. This can serve as a useful basis for decision-makers to identify which aspects of the institutions could be improved and where progress could be made, ultimately leading to better economic results and greater economic growth in the country.

5. Conclusions and research opportunities

The quality of institutional performance is monitored through the following indicators: corruption control, government efficiency, political stability and the absence of violence, the quality of regulation, and the rule of law. These indicators enabled clear conclusions to be drawn. Corruption control and government efficiency showed a continuous decline in the period from 2002 to 2022. Political stability and absence of violence remained relatively stable, with only minor fluctuations. Regulatory quality and the rule of law also exhibited a slight downward trend. Economic growth was assessed through indicators such as GDP, GNI, and unemployment rates. Despite the decline in institutional quality, economic growth displayed modest but positive trends.

The results of the data analysis regarding the institutions in B&H showed that they play a very important role in the country's economic growth. A particularly noteworthy finding is the statistically significant correlation between Voice and Accountability, Regulatory Quality, Rule of Law, and Control of Corruption, and nearly all indicators used to measure economic growth in B&H. It is important to note that Voice and Accountability and Control of Corruption have a strong negative correlation with all economic growth indicators (except for the unemployment indicator, with which they have a strong positive correlation). In contrast, Regulatory Quality and Rule of Law have a strong positive correlation with all economic growth indicators (except for the Unemployment indicator, with which they have no statistically significant correlation). According to the created regression model, the greatest change and improvement in economic growth could be brought about by an increase in the Regulatory Quality indicator. For other indicators, regression analysis showed no statistically significant influence on economic growth. Based on the research conducted in Bosnia and Herzegovina, it is possible to conclude that among institutional quality indicators, Control of Corruption is inversely proportional to economic growth indicators, while Regulatory Quality and Rule of Law are directly related to economic growth indicators. It can be stated that institutions determine economic growth of Bosnia and Herzegovina; more specifically, the higher the control of corruption, the quality of regulation, and the rule of law, the faster the economic growth. Our research confirmed that there is a correlation between the quality of institutions and economic growth in B&H. In addition, it has been proven that the quality of economic institutions determines economic growth in B&H. It can be concluded that strong and effective economic institutions provide a solid foundation for increasing economic growth in B&H.

In the context of accelerating economic growth in economically, politically, socially, and religiously complex, small, and open countries, like Bosnia and Herzegovina, one of the key challenges for the future is certainly to develop adequate, efficient, transparent and corruption-free institutions. The research results emphasized that Voice and Accountability and Control of Corruption have a strong negative correlation and that with their more efficient and better control, greater economic growth could be achieved. On the other hand, strengthening Regulatory Quality and Rule of Law, i.e. with an increase in the value of the aforementioned indices, would also lead to increased economic growth in B&H. Adequate and efficient institutions are those that can contribute to economic growth in the country. Given the various macroeconomic problems Bosnia and Herzegovina faces, institutional strengthening in this context should be treated as an imperative. The main limitation of the study and applied methodology lies in a relatively short period of time. Future research could benefit from extending the period under observation, which will provide researchers with a better understanding of the interrelationship between economic growth and institutional quality in B&H. Furthermore, future research should focus on a detailed analysis of the influence of economic institutions on the country's economic growth but within a regional context (including more countries in the analysis) in order to present more credible conclusions. Based on the results obtained in this way, more accurate conclusions could be drawn about the quality of institutions in B&H compared to other countries at the same or similar levels of economic development. Additionally, researchers are encouraged to include more economic growth and institutional quality indicators in their future analyses referring to B&H to make their results even more reliable and verifiable. Moreover, it would be good to include some other variables that could influence economic growth (e.g. human capital, investments, demographic variables, etc.). Therefore, one of the recommendations for future research is to examine the impact of institutional variables on economic growth in a model containing more variables that influence growth (as mentioned above).

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THE IMPORTANCE OF MEASURING ECONOMIC, SOCIAL AND PERSONAL BENEFITS OF VOLUNTEERING

Abstract

Purpose: This study aims to broaden the understanding of volunteering by exploring its wider economic, social, and personal impact beyond individual altruism. It aims to promote the recognition of volunteering as an important contributor to community well-being, social cohesion, democracy, social change, and personal development.

Methodology: The research draws on existing literature on volunteering, service-learning, and civic engagement, and presents original research based on a sample of 489 students from Croatian business schools. It discusses various methods of measuring the impact of volunteering and provides an overview of the current state of volunteering in Croatia.

Results: The research shows that different measurement methods reveal the diverse impact of volunteering on individuals and organizations, highlighting the need for comprehensive data and frameworks. Traditional techniques provide a foundation, but the integration of advanced methods–such as stakeholder engagement, personal development, and social reporting standards–provides a holistic perspective on the contribution of volunteers. These methods improve evaluation, promote transparent communication, and acknowledge the economic, social and personal benefits of volunteering, leading to effective volunteer programs and stronger policy support in Croatia.

Conclusion: The study highlights the importance of improving the recognition of volunteering as an important contributor to community well-being, social cohesion, democracy, social change, and personal development. By highlighting the multiple benefits of volunteering, this study is of relevance to scholars specializing in volunteering, service-learning, and civic engagement, practitioners seeking to improve volunteer programs, and policymakers considering institutional support for volunteers and civil society organizations (CSOs).

Keywords: Volunteering, impact measurement, economic benefits, social benefits, personal benefits

1. Introduction

Recognizing human potential as a critical driver of development demonstrates the importance of promoting social responsibility and awareness among individuals, communities, and nations. In this context, volunteering serves not only as a response to identified societal needs and challenges, but also as a catalyst for the personal development and self-actualization of volunteers. In Croatia, the growth of volunteering reflects the development of civil society and represents active citizen engagement in addressing various social problems that exceed the capacity of the public and private sectors. However, obtaining accurate and comprehensive data on the state of volunteering in Croatia remains a challenge.

Building on existing research on motivational factors for volunteering (Clary & Snyder, 1999; Ledić, 2007; Moore et al., 2014; Garai-Fodo et al. 2021; Rampasso et al., 2021) and the economic, social, and personal benefits of volunteering (Hadad & Găucă, 2014; Bere et al., 2019; Haski-Leventhal et al., 2020; Wilson et al., 2020; Liszt-Rohlf et al., 2021), this study aims to fill a gap in the current literature by focusing on the methods used to measure the impact of volunteering. In particular, it emphasizes the importance of assessing the impact of volunteering on individuals, organizations, and society (Shin & Kleiner, 2003; Haddock & Devereux, 2016; Sadowski et al., 2018), with a special focus on socio-economic development in Croatia. This includes describing the specific methods of measurement and emphasizing the benefits that various stakeholders can derive from the knowledge gained through such assessments.

This paper aims to achieve three objectives: firstly, to explain the methods used to measure the benefits of volunteering; secondly, to provide an overview of the current state of volunteering in Croatia, drawing on official data, reports, and a literature review; and thirdly, to present findings from an empirical study conducted in 2017 involving 489 students from five public business schools in Croatia. A comprehensive questionnaire was used to examine several dimensions, including attitudes toward volunteering, motives for volunteering, volunteering behavior, and socio-demographic data. This study focuses primarily on the results related to attitudes toward volunteering. The data was analyzed using SPSS 24.0. Despite the time lag, the results retain their validity as there is limited data on the percep-

tion of volunteering in Croatia, especially among young people. A 2023 study on the general population (D-Kolektiv, 2023) underlines this continuity by showing that only 7% of people volunteer. These results not only confirm the static nature of the situation but also underscore the continued relevance of the above-mentioned research from 2017. These findings highlight the need for discussions aimed at aligning society's priorities with activities that are conducive to its development, as the results show that, since 2017, volunteering is still not perceived as a potential source of self-development, and that the social climate continues to diminish the importance of volunteering and its impact on economic, social, and personal development.

The study highlights the state of volunteering in Croatia and the existing challenges related to volunteering, emphasizing the need to understand the multiple impacts of volunteering. It also examines the methods and tools needed for a comprehensive evaluation. In this context, the study focuses on answering the following research question: Can efficient measurement of the economic, social, and personal impact of volunteering contribute to the development of volunteering in Croatia? Placing volunteering in the context of human and social capital means considering it as a space for action and learning. This experience leads to the acquisition and transmission of this capital within the community (Buzov & Ivošević, 2024).

Furthermore, the findings of the study underscore the importance of measuring the impact of volunteering and emphasize the need to implement comprehensive frameworks, such as those proposed by Social Value International (2021) to capture the broader social value created by volunteering. In addition, the study highlights the need for a holistic approach to assessing the impact of volunteering, particularly in terms of personal development and social progress, and emphasizes the importance of promoting volunteering as a catalyst for personal growth and social progress.

The paper consists of three main sections. The first section includes both the introduction and the literature review. The introduction highlights the importance of volunteerism and sets forth the specific objectives and context of our study. The literature review includes an analysis of previous research and studies on the importance of volunteering and the measurement of its economic, social, and personal benefits. The second section is devoted to our

research methodology, outlining the three main objectives of the study, explaining the intricacies of the methodology used, and highlighting the value of our research. Finally, the third section presents the research findings, along with a discourse and concluding remarks that derive from our initial research question, acknowledge the limitations of our study, and offer insights and recommendations for future research and recommendations for the formulation of tailored policies, infrastructural support, and volunteer programs.

2. Literature review

Measuring the impact of volunteers can help provide valuable insights into the tangible benefits that volunteering brings to individuals, organizations, and society as a whole. Rochester et al. (2010) argue that organizations have to prove themselves and provide evidence to back up claims of their effectiveness. In 2014, the European Economic and Social Committee emphasized the importance of measuring the social impact in the third sector, advocating for standardized indicators of the third sector impact at the macro level, as well as the standardization of practices and methodologies at the organizational level (European Economic and Social Committee, 2014). Social impact measurement provides a better tool for organizational management and should be integrated into the organization as an organizational process, not as an additional activity that the organization performs. Civil society organizations (CSOs) strive to bring about positive change for society, and they focus not only on understanding and quantifying the magnitude of change that results from their actions, but also on the outcomes of their activities (Hadad & Găucă, 2014). However, the essence is not only in measuring, understanding, and reporting, but also in learning and improving the organization based on the measured data (Social Impact Measurement for Civil Society Organization, 2022). This includes optimizing resource use in smart, sustainable, or regenerative ways to maximize the value of the resources invested. According to Samuels (2023), volunteer impact evaluation can provide valuable insights into the effectiveness of the volunteer program. It addresses key questions such as the number of clients directly benefiting from volunteer service, observed behavioral changes among those served by volunteers, variations in the organization's resource capacity, the effectiveness of volunteer appreciation initia-

tives, the performance of the volunteer engagement strategy, the feasibility of expanding the volunteer program, and the potential to convert volunteers into donors. Haddock and Devereux (2016) describe several benefits of measuring the impact of volunteerism, including provision of a foundation for diverse volunteer groups to demonstrate their significant collective contribution to sustainable development. This process allows these groups to concentrate their efforts on areas of common interest and synergy, promoting a more cohesive and impactful approach to their work.

Volunteering provides value on multiple levels, highlighting that by recognizing the value of volunteering, individuals, communities, societies, and economies can be strengthened (Sadowski et al., 2018). Measuring the social impact of volunteering is important, as Sadowski et al. (2018) emphasize, for several reasons. It demonstrates the value of volunteering by enhancing communication and reporting on community action and engagement. It strengthens accountability within civil society organizations by properly recording resources allocated to community initiatives. The measurement process ensures that the quality of volunteering is not only assessed but also improved through enhanced internal management and more effective benchmarking. In addition, this approach enables a more critical analysis of performance and helps to understand both intended and unintended benefits. This understanding can in turn influence strategic decisions about the allocation of resources for future initiatives. Also, measuring the social impact contributes to project sustainability. By aligning with evolving donor expectations that go beyond traditional annual reports and include financial, social, and environmental indicators, organizations can make a compelling case for continued support. Finally, the emphasis on evidence-based decision making for policymakers, donors and investors underscores the broader implications of rigorous impact measurement in volunteering and community engagement.

Consideration of these principles reveals a departure from the traditional approach to impact measurement. Rather than relying solely on standard economic metrics such as resources invested and volunteer hours, the focus is on recognizing the broader impact of volunteering. This includes not only the financial benefits to the organization, but also the potential impact at multiple levels: the

personal sphere, which includes volunteers, employees, and beneficiaries; the institutional sphere, which refers to the nonprofit organizations that carry out these activities; the immediate beneficiaries; and the larger community, which includes family members, friends of beneficiaries, local NGOs, the corporate sector, and government. Volunteering is commonly viewed as a social and community endeavor that enriches social capital, strengthens the community, and facilitates the provision of services that would otherwise be either more expensive or less accessible (Putnam, 2000).

Many aspects of the welfare state and community development in contemporary society depend on voluntary activities. The economic assessment of volunteering is usually calculated through quantifying the market replacement cost of volunteers. However, the economic impact of volunteering is often ignored. It is not captured by GDP statistics because usually no monetary transaction takes place. Nevertheless, the UNDP recognizes the economic impact when assessing volunteering in terms of GDP, estimating that one billion people were actively volunteering in 2019, accounting for around 2.4% of global GDP (Human Development Report Office, 2019). In Great Britain, for example, formal volunteering generates an economic output of around £23 billion, equivalent to 0.8% of GDP (Armour, 2023). Many countries acknowledge the significance of unpaid volunteer service for economic, social, cultural, and individual development. In the United States, the value of a volunteer hour was estimated to be $31.80 in 2023.

According to Shin and Kleiner (2003), volunteers are not simply an unpaid working force, nor do they merely help organizations in which they volunteer save money. They actually help organizations to streamline their financial resources toward maintaining their mission, which in turn leads to personal, organizational, and community development.

There is significant academic and public interest in the idea that volunteers, who are perceived as donating their time and energy, receive compensation in the form of increased earnings (Wilson et al., 2020). The authors mention a survey conducted by LinkedIn, a popular professional network, which found that 41% of employers consider volunteer work as equal as paid work when selecting new employees. Additionally, one in five employers having made a recent hiring decision based on a candidate's volunteer experience.

The UN definition of volunteering includes "… benefit to others" as one of the core characteristics of volunteering. Therefore, social benefits are usually the most emphasized ones in the case of volunteering. Social benefits of volunteering include numerous "positive externalities": improved employment and income prospects, lower criminal activity, lower risk of mental-health problems, and so on. Volunteering plays a vital role in maintaining a democratic society, as it helps build citizenship skills such as negotiation and public speaking (Ott & Dicke 2016). It also enables people to interconnect and enhance their social networks, thereby strengthening communities. Ironmonger (2000) emphasizes that it is important to recognize the value of volunteering. Very often, the time donated to voluntary activities is even more valuable than money–many people may not be able to donate money, but they do donate their time.

According to the International Labour Organisation (ILO, 2011), volunteering brings significant benefits to society since it:

- provides important employment training and access to the labor force,

- is a critical resource for achieving global development goals (e.g., according to the ILO, efforts to eradicate smallpox and vaccinate children against polio would not have been possible without the mobilization of millions of volunteers for this purpose),

- can provide services that cannot be readily provided by paid workers, such as mentoring and serving as role models,

- enhances social solidarity, social capital, political legitimacy, and the quality of life in a society,

- can help promote social inclusion and integration.

Although the ILO (2011) refers to the Millennium Development Goals (MDGs), volunteering remains useful and relevant in the context of the Sustainable Development Goals (SDGs) adopted in 2015. "The newly adopted Sustainable Development Goals offer another opportunity for individuals to show solidarity through volunteerism" (UN Volunteers, 2015).

Volunteering offers individuals–volunteers–the opportunity to increase their social engagement. Research by Thoits and Hewitt (2001) found that volunteering improved all six aspects of personal well-being of volunteers: happiness, life satisfaction, self-esteem, sense of control over time, physical health, and depression. Numerous studies have found that volunteering improves the physical and psychological well-being of elderly persons by maintaining self-esteem, life satisfaction, access to support systems, and activity level (Van Willigen, 2000). Moreover, volunteering fosters the development of "civic skills" (Verba et al., 1995) and has been linked to increased chances of employment, especially for individuals re-entering the workforce. In addition, volunteering is associated with higher self-efficacy. Shin and Kleiner (2003) emphasize that volunteering helps improve self-efficacy and self-esteem, which in turn prevents depression by increasing energy and promoting a more positive attitude toward life. Students are an ideal population for volunteering due to their energy, enthusiasm, and desire to gain practical experience. Edwards et al. (2001) found that student volunteers were not only reliable and respectful but also provided significant value to organizations, underscoring their importance in helping maintain and enhance organizational operations. In return, volunteering provides many opportunities for students. It enables them to apply academic knowledge to real-life examples, provides a platform to develop new skills and improve existing ones, expand their social and professional network, and explore different career paths.

In their literature review, Haski-Leventhal et al. (2020) identified the main individual benefits of volunteering. Volunteering can lead to several personal benefits, including increased employability, improved cognitive and behavioral adaptability, accumulation of human capital, acquisition of valuable life skills and practical experience, personal growth, development of leadership skills, improvement of critical thinking skills, greater self-confidence, and improved conflict resolution skills. It also promotes additional benefits such as improved interpersonal communication skills and self-efficacy as well as the development of positive civic values, a sense of social responsibility, and a commitment to community. According to Liszt-Rohlf et al. (2021), volunteers develop their ability to delegate tasks to other people or train them to perform various tasks independently (leadership skills), and they gain social and process-oriented competencies, including communication (in challenging situations) and technical skills (assisting people with disabilities).

In addition, volunteering contributes to a deeper understanding of social issues and fosters reciprocity and appreciation for the voluntary sector. It fosters greater empathy and increases sensitivity to critical social issues such as poverty, illiteracy, unequal educational opportunities, and community violence.

3. Research method

The present study has three objectives: first, to comprehensively present and explain different methods used to measure the benefits of volunteering, with the aim of quantifying its positive impact on economic, social, and personal development; second, to present the current state of volunteering in Croatia based on official data and reports that provide information on the estimated number of volunteers, volunteer hours, and related costs; and third, to provide an overview of the perception of volunteering in Croatia. This was achieved through an empirical study conducted in 2017 with a convenient sample of students studying at five public business schools in Croatia - Osijek, Pula, Rijeka, Split, and Zagreb. The main reason for selecting business schools is that their curricula include courses dealing with nonprofit and voluntary activities as well as civil society development, so students are introduced to the sector and often have the opportunity to actively participate in such activities, which is often not the case at other faculties. The survey was conducted in the form of a paper-and-pencil questionnaire and administered by trained instructors. Participation was voluntary and anonymous, and no incentives were offered to participants. The questionnaire was distributed to 500 students, 11 of whom did not complete it. Usable data were thus obtained from a sample of 489 students. The questionnaire consisted of four groups of questions. The first group related to general attitudes toward volunteering, the second to motivation for volunteering, i.e. non-volunteering, the third to volunteering behaviors, and the last group included socio-demographic data. The data were analyzed using SPSS 24.0. Descriptive statistics and ANOVA analysis were used to interpret the results. The major characteristics of the sample are given in Table 1.

Table 1 Sample description

		FREQUENCIES	**PERCENTAGE**
GENDER	male	152	31.1
	female	337	68.9
YEAR OF STUDY	1st	76	15.5
	2nd	180	36.8
	3rd	114	23.3
	4th	82	16.8
	5th	37	7.6
LOCATION	Osijek	105	21.5
	Pula	94	19.2
	Rijeka	95	19.4
	Split	83	17.0
	Zagreb	112	22.9
HOUSEHOLD INCOME	Below average (650 Euro or less)	110	24.6
	Average (651-1,300 Euro)	187	41.7
	Above average (above 1,300 Euro)	151	33.7
VOLUNTEERING EXPERIENCE	Yes	215	44.0
	No	274	56.0
TOTAL		489	100

Source: Authors

This study highlights the importance of evaluating the economic, social, and personal impact of volunteering, while also shedding light on the current landscape of volunteering in Croatia. Empirical findings from a student survey deepen the understanding of attitudes, motivations, and behaviors related to volunteering. They also highlight the need for a comprehensive impact assessment to stimulate positive change in the volunteering landscape and encourage greater engagement of all social actors.

4. Results

The results of this study are structured around three core objectives. Firstly, the study details various methodologies for measuring the benefits of volunteering, focusing on its impact on economic, social, and personal development. Secondly, it examines the current landscape of volunteering in Croatia, utilizing official data to report on volunteer numbers, hours, and related costs. Lastly, it explores the societal perception of volunteering within Croatia, providing insights into how volunteering is viewed and valued by the community.

4.1 Measuring the benefits of volunteering

The first objective of this study is to examine the practical dimensions of impact assessment of volunteering. In this context, it emphasizes the central role of different methods, principles, and tools in translating theoretical knowledge into concrete, actionable measures. In this way, a practical roadmap is offered to guide both organizations and researchers involved in assessing the impact of volunteering.

According to Bere et al. (2019), monitoring is the process of collecting the facts and figures such as:

- – Numbers of volunteers,
- – Demographic information, e.g. age and ethnicity,
- – The frequency and duration of the volunteer activity,
- – The type of work that volunteers do,
- – The number of beneficiaries served.

These criteria, as described by the authors, represent a traditional approach to measuring the con-

tribution of volunteers. However, it is important to note that this method may not fully capture the essence of the contribution that volunteering makes to the personal development of individuals and the sustainable economic development of a country.

Different measurement techniques are used to quantify and assess the social value created by organizations and individuals. According to Social Value International (2021), social value is the value that stakeholders experience through changes in their lives. The organization has defined eight core principles derived from social accounting and auditing, sustainability reporting, cost-benefit analysis, financial accounting, and evaluation practices. A comprehensive understanding of these eight principles can provide organizations with the tools to effectively assess the impact of their initiatives and programs.

1. **Stakeholder engagement** – This principle emphasizes the importance of identifying stakeholders and engaging them in consultation processes to ensure they have a clear understanding of what is being measured and how it will be assessed in a social value report.

2. **Understanding change** – This principle focuses on the need to explain how change occurs and to evaluate these changes using collected evidence. It involves identifying both positive and negative, as well as intended and unintended, changes.

3. **Valuing stakeholder preferences** – Resource allocation decisions should take into account the values and preferences of stakeholders. This will ensure that their input is appreciated.

4. **Materiality** – This principle involves identifying the essential information and evidence to provide a complete and accurate picture, allowing stakeholders to draw reasonable conclusions about impacts.

5. **Avoiding overclaiming** – This principle encourages the use of baseline data, trends, and benchmarks to assess the extent to which the activity caused a specific change, as opposed to other contributing factors.

6. **Transparency** – This involves openly presenting the basis of the analysis to ensure

accuracy and honesty, while also committing to reporting and discussing the information with stakeholders.

7. **Verification** – This principle refers to obtaining independent confirmation or validation of the results, thereby ensuring the credibility and reliability of the information provided.

8. **Responsiveness** – This principle emphasizes the importance of timely decision-making based on appropriate accounting and reporting practices to achieve optimal social value.

Measuring the impact of volunteering on an individual's personal development allows volunteers to reflect on their own achievements. Kamenko Mayer et al. (2020) introduce four dimensions that serve as a tool to measure the impact of volunteering on personal development assessed through self-assessment using six statements within each dimension that indicate the extent of the impact of volunteering. These four dimensions include:

– **Self-esteem** – Self-image of personal change, psychophysical improvements, and volunteer self-perception, including the level of self-esteem achieved, social and emotional development, proactive behavior, and personal responsibility, among others.

– **Relationship with others** (*"me and others"*) – Assessment of the relationships that volunteers build with others, as measured by indicators such as a sense of belonging, social networks, and positive identities.

– **Relationships with the community** (*"me and the community"*) – Examining volunteers' improved understanding of social responsibility, commitment to values, willingness to continue volunteering, and willingness to engage in community actions.

– **Knowledge and skills** – Assessing improvement in skills and competencies acquired through volunteering, e.g. communication, gaining new experiences, organizational skills, etc.

The primary goal of this self-assessment is to actively involve volunteers in the evaluation process and create open channels of communication to address issues related to impact.

When determining the criteria for measuring the degree of inclusion at the organizational level, the following aspects should be considered, as outlined by Kamenko Mayer et al. (2020):

- **Quality of service delivery** – The degree of innovation in organization services, the introduction of new services to beneficiaries, among others.

- **Quality of volunteer programs** – The number of volunteers, the range of volunteer activities, the quality of those activities, the introduction of new activities, and the degree of innovation within activities, among other factors.

- **Quality of intra-organizational relationships** – The level of team cohesion, interpersonal relationships among employees, and relationships with volunteers.

- **Organizational policies** – The content of organizational documents, the values they express, the extent to which inclusion is embedded in organizational policies, and any infrastructural or technical improvements aimed at improving accessibility.

- **Organization and community engagement** – Improved understanding of community needs, an organization's public image, visibility, and recognition within the community.

The process of measuring the impact of volunteering on social inclusion was designed as a self-evaluation and team process within the organization. To help the organization understand these aspects and what they mean to them during the self-assessment process, a list of possible supporting documents for each statement is provided. This evidence helps validate the changes brought about by volunteering and their impact on social inclusion at the organizational level.

Table 2 illustrates how each stakeholder can be impacted across these dimensions and provides organizations with a valuable tool to determine which aspects they should assess and communicate.

Organizations can also use social reporting to comprehensively assess and communicate the tangible impacts of their activities, both internally and externally. While these social reporting standards are primarily used as an important tool for measuring the impact of social enterprises, they can also be used by nonprofit organizations. They have been recognized and adopted by experts and academics in certain countries, making them an accepted scientific framework (Hadad & Găucă, 2014). This type of reporting serves as a robust tool to assess the outcomes of an organization's operations quantitatively and qualitatively. A social report provides deep insights into the value created and the broader impact for different stakeholders. It provides a comprehensive assessment of an organization's performance in relation to its commitments and its impact on individual stakeholders.

Table 2 Measuring the impact of volunteering

	Human capital (people's knowledge, skills, attitudes, health)	Social capital (more cooperative relationships between people)	Economic capital (benefits or costs with financial value)	Cultural capital (sense of own identity and understanding of others' identity)
Volunteers	- increased personal development (self-esteem, empathy, etc.) - increased transferable competences (especially in relation to social services - improved health and wellbeing - increased employability chances (in the social sector and beyond)	- expansion of the personal social network - enhanced sense of trust in others (individuals and community) - increased social competences - increased transferable skills - improved health and wellbeing	- increased access to training for that would otherwise require payment - improved employment prospects and future earning potential	- better understanding of one's own identity - greater appreciation of other cultures and interests - shift in perspective toward society and the active role of each citizen
Institution	- increased personal development and skills of staff - increased motivation of staff to develop professional skills in the field of volunteer management - increased staff satisfaction and retention	- improved organizational working procedures - greater income for the institution - job creation/decrease in paid job - improvement of human interaction relationship within the institution - increased institutional visibility	- increased economic savings - increased financial value of the organization's activities (greater impact for the same costs)	- services are more reflective of cultural diversity within community - greater diversity in the institution
Beneficiaries	- increased personal development (self-esteem, empathy, optimism) - increased skills and abilities - improved physical and mental health - greater sense of wellbeing among beneficiaries - increased number of beneficiaries aware of volunteering opportunities - increased number of beneficiaries that become volunteers	- new friendships, contacts and network - increased number of beneficiaries that become volunteers - increased awareness of the benefits of volunteering - greater involvement in local activities, groups or clubs - increased empowerment to take actions	- increased access to services that would otherwise require payment increased employability opportunities due to newly developed skills and personal development	- greater sense of belonging to a group and taking part in culture and expressing values - increased understanding of other cultures and values - increased opportunities to practice or express faith - development of desirable behaviors - improvement of civic activism (beneficiaries can become volunteers)
Community	- improved skills and a more productive workforce - better personal development - increased level of awareness of the community regarding local problems	- increased social networks - enhanced trust and participation more organizations working together	- enhanced value for money in public services - increase of investment financial value (higher impact for the same costs) - reduced anti-social behavior	- volunteering is recognized, promoted, and practiced as a desirable behavior model - new values are being promoted within the community, such as solidarity, human dignity, and human rights

Source: Bere et al. (2019)

4.2 Volunteering in Croatia

Building on the examination of methods for measuring the benefits of volunteering, the study moves on to a detailed examination of the current state of volunteering in Croatia, drawing on findings from rare studies and official data and reports, which include the estimated number of volunteers, volunteer hours, and associated costs.

Although previous research has emphasized the importance of volunteering for social and economic development, studies conducted more than a decade ago found that Croatia is lagging behind in researching the civil sector and the benefits of volunteering as a basis for civil society development (Forčić & Ćulum, 2010). Since 2005, only a few studies have addressed volunteering in Croatia. This lack of empirical research and limited availability of data has already been recognized as an obstacle to discussions about the nonprofit sector and the role of volunteering (Bežovan, 1996). Most studies are conducted regionally or locally and are carried out by the local volunteer centers (Kotlar et al., 2016). These studies are not conducted on a regular basis and can hardly show the actual number of volunteers. The 2005 research on volunteering in Croatia (Črpić & Zrinščak, 2005) shows that about 35% of Croatian citizens were members of at least one civil society organization (mostly religious, sports, and unions). Only a small proportion

was active within social, ecology, human rights, and similar organizations. At the same time, over 38% of respondents were involved in different types of informal volunteering. Volunteers most frequently engaged in organizing different events and local community activities (Franc & Šakić, 2005). A study carried out in 2007, which investigated why people do not volunteer, found that only 30% of respondents do so (Ledić, 2007). A comparative study on 13 countries in 2011 (Grönlund et al., 2011) mentions specifics of volunteering in Croatia, where formal volunteering was organized by the state but not compulsory, while many individuals engaged in informal volunteering among family and friends. The most important motives for volunteering were altruism and learning, while the least important were social and protective motives. The 2023 survey found that while 25% of Croatian citizens aged 16 and over have volunteered at least once in their lives, 11% have volunteered in the last three years (2020-2022), and only 7%, as mentioned above, are currently actively volunteering (D-Kolektiv, 2023).

In order to have at least a certain number of volunteers, all organizers of volunteer activities of any kind are required to submit an Annual Report on Services Performed or Activities of Volunteering Organizers. As shown in Table 3, there has been an increase in the number of volunteers, volunteer hours, and volunteer costs in recent years.

Table 3 Annual report on services performed or activities of volunteering organizers

	2021	2022	2023
Number of volunteers	59,161	**63,275**	**67,909**
Number of received reports on organized volunteering	1,607	**1,720**	**1,660**
Volunteer hours	3,181,557	**3,236,883.5**	**3,012,837**
Volunteering costs	2,160,715 Euro	2,748,985.86 Euro	3,812,714.77 Euro

Source: Ministry of Labor, Pension System, Family and Social Policy (2024)

These numbers, however, still depend solely on the responsibility of organizers to submit the exact data. Moreover, there is still no systematic measurement of the impact of volunteering and volunteer programs neither on personal development of individuals nor on economic and social development of the country. For this reason, this research provides some important evidence on the importance of measuring the impact of volunteering.

4.3 An overview of the perception of volunteering in Croatia

In the research conducted by the authors of this paper on a sample of 489 students, respondents indicated that the social climate in Croatia has a limited positive impact on volunteering: The average score on the 5-point Likert scale for this statement was 2.76, and only 20.3% of respondents agreed or completely agreed that the social climate has a positive

influence on volunteering. The overall state of volunteering in Croatia is rated at 3.05, with the highest level of agreement for the statement that people are generally passive and lack ambition for any engagement, including volunteering (3.62). Overall, 56% of respondents agreed with this statement. The lowest level of agreement (2.51) was recorded for

the statement that the Croatian government has implemented good policies and measures to promote volunteering. Overall, 47.3% of respondents disagreed with this statement.

The research also revealed a significant difference in perceptions of volunteering in Croatia between volunteers and non-volunteers, as shown in Table 4.

Table 4 Differences between volunteers and non-volunteers with respect to attitudes toward volunteering

		Sum of Squares	df	Mean Square	F	Sig.
Attitudes toward volunteering	Between groups	3.098	2	1.549	6.407	.002
	Within groups	116.282	481	.242		
	Total	119.380	483			

Source: Authors

These results indicate that students with negative or neutral attitudes toward volunteering are likely to participate in volunteer activities less than students with positive attitudes. The prevailing sentiment among students is underlined by the fact that only 20.3% of them perceive a positive impact of the social climate on volunteering. The introduction of a transparent indicator of the impact of volunteering could change this perception and promote a more positive attitude toward volunteering.

The analysis of students' opinions about the visibility and social value of volunteering shows that volunteering in Croatia is not perceived as a potential source of self-development. This is the most important point in the evaluation, which was rated 3.66, and a total of 59.5% of respondents agree with this statement. The majority of students (58.7%) believe that volunteering is adequately portrayed in the mass media. However, mass media create not only positive but also negative publicity regarding volunteering, which can explain the high percentage (38.8%) of respondents who claim that there is no trust in volunteering. In addition, 46.2% of respondents believe that although children are exposed to volunteering throughout the educational process, they lack role models (i.e. actual involvement in volunteering), especially in their families.

Students who volunteer are often involved in a variety of organizations, particularly their local non-

profit organizations. The study shows a preference for short-term volunteering (67.9%).

The motivation to volunteer generally arises from a combination of utilitarian and altruistic motives, with an emphasis on developing personal skills, gaining experience, and improving one's resume. In general, 207 responses could be categorized as altruistic motives (helping others) and 159 as utilitarian motives (improving human capital). However, the most important single motive was "to develop personal skills, gain experience, and build and improve one's resume," a utilitarian motive cited in 114 out of 366 cases. This information is of great value to nonprofit organizations seeking volunteers.

5. Discussion

Various methods for measuring the benefits of volunteering underscore the complexity of their impact on individuals and organizations. Along with the recognition of the important economic and social contribution of volunteering, there is a need for high-quality data and evidence that would support that contribution (Šimunković, 2022).

Most of the studies on volunteering impact in Croatia and other countries focus on social contribution and social capital building (Buzov & Ivošević, 2024; Dekker, 2015; Begović, 2006). Placing volunteering in the context of human and social capital means viewing it as a space for action and learning that

necessarily leads to dealing with its effects or consequences, but also experiences, that is, the acquisition of these capital and their exchange in the community (Bourdieu, 1986). In Croatia, the persisting problem of low levels of trust in civil society and its poor potential for building social capital seem to be a lasting barrier to strengthening civil society, which represents another insufficiently researched area (Bežovan, 1996). This still remains the case as the focus on the performance of CSOs at the lowest levels of indicators, rather than their broader impact, continues to cause concern and distrust toward the sector (Baturina, 2018).

According to Putnam (2000), volunteering can be an efficient response to these challenges - if accompanied by positive experiences, it should increase trust by participating in the achievement of common goals, by the gratitude that accompanies volunteer activities, by working in an environment of people who inherently have a higher level of trust and act pro-socially, etc. In addition to the various other positive effects on trust that should accompany any membership in civic organizations, volunteering should foster a large number of positive interactional experiences, and thus cumulatively affect a higher level of generalized trust. Gvozdanović (2017) shares the same notion, stating that nonprofit organizations not only connect individuals with the same and similar interests, but also have the potential to connect different social groups through membership in several civil society organizations. In this way, individuals create bonds of lower intensity, but there is an increased spread of social trust.

While traditional monitoring techniques provide the foundation for understanding the contributions of volunteers, it is imperative to incorporate comprehensive frameworks, such as those articulated by Social Value International (2021), that can capture the broader social value generated. The emphasis on stakeholder engagement and transparency underscores the need for an integrative approach to impact assessment that ensures the comprehensive inclusion of all impact dimensions. In addition, the dimensions proposed by Kamenko Mayer et al. (2020) provide a valuable framework for comprehensively assessing the impact of volunteering on personal development. Implementing these strategies can help organizations conduct thorough evaluations and effectively communicate the tangible results of their initiatives, fostering a better understanding of the value created. By integrating

findings from previous research and aligning our study with established frameworks, we argue for a holistic methodology for measuring the impact of volunteerism that facilitates the development of sound strategies and effective volunteer programs.

Measuring the impact of volunteering would contribute to the transparency of CSO activities and allow society to better recognize the contributions that specific volunteer activities and programs make to society. By integrating advanced methodologies such as self-assessment, stakeholder engagement and change evaluation, civil society organizations can make the far-reaching impact of volunteering visible. Focusing on the personal development of volunteers and social inclusion at the organizational level contributes to an understanding of the broader impact of volunteering, facilitates knowledge sharing between practitioners, and promotes network building and the transparent handling of social issues. In addition, the introduction of social reporting standards can improve the ability of civil society organizations to assess, communicate, and promote the real impact of volunteering in society.

This paper serves as a resource for scholars specializing in volunteerism, service-learning, and civic engagement by providing comprehensive insights into advanced methodologies for understanding, measuring, and promoting the broader impact of volunteerism. The study provides a literature review and practical guidance on impact measurement that can enhance scholars' research, contribute to academic discussions, and support the development of educational programs, also known as service-learning programs, that promote volunteerism among young people and provide them with opportunities to develop their social awareness and civic engagement. Recognizing the personal benefits of volunteering has a positive effect on preferences for short-term volunteering, as shown by a study commissioned by the nonprofit association D-Kolektiv in 2023, which found that over 60% of volunteers in Croatia volunteer sporadically. The idea that people are generally passive and lack ambition to get involved, including volunteering, is in line with the findings of Wymer et al. (2008), which indicate that young people's decision to volunteer is highly dependent on the observed volunteering of significant others (parents, siblings, close friends). This sporadic nature of volunteering is probably also influenced by the lack of support at a policy level, which highlights the need for strategic measures to

promote coherent and effective volunteering in the long term. The low ratings of government policies and actions indicate that policy support for volunteering needs improvement. As Handy et al. (2009) point out, countries where volunteering has a positive signaling value tend to have significantly higher volunteering rates, suggesting that improving policy support could boost participation. Many young people do not see volunteering as a potential source of personal development, which underscores the need to promote volunteering as a means of personal development. Several government measures implemented, such as recognition of volunteering in the process of employment and education, adjustment of the system for measuring the economic value of volunteering, ensuring various opportunities to finance volunteering, and establishment of the National Volunteer Award (Šimunković, 2022), do not seem to be effectively communicated to young people. If these elements were properly measured, they could improve the communication.

Examining the state of volunteering in Croatia reveals several critical insights into the prevailing attitudes and challenges within the volunteer landscape. Although the number of volunteers and hours volunteered has increased, there is still no systematic approach to measuring the impact of volunteering, which highlights the need for comprehensive evaluation mechanisms. These findings underscore the need for a comprehensive approach to assessing the impact of volunteering, especially given the limited perception of volunteering as a catalyst for personal and social development. This study answers the research question and shows that efficient, clear and transparent measurement of volunteering can be used to understand, improve and communicate the undeniable economic, social and personal impact of volunteering. By leveraging the findings of existing studies and aligning with established frameworks, organizations can create a more conducive environment for volunteering within the Croatian community.

6. Concluding remarks

Evidence of volunteer impact becomes a powerful tool for advocacy and fundraising, as it can be used to gain the support of donors, sponsors, and policymakers who are more likely to invest in volunteer programs that have demonstrated positive outcomes. Policymakers can use data on volunteer impact to make evidence-based decisions about volunteering, social services, and community development. This can lead to the formulation of supportive policies that recognize and incentivize volunteerism.

The study used a convenient sample of students from business schools in Croatia, which may limit the generalizability of the results to a broader population of volunteers or individuals outside the educational setting. In addition, the cross-sectional nature of the study may have prevented exploration of changes or trends in volunteer behavior over time, which would have allowed for a more comprehensive understanding of the dynamics of volunteering in Croatia.

Implications for future research include the potential use of measurement tools in different contexts by conducting cross-cultural or cross-national studies that use the measurement tools to compare the impact of volunteering in different regions and shed light on regional differences and best practices. The tools can be used to segment and analyze the impact of different volunteer demographics, such as age groups, skills, or motivations, to gain an understanding of how different volunteer profiles contribute to societal outcomes. Future research can use these measurement tools in longitudinal studies to assess how the impact of volunteering evolves over time, gaining insights into long-term impacts on individuals and communities. Organizations can use these tools to continuously assess and improve their volunteer programs to ensure that they are aligned with the evolving needs of their beneficiaries and communities. Research can explore the global impact of volunteering by examining how the influence of volunteers contributes to addressing global challenges such as climate change, humanitarian crises, and sustainable development goals.

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EXPLORING CONSUMER INTENTION TO USE 5G TECHNOLOGY: A CROATIAN PERSPECTIVE

Abstract

Purpose: This paper examines consumer intention to use 5G technology in the personal and professional aspects. It focuses on how perceived value, ease of use, performance expectancy, perceived security, and employment status influence this intention in the Republic of Croatia.

Methodology: Data was collected through an online survey targeting consumers with prior experience using 5G technology in September and October 2023 in the Republic of Croatia. The multivariate linear regression statistical method was implemented using JASP statistical software.

Results: The authors found that ease of use, perceived security, and performance expectancy significantly and positively impact consumer intention to use 5G technology. Contrary to initial expectations, perceived value showed a non-significant relation towards the intention to use 5G technology, which could be due to the research sample reasons. The employment status variable showed a negative and significant relationship with 5G adoption intentions. However, it indirectly moderated the ease-of-use variable, which significantly impacted the intention to use 5G technology. Consequently, employment status emerged as a significant predictor when included in the analysis.

Conclusion: The key contribution of this paper lies in the analysis of the employment status variable and its explanatory power: while consumers may not view 5G technology as essential (direct relationship), they are more likely to intend to use it if it makes their everyday lives easier (indirect relationship). Additionally, the paper showed the extension of the TAM and UTAUT theoretical models, thus covering the research gap. Furthermore, the paper recommends future research to explore the economic and cultural impacts of the intention to use 5G technology, including factors such as income, cultural variation, and infrastructure.

Keywords: 5G technologies, emerging technologies, efficiency, cooperation, security

1. Introduction

Wireless communication, which gained momentum in the late 90s, has spread globally through mobile technology and its users. Since its inception with 1G in the late 80s, wireless communication has evolved through various technological advancements, reaching 4G in 2010 and 5G in 2019 (Teodorescu et al., 2023). From the early analog 1G networks to the ultra-fast 5G networks of today,

each generation has substantially improved speed, capacity, and capabilities. These advancements have enabled the development of new services and applications, such as mobile internet, video calling, and the Internet of Things (IoT). Furthermore, due to the 5G technology's ultra-low latency and good communication bandwidth with the possibility to connect multiple devices, new business opportunities might arise (Pons et al., 2023). Development and implementation are already occurring in some industries, such as medicine, transportation, and construction (Devi et al., 2023). For example, there are cases of real-time automation or remote surgery cases enabled by 5G technology (Javaid et al., 2023). As technology progresses, we can expect even more exciting developments in future generations of cellular networks (Parcu et al., 2023, Deloitte, 2020).

On the other hand, the adoption of 5G technology is of genuine interest to the practical and research community. Some of the factors it can be influenced by are perceived value, ease of use, performance expectancy, and security concerns. This paper analyzes factors under the Technology Acceptance Model (TAM) and Unified Theory of Acceptance and Use of Technology (UTAUT) frameworks, which were modified in the research model. The TAM was initially proposed by Davis (1989) and it defines perceived ease of use and perceived usefulness as a way of understanding reasons behind technology adoption. The primary research objective is to examine attitudes, perceptions, and the level of acceptance of 5G technologies. The main goal is to assess how this acceptance influences individual usage. The paper focuses on understanding the strong interdependence between 5G acceptance and effective individual usage with the potential for business collaboration, where only a high level of 5G adoption can drive successful collaboration. The specific goals include assessing knowledge and current use of 5G technologies with evaluating the intention to use 5G technologies in the future. Furthermore, the authors of the research paper will focus on the intention to use 5G technology concerning consumer perceived value, ease of use, performance expectancy, employability, and perceived security.

Consumer perceived value is an evaluation of the advantages 5G technology presents against current substitutes. Shah et al. (2023) showed that every technology needs to adapt to user demands. They are the end users, and their perceived value of the technology will ultimately determine whether its adoption spreads

globally or remains limited. Therefore, some of those elements are faster download and upload rates, lower latency, consistent connectivity, and the possibility to enable creative ideas. These elements taken together affect a consumer's intention to use 5G technology, as shown by Gandhi and Shah (2024) and Mustafa et al. (2022). Ease of use is the impression of simplicity or complexity a customer has with adopting and using 5G technology. When a technology is user-centric and easy to use, its global presence becomes inevitable. Akbari et al. (2020) argue that the ease of use builds trust in the consumer to use a certain technology, especially 5G apart from those that are not so easy to use. Some of the important elements are educational materials, network coverage, user interface, and device compatibility. Taken together, these elements affect a consumer's intention to use 5G technology, as demonstrated in the study by Jericho and Jayadi (2023). Performance expectancy captures user opinions on the possibilities of 5G technology. Mustafa et al. (2022) suggest that 5G technology will likely be accepted if it is beneficial in routine life and if it reduces human effort while increasing performance and efficiency. Therefore, this element covers expectations in speed, dependability, latency, and coverage. Should these standards fall short, consumer happiness may suffer and 5G technology uptake could be minimized, as is the case in the study by Chivanov and Dymkova (2024). A consumer view of the possible hazards connected with 5G technology is known as perceived security. Consumers may perceive potential risks, in terms of security breaches, governmental interference, or system weaknesses, as inhibiting the growth of technology adoption despite the advantages it offers (Wang et al., 2022). Consumers with higher perceived security of 5G networks, characterized by lower concerns about data privacy, health risks, and network vulnerabilities, will exhibit stronger intentions to use 5G services (Balassa et al., 2024, Bauer et al., 2021). Consumer willingness and capacity to adopt 5G technologies can be influenced by consumer employment. Employed people with higher incomes are able to purchase data plans and gadgets suited for 5G. Moreover, the specific workplace sometimes calls for technological expertise, which results in more comfort and familiarity with fresh technologies like 5G. Employed consumers may also have more demanding lives requiring constant connectivity, which increases their requirement for a dependable network (Ardi et al., 2024; Cheng et al., 2021). With Croatia's dropping unemployment rate and improving economic situation, consumer em-

ployment levels are probably going to help the intention to use 5G technology.

The model has been developed based on papers by Agrawal et al. (2021) and Al-Maroof et al. (2021). Due to the novelty of this topic, fewer relevant research papers are tackling this impact. Some papers used the Technology Acceptance Model (TAM) to check the perceived ease of use (Akbari et al., 2020; Crnobori et al., 2022), while this paper will focus on perceived value, performance expectancy, ease of usage, perceived security, and the employment status of its respondents in determining the intention to use 5G technology. It employs data collected in the Republic of Croatia in September and October 2023, and analyzed using the multivariate linear regression technique to examine relationships between key factors influencing 5G adoption. The findings aim to deepen our understanding of how consumer perceptions, contextual variables, and demographic factors drive 5G acceptance. By addressing existing gaps in the literature and developing a new model not previously used in the Republic of Croatia, this study provides actionable insights for both academia and industry stakeholders, offering a foundation for informed decision-making and future research.

The research paper structure is as follows. The literature review will be presented in the second section. The third section includes research methodology. The fourth section includes research results, while the final sections include a discussion, a conclusion, limitations, and further research recommendations.

2. Literature review

5G technology and its general acceptance among the consumers indicated strong academic interest due to its lucrative potential across various sectors. Some of the most developed world countries have already implemented 5G technology in their everyday context, while countries in transition, such as Croatia, have been researching and creating foundations to do so. Therefore, there is space for research and implementation processes to explore unique socio-economic and demographic dynamics influencing 5G adoption. Theoretical models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) have been widely applied to understand consumer behavior regarding emerging technologies. While these models have

provided valuable insights into general technology adoption, their application to 5G-specific contexts reveals the necessity of additional variables to address its unique attributes. Some of the recent papers showed a lack of research on factors such as perceived security, economic accessibility, and contextual factors such as employment status. These factors might play important roles in the 5G consumer acceptance, as demonstrated in the papers by Mustafa et al. (2022) and Crnobori et al. (2022).

Within the 5G context, the consumer's perceived value arises as a multi-dimensional factor, including the network performance, ease of use, and socio-economic benefits. Gandhi and Shah (2024) highlight that consumer expectations of faster speeds, greater reliability, and seamless connectivity drive perceptions of value, which, in turn, influence adoption intentions. Furthermore, research by Patel et al. (2022) indicates that the perceived 5G benefits in enhancing productivity and user experiences significantly outweigh concerns about initial adoption challenges. On the other hand, additional negative factors such as learning curves, cost of 5G technology infrastructure implementation, and compatibility might compromise the 5G benefits. The importance of performance expectancy, defined as the degree to which consumers believe that using 5G technology will enhance their productivity and satisfaction, has been confirmed by several studies (Jericho and Jayadi, 2023; Al-Maroof et al., 2021). Still, the performance expectancy together with socio-economic variables, such as employment and income levels, have not been sufficiently researched, especially in the context of developing and transitional economies.

Security concerns constitute another crucial factor influencing 5G technology adoption. Despite the technological advancements in encryption and data protection protocols, consumer skepticism regarding data privacy, potential cyber threats, and government surveillance persists (Ahmad et al., 2024; Scalise et al., 2024). This skepticism is further endorsed by Nkrumah (2024), who identifies the perception of weak regulatory oversight as a significant barrier to 5G adoption in regions with limited experience in managing advanced telecommunications infrastructures. These concerns are often present in regions with moderate digital literacy and complex regulatory frameworks, as is the case in the Republic of Croatia. Addressing such issues requires a public awareness campaign approach to build trust and

transparent policies to ensure accountability among service providers. Georgiou et al. (2021) note that the public trust in the security around new technologies, especially 5G is vital for their adoption in societies where people are cautious about interacting with various innovative digital ecosystems.

Employment status represents a new variable in the 5G adoption process, reflecting the intersection of socio-economic capability and technology readiness. Ardi et al. (2024) and Cheng et al. (2021) argue that employed individuals not only have the financial capacity to afford 5G-enabled devices and data plans, but are also more likely to encounter environments that encourage adoption, such as technology-driven workplaces. Furthermore, research by Briglauer et al. (2024) shows that higher income levels associated with employment positively correlate with the likelihood of early adoption of high-speed broadband availability, therefore 5G itself, particularly in urban regions. In transitional economies like Croatia, where economic disparities persist despite declining unemployment rates, employment status could serve as a significant moderator in consumer adoption behaviors. Understanding these dynamics is particularly important for designing targeted strategies to promote digital inclusion and meaningful access to advanced technologies.

This paper focuses on bridging the gap in consumer intention to use 5G technology by analyzing relevant factors such as perceived value, performance expectancy, ease of use, perceived security, and employment status. Furthermore, by focusing on perceived security and employment status, this paper extends the scope of traditional TAM and UTAUT models, recognizing that income level, trust, and risk perception are particularly influential in the context of advanced communication technologies like 5G (Ahmad et al., 2024; Scalise et al., 2024; Cheng et al., 2021). Therefore, the analysis of this paper supports the regional and demographic variations that shape consumer perceptions and behaviors. The potential research gap and contribution of this paper can be seen in the specific regions of transitional economies such as the Republic of Croatia and its residents' intention to use 5G technology with this paper's research model, which was not covered by similar papers, such as Mustafa et al. (2022) and Crnobori et al. (2022). By pursuing the analysis within the socio-economic and regulatory landscape of the Republic of Croatia, this research builds on previous papers, while providing a foun-

dation for future exploration of transitional economies. The integration of constructs like perceived value, ease of use, and performance expectancy, and the additional factors like perceived security and employment status, into a robust, context-specific framework enhances our understanding of consumer intention to use 5G technology and supports the development of strategies to support its widespread acceptance.

To test the model factor relationships, a multivariate linear regression analysis will be conducted. Regression will use latent variables and quantify them using manifest variables. Descriptive statistics will be used to summarize the data. The following will be further explained in the methodology section.

3. Methodology

The research was conducted through social media channels with a sample of 122 respondents, consisting of the Republic of Croatia adult citizens, in September and October 2023. The study included participants of both genders, and only those familiar with 5G technologies and who have used it have been included in the research, thus decreasing the total number of respondents to 72. The questionnaire was organized into four sections: the first section focused on general socio-demographic questions, the second on knowledge, usage, and intentions to use the 5G network, the third on the perceived value, ease of use, and performance expectancy of the 5G network, and the fourth on attitudes regarding the impact and safety of 5G technologies. The questions were designed with responses based on the Likert scale, allowing respondents to express their level of agreement with the statements. The questionnaire was developed using elements from the studies "Public Perception on Huawei's Global Race for 5G - A Case Study of India V.S. USA" by Agrawal et al. (2021), and "Acceptance Determinants of 5G Services" by Al-Maroof et al. (2021). The questionnaire was conducted anonymously through a Google form. Completing the questionnaire took approximately 10 minutes, and participation was voluntary and anonymous. After collection, the data were analyzed using JASP statistical software. Descriptive statistics were employed for data summaries of nominal and ordinal variables. Multivariate linear regression was applied to test the factor relations, and the results are presented in tables and graphs.

4. Research findings

In the survey, 61.1% of participants were women and 38.8% were men. The majority were aged 26 to 35 (48.6%), followed by those under 25 (27.8%). A smaller proportion of respondents were aged 36-45 (15.3%), followed by those aged 46-55 (5.5%), and those older than 56 (2.7%). In terms of education, most participants had completed secondary vocational education (58.3%), and the majority were employed (86.1%). All sociodemographic characteristics are shown in Table 1.

Table 1 Sociodemographic characteristics of the respondents

Category	Subcategory	Frequency (n)	Share (%)
Gender	Men	28	38.8
	Women	44	61.1
Age	18-25	20	27.8
	26-35	35	48.6
	36-45	11	15.3
	46-55	4	5.5
	56 and above	2	2.7
Education level	Secondary school	42	58.3
	Associate/Bachelor's degree	29	40.3
	Graduate/Master's degree and above	1	1.4
Employment status	Unemployed	1	1.4
	Student	8	11.11
	Retired	1	1.4
	Employed	62	86.1

Source: Authors' data (2023)

Furthermore, 61% of respondents reported that they have used or are currently using 5G technologies. Meanwhile, 8% indicated they do not know what 5G technologies are, and 19% expressed uncertainty about it. Additionally, 15% stated that they had never used 5G technologies, and 24% were unsure whether they had (Figure 1). Therefore, for this research, the authors included only those respondents who are familiar with 5G technology and have used it. By doing so, the respondent pool decreased to 72 participants who have the intention to use and have used 5G technology (IU).

Figure 1 Use of 5G technologies
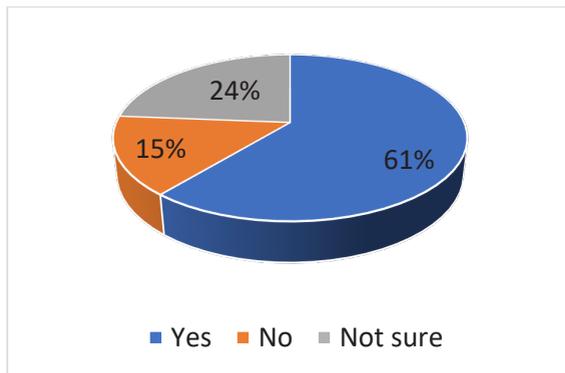
Source: Authors

The following tables show descriptive statistics for research manifest variables. Perceived value, ease of use, performance expectancy, and perceived security of 5G technologies were rated on a scale from 1 to 5, with 1 meaning "I do not agree at all" and 5 meaning "I completely agree." Table 2 details the perceived value (PV) of using 5G technologies.

Table 2 Perceived value of using 5G technologies

Topic – Perceived value	N	Minimum	Maximum	Mean	Std. Deviation
I understand 5G technologies	72	1	5	3.42	1.285
I can use my skills to download any material via 5G technologies	72	1	5	3.39	1.276
I am skilled enough to use different applications and 5G technologies	72	1	5	3.45	1.318

Source: Authors' data (2023)

On average, respondents are neutral about whether they are skilled enough to use 5G technologies. However, they generally agree that they are skilled enough to use various applications and services through the 5G network. This finding aligns with earlier results regarding the intention to use services via 5G technologies (Mustafa et al., 2022). Table 3 below provides an insight into the results of the ease of use (EU) of 5G technologies.

Table 3 Ease of use of 5G technologies

Topic – Ease of use	N	Minimum	Maximum	Mean	Std. Deviation
I think it is generally easy to use 5G technologies	72	1	5	3.58	1.304
I think it is easy to use 5G technologies for business purposes	72	1	5	3.56	1.240
I think using 5G technologies is easy to learn	72	1	5	3.67	1.301

Source: Authors' data (2023)

On average, respondents agree that 5G technologies are generally easy to use, both for personal and business purposes, and that they are easy to learn. However, these results are marginal, with large standard deviations indicating significant variability in responses. A closer analysis reveals that a substantial portion of respondents neither agree nor disagree with these statements, suggesting a possible lack of familiarity with 5G technologies and their use. Table 4 shows performance expectancy (PE) of 5G technologies.

Table 4 Performance expectancy of 5G technologies

Topic – Performance expectancy	N	Minimum	Maximum	Mean	Std. Deviation
Using 5G technologies will be/is useful in my personal life	72	1	5	3.40	1.271
Using 5G technologies will be/is useful in my business life	72	1	5	3.50	1.287
Using 5G technologies will be/is useful for improving my business	72	1	5	3.52	1.241
Using 5G technologies will be/is useful for downloading apps and services	72	1	5	3.57	1.253
I think 5G infrastructure is beneficial for the future of the economy	72	1	5	3.58	1.272
I think that 5G infrastructure can improve the business of any company	72	1	5	3.61	1.263

Source: Authors' data (2023)

On average, respondents agree with the statements regarding the perceived usefulness of 5G technologies. However, when it comes to expectations related to personal life and other areas, many respondents neither agree nor disagree. This pattern, observed through a more detailed analysis, may suggest a limited understanding of 5G technologies and their potential. The final question addressed respondents' perceived security (PS) in using 5G technologies (Table 5).

Table 5 Perceived security of 5G technologies

Topic – Perceived security	N	Minimum	Maximum	Mean	Std. Deviation
5G technologies in my country are completely safe	72	1	5	3.27	1.179
5G technologies in the world are completely safe	72	1	5	3.25	1.194

Source: Authors' data (2023)

On average, respondents are neutral regarding whether 5G technologies are completely safe both nationally and globally. However, a more detailed analysis reveals that a significant portion of respondents do believe that using 5G technologies is safe. Furthermore, the research model is shown in Figure 2.

Figure 2 Research model
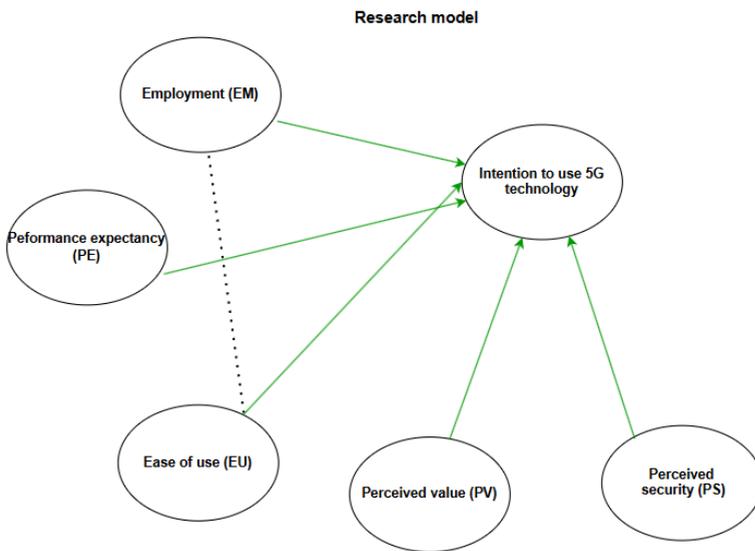
Source: Authors

Table 6 presents the research latent variables. Descriptive statistics were used to show the data mean, skewness, kurtosis, and Shapiro-Wilk test results. The data show that skewness is negative for all variables, except for the employment (EM) variable. The kurtosis metrics indicate a flatter curve for most variables, except for the employment (EM) variable, where the distribution is more peaked. Furthermore, the Shapiro-Wilk test shows statistically significant values under a 1% significance level, meaning that the research data are not normally distributed. Due to that, the Spearman non-parametric test will be applied.

Table 6 Descriptive statistics for latent variables

Measure	IU	PV	PS	PE	EU	EM
Valid	72	72	72	72	72	72
Missing	0	0	0	0	0	0
Mean	3.819	3.963	3.639	3.863	4.106	0.181
Std. Deviation	1.000	0.905	1.035	1.028	0.904	0.513
Skewness	-0.868	-0.401	-0.736	-0.679	-0.571	3.494
Std. Error of Skewness	0.283	0.283	0.283	0.283	0.283	0.283
Kurtosis	0.211	-1.044	0.128	-0.087	-0.787	14.151
Std. Error of Kurtosis	0.559	0.559	0.559	0.559	0.559	0.559
Shapiro-Wilk	0.911	0.880	0.892	0.894	0.838	0.401
P-value of Shapiro-Wilk	< .001	< .001	< .001	< .001	< .001	< .001
Minimum	1.000	2.333	1.000	1.000	2.000	0.000
Maximum	5.000	5.000	5.000	5.000	5.000	3.000

Source: Authors

The non-parametric Spearman test is shown in Table 7. Most variables show a moderate positive correlation, with IU-PV, IU-PS, and PV-PE exhibiting a high correlation under a 1% significance level. Non-significant correlations are observed between PV-EM and EM-EU, indicating a non-linear relation.

Table 7 Non-parametric Spearman test

Variable relations	Spearman's rho	p-value
IU-PV	0.739	<0.001
IU-EM	-0.359	0.002
IU-PS	0.745	<0.001
IU-PE	0.810	<0.001
IU-EU	0.673	<0.001
PV-EM	-0.022	0.855
PV-PS	0.507	<0.001
PV-PE	0.772	<0.001
PV-EU	0.877	<0.001
EM-PS	-0.318	0.007
EM-PE	-0.306	0.009
EM-EU	0.147	0.219
PS-PE	0.669	<0.001
PS-EU	0.424	<0.001
PE-EU	0.698	<0.001

Source: Authors

The model summary is presented in Table 8. The model shows that 81% of variance in the dependent variable is explained by the independent variables. Furthermore, the Bayesian information criterion (BIC) and Akaike information criterion (AIC) values are lower than those of the null model and explain better the proposed research model. Therefore, the null model was rejected and the new model accepted at the 1% significance level. On the other hand, although slight autocorrelation is evident, as indicated by a Durbin-Watson value of 1.932, an autocorrelation value of 0.068 was considered negligible by the research authors.

Table 8 Model summary

Metrics/Model	R²	AIC	BIC	p-value	Durbin-Watson
Model	0.810	97.825	113.762	<0.01	1.932

Source: Authors

Table 9 presents the multivariate linear regression results for the research model without the latent employment variable (EM). The results show significant values at the 1% level for perceived security and performance expectancy, while the values are insignificant for consumer perceived value and ease of use. The employment variable was excluded in order to demonstrate the difference it might make in the model relationships, which will be shown in Table 10.

Table 9 Multivariate linear regression results for the research model without the employment variable (EM)

Variables	Unstandardized	Standard error	Standardized	p-value
PV	-0.005	0.141	-0.005	0.970
PS	0.364	0.087	0.377	<0.001***
PE	0.440	0.105	0.452	<0.001***
EU	0.202	0.138	0.183	0.146

Note: Statistical significance at the ***1% probability level.
Source: Authors

The multivariate linear regression results for the research model including the employment variable (EM) are presented in Table 10. After adding the employment variable (EM), the ease of use (EU) variable became statistically significant at the 5% level. Furthermore, the employment (EM) variable itself shows a negative impact on the dependent variable and is significant at the 5% level. All other variable relationships remained the same as in Table 9.

Table 10 Multivariate linear regression results for the research model with the employment variable (EM)

Variables	Unstandardized	Standard error	Standardized	p-value
PV	-0.047	0.138	-0.043	0.734
PS	0.369	0.084	0.382	<0.001***
PE	0.359	0.108	0.369	<0.001***
EU	0.319	0.142	0.142	0.029**
EM	-0.279	0.121	-0.143	0.024**

Note: Statistical significance at the ***1% and ** 5% probability level.
Source: Authors

The research findings show that respondents are familiar with 5G technologies, have used them, and are interested in using them both personally and professionally. While they find 5G easy to use, they consider their skills moderate and rate its security as average. Following the presentation of the research results, several key observations emerge. There is no significant correlation between consumer perceived value (PV) and the intention to use 5G technology, which is not correlated with the findings of Mustafa et al., 2022. This discrepancy could be attributed to differences in the research samples. The relationships between ease of use (EU), performance expectancy (PE), and perceived security (PS) indicated a positive and significant influence at the 1% level, which is in line with the findings of Al-Maroof et al. (2021), Akbari et al. (2020) and Siagian et al. (2022). On the other hand, consumer employment (EM) showed a negative and significant influence at the 5% level on the intention to use 5G technology. This unexpected result suggests that employment status may not directly drive 5G adoption. Instead, its influence appears to be indirect, moderating the ease of use variable, which in turn significantly impacts the intention to use 5G technology. This finding extends existing research by highlighting the important role of employment status, suggesting that while employed individuals may not view 5G technology as essential to their professional lives, they are more inclined to adopt technologies that simplify and enhance their daily routines.

6. Conclusion

This research paper explores consumer intention to use 5G technology in both private and business-related contexts. This research is focused on analyzing the influence of perceived value, ease of use, performance expectancy, security attitudes, and employment status on the intention to use 5G technologies. The research sample included individuals with prior experience and knowledge of 5G technology. The research instrument was composed of an online survey distributed via social media channels in September and October 2023. Using a multivariate linear regression model, the study found that ease of use and performance expectancy show a strong and positive influence on consumer intention to adopt 5G technology, indicating that consumers prioritize functionality and practical benefits when evaluating new technologies.

The key contribution of this paper lies in the employment status variable, which, although negatively associated with the intention to use 5G technology, demonstrates an indirect influence through its effect on ease of use. This finding indicates the importance of 5G technology design, emphasizing the need for solutions that are usable across various consumer groups, particularly employed individuals seeking to enhance their daily lives. Furthermore, the paper extends the TAM and UTAUT theoretical frameworks by integrating perceived security and employment status as contextual factors, thereby addressing the research gap referring to socio-economic factors in consumer intention to use 5G technology. Lastly, this paper advances the understanding of consumer intention to use 5G technology by bridging theoretical and practical gaps, offering actionable insights for academics, policymakers, and industry stakeholders. By highlighting the interconnection of technological, socio-economic, and contextual factors, it provides a robust framework for understanding and improving the intention to use 5G technology in transitional economies, such as the Republic of Croatia.

The research has some limitations. First, the use of an online survey might have resulted in selection bias, as it might have been distributed to a particular group of people or those who were more likely to be interested in technology. Second, the study only observed a small number of variables, ignoring other possible factors like socio-economic position, cultural variations, or particular use cases. Third, consumer intention to use 5G technology may potentially be impacted by the economic environment surrounding the rollout of 5G technology. Therefore, an expanded model should potentially include variables such as economic growth, income disparity, and the general cost of living. Lastly, the intention to use 5G technology may also be impacted by the quality and accessibility of 5G infrastructure, including network coverage and device compatibility.

Future research could address these limitations and improve our understanding of 5G user intention by employing qualitative techniques similar to focus groups or interviews, cross-cultural comparisons, longitudinal studies, the economic impact of 5G technology, and a comparison of 5G adoption with earlier mobile network generations. Furthermore, future studies could provide a more comprehensive understanding of consumer intentions to embrace 5G technology in Croatia or similar transitional countries by investigating these areas in greater depth.

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SOURCING EFFICACY – THE ROLE OF SUPPORTIVE INTELLIGENCE

Abstract

Purpose: Globalization has increased the importance of sourcing and procurement strategies and fact-based negotiation (FBN). Technological advances such as machine learning (ML) and artificial intelligence (AI) and their integration in FBN are significant transformative steps. The paper explores ML and AI's role in improving FBN processes that traditionally rely on data-driven perceptions.

Methodology: The research used in the paper used a multi-method approach with quantitative and qualitative elements. This research design was chosen to explore the complexity of integrating AI and ML in FBN and to obtain the impact this integration has on sourcing processes in different industries. The research results are based on a survey of 210 participants and 33 in-depth interviews.

Results: The research showed that companies use FBN and see it as a beneficial approach to increasing negotiation efficacy. AI and ML integration in FBN significantly improves the negotiation process since it provides predictive modeling and real-time data analysis.

Conclusion: The paper's results align with current scientific studies highlighting the opportunities and barriers to AI and ML integration in negotiation processes. Companies must prioritize planning, education and organizational alignment for further development and optimization of these tools. With this, it is possible to fully realize the possibilities that integrating AI and ML into FBN can bring to the transformation of sourcing processes and the company's competitiveness.

Keywords: Sourcing, Fact-Based-Negotiation, supportive intelligence, artificial intelligence, machine learning

1. Introduction

According to Vitasek (2016), sourcing has always been a significant pillar for any company wishing to achieve a competitive edge in the global market. There is a possibility that integrating artificial intelligence (AI) and machine learning (ML) into Fact-Based Negotiation (FBN) may enable the achievement of a competitive objective (Spekman et al., 1999). According to Shahzadi et al. (2024), AI will enhance the crucial functions of organizational supply chains and manufacturing industries. The forecast made by MIT Technology Review 2025 (2024) suggested that the implementation of AI in supply chain management and manufacturing will grow from 11% in 2022 to 38% by 2025.

The main competitive advantage of FBN is that it has been applied in other business units such as sales, HR, and legal, which leads to better overall

negotiation results. The challenge of utilizing FBN to its fullest effectiveness is that it requires adequate management of internal and external data sources, which is often tedious and complicated. Supportive intelligence tools such as AI and ML can ease these processes and enable more accurate and effective decision-making (Allal-Chérif et al., 2020; Guida et al., 2023). The incorporation of AI and ML into FBN signifies a new era. These systems enable negotiators to conduct numerous data analyses to recognize patterns, make intelligence, enhance sourcing strategies, and assist decision-making (Lorentz et al., 2021).

Even though building contexts is crucial, AI-enabled estimations can predict counterparty behavior alongside fuzzy logic and other soft computing techniques that effectively enhance supply chain coordination (Shapiro, 2000). The sourcing agent with appropriate intelligence support tends to shift from classical negotiation methods towards cooperative negotiation strategies fostering precision and flexibility. This allows them to be more adaptive, which helps to generate better negotiating outcomes and achieve the company's profitability and competitive goals within the modern global business environment (Murray & Raynolds, 2007).

Thus, this paper aims to investigate the use of AI and ML techniques to enhance further FBN processes that were previously purely qualitative. The framework within which FBN is discussed is the organizational culture technology acceptance model. This constitutes the first part of the paper, which introduces FBN and its background. The second part of the paper deals with the research of AI and ML in the context of FBN. Lastly, the third part of the paper concludes and recommends further studies in this area.

2. Literature review

Companies face complex challenges in today's ever-evolving global market, highlighting the importance of effective procurement and sourcing strategies to remain competitive (Vitasek, 2016). Studies (e.g., Gates & Matthews, 2014; Ebner, 2017) highlighted the fundamental shift toward data-centric negotiation approaches and found that data is the new currency for delivering competitive sourcing outcomes. Traditional negotiation methods are increasingly being improved, and companies are adopting technology-driven strategies focusing on

accuracy, efficiency, and strategic planning (Fasihullah et al., 2023). Technologies like AI and ML are important for this move in negotiation since they can analyze large datasets, quickly spot patterns and provide actionable insights and will help negotiations to enter the digital sourcing era (Allal-Chérif et al., 2020; Lorentz et al., 2021; Guida et al., 2023). Kelleher (2000) stated that supportive intelligence helps sourcing professionals in real-time data analysis for data-driven decisions, while traditional methods aim to help them use available resources strategically and capitalize on market opportunities.

The Technology Acceptance Model (TAM)

Sargolzaei (2017) concluded that the TAM predicts and explains user behavior regarding new technology acceptance in companies. TAM highlights perceived practicality significance in sourcing and practical drivers' technology adoption ease of use (Rahmi et al., 2018). The model suggests that if sourcing professionals see data-driven negotiation tools as easy and beneficial, they will use and utilize such systems (Luo et al., 2023). Frank et al. (2023) concluded that sourcing efficacy can be significantly enhanced when using data-driven insights for negotiation validation. Integration of supportive intelligence (e.g., AI, ML) can enhance sourcing efficacy (e.g., Allal-Chérif et al., 2020; Schulze-Horn, 2020; Guida et al., 2023). When these analytic tools are user-friendly and helpful in sourcing operations, sourcing professionals are more likely to adopt and effectively utilize them (Althabatah et al., 2023). Additionally, Gangwar et al. (2015) found that TAM can be integrated with studies on readiness for change and organizational culture to propose a complete attitude toward the technology adoption process in sourcing. Based on Rogers' (2003) diffusion of innovations theory, factors such as change readiness and organizational culture significantly impact the adoption of new technologies in sourcing (Sotelo & Livinghood, 2015).

Culture as an important factor in technology adoption

Adinew (2024) found that adopting new technology in companies is one of the most complex processes significantly influenced by a company's culture. Companies with a culture open to innovation and change (Steers et al., 2008) can implement AI and ML more successfully in their sourcing (Farayola, 2023). Vasiljeva et al. (2021) concluded that opin-

ion toward AI differs among industries and that the three main factors influencing AI implementation are regulation, competition and top management's attitude toward this issue. The role of culture can also be seen in Lee et al. (2019), who stated that the implementation success of the new technologies needs alignment between new technologies requirements and the company's culture. Therefore, companies must create cultures aligned with evidence-based decision-making and continuous improvement to benefit from supportive intelligence (Shahzadi et al., 2024; Adinew, 2024; Guida et al., 2023). Allal-Chérif et al. (2020) found that this alignment can help integrate emerging technologies and maximize their positive impact.

The emergence and evolution of FBN

Helmold et al. (2022) stated that FBN developed as an increasingly beneficial contract negotiation model. It has distinguished itself from traditional methods that rely on instincts and experience. Parninagtong (2016) found that FBN leverages data-driven strategies for informing decision-making with objective and measurable criteria. At the same time, it enables more effective and informed contract negotiations (Tomlinson & Lewicki, 2015). Latilo et al. (2024) found that contract agreement negotiation represents a multifaceted process demanding different characteristics and considerations. To reach successful negotiations, it is necessary to ensure that the agreement satisfies both parties, fulfills its intended purpose, and remains durable over time (Sussking & Ali, 2014). It also creates the base for future collaboration efforts (Tomlinson & Levicki, 2015).

FBN leverages data-driven insights to ensure an objective and informed decision-making process compared to traditional negotiations that rely on individual experience and subjective assessment (Schulze-Horn et al., 2020). FBN enhances prospects for reaching agreements with more chances to endure the test of time and establish a better base for future collaboration (Nyden et al., 2013). This is done by grounding the negotiation process in verifiable and measurable criteria. Fiske et al. (2019) concluded that this approach allows negotiation parties to surpass intuition and anecdotal evidence and make informed decisions supported by analytical insights of quantifiable data. Finally, FBN is a progressive move toward a better-informed

and sustainable approach to contract negotiations (Hămuraru & Buzdugan, 2024).

Streamlining trade-offs with intelligent support in FBN

The negotiation process often involves different and complex trade-offs in which decision-making needs to be considered in different aspects such as price, delivery terms, payment terms, service quality, etc. (Van der Rhee et al., 2009). Faratin et al. (2002) found these trade-offs familiar in negotiations, but the role of intelligent support, such as AI and ML, in enhancing these strategies has not yet been explored (Lin et al., 2023).

Since its emergence, AI has been seen as a tool that can significantly assist the negotiation process by offering insights to manage trade-offs more effectively (Schulze-Horn et al., 2020). Jarrahi (2018) stated that AI can be used for data analysis to identify the optimal balance between quality and cost that can help negotiators make decisions. Tafakkori et al. (2022) and Shrestha et al. (2019) concluded that AI can predict the impact of delayed deliveries and help negotiators make better decisions about costs and customer satisfaction.

ML is another supportive intelligence tool that can reduce the trade-off between delivery speed and cost in logistics and scheduling (Khedr, 2024). Kalasani (2023) stated that advanced algorithms learn from data and help negotiators create sourcing balance strategies. These algorithms can support negotiators in making decisions for accepting minor losses that could strengthen supplier relationships and secure supply chain reliability (Niranjan et al., 2021; Riahi et al., 2021).

With the help of supportive intelligence, negotiators can identify crucial trade-offs and develop innovative solutions (Singh & Mazumdar, 2017). This can help them streamline the negotiations and make informed decisions, balancing different criteria such as quality, price and customer satisfaction (Riahi et al., 2021). Previous studies showed that by integrating AI and ML in FBN, negotiators can leverage data-driven insights to make strategic choices for optimizing multiple objectives simultaneously. This approach supports negotiators in streamlining negotiations, resulting in more favorable outcomes that balance all stakeholders' needs and priorities.

Key elements of FBN in sourcing

In scientific papers, studies, and professional journals connected to sourcing, researchers and authors identified several key elements of FBN in sourcing that can be assisted and improved by supportive intelligence (Table 1).

Table 1 Key elements

Element	How and why
1. Cost breakdown analysis	A combination of AI, ML and Robotic Process Automation (RPA) enables cost breakdown analysis automation needed for support in FBN (Jha et al., 2021).
2. Zero-based costing	AI in handling zero-based costing improves productivity and creates a good start for negotiations (Timmermans et al., 2019).
3. Total cost of ownership (TCO)	RPA and AI help companies prepare TCO as a crucial part of optimizing a company's asset management strategies (Hosseini & Andersson, 2024; Bataev et al., 2020).
4. Value analysis	Value analysis implementation in FBN can increase the quality of construction projects and improve consumer satisfaction (Shelote et al., 2018).
5. The Best Alternative to a Negotiated Agreement and the Worst Alternative to a Negotiated Agreement	Adequate preparation and data gathering with the help of supportive intelligence is crucial for negotiators to achieve a better deal (Sebenius, 2017).
6. Sustainability	Companies can make more informed decisions and access sustainability factors within their supply chains with the help of supportive intelligence and e-procurement (Ramkumar & Jenamani, 2014)
7. Preparation	Accurate assessment of interest and possible agreements is significant for negotiation outcomes (Althabatah et al., 2023)
8. Concessions and compromise	Concessions and compromise are instrumental in reaching a mutually acceptable agreement, so the help of supportive intelligence is needed (Mwagike & Changalima, 2022).
9. Problem solving	An integrative approach allows negotiators to diverge from competitive strategies and focus on jointly overcoming obstacles (Boshrababi & Hosseini, 2021).
10. Decision making	Involves considering multiple scenarios and their potential outcomes, ensuring that decisions are grounded in data (Riggio & Saggi, 2015).
11. Persuasion	Articulating the value and rationale behind one's position, anchoring the negotiation on substantiated narratives and data (Ivey, 2023).
12. Agreement	An accurate assessment of interests and possible agreements, along with anticipation of potential contingencies and factors that may interfere in negotiation, are areas where supportive intelligence can help (Liu & Chai, 2015)

Source: Authors

AI and ML, as supportive intelligence, have their place in each key element of FBN sourcing. The literature review shows a significant link between supportive intelligence **tools** such as AI and ML and successful negotiation strategies (Karlsson, 2020). The use of AI and ML tools can help FBN analyze complex datasets and predict results, developing at the same time innovative strategies that are the result of modern sourcing (Heilig & Scheer, 2023). Collaboration between FBN and supportive intelligence assists informed decision-making and safeguards that negotiations are based on objective standards and mutual benefits (George et al., 2023). This approach links tradition and modern technology by mixing negotiation with data-driven preciseness. Thus, FBN and supportive intelligence such as AI and ML offer a comprehensive strategy for modern sourcing challenges. Together, they create an environment where sourcing professionals can balance efficien-

cy with effectiveness when agreeing on contracts, which creates value and sustainability for the company in the long term.

3. Methodology

The research aims to provide an in-depth analysis of how AI and ML can support sourcing professionals in enhancing the effectiveness of FBN. A multi-method approach incorporating qualitative and quantitative elements was used for the research. This mixed-method design was selected to explore the intricate nature of AI and ML integration into FBN and to capture the impact of such practice across various industry sectors.

A purposive and snowball sampling strategy was used to create a research sample. The sample consisted of professionals representing the population in terms of industry, experience, role, and engagement with FBN, AI and ML technologies. Different organizational positions in the sample were needed to gather a wide range of insights into the applications, challenges, and opportunities of AI and ML in FBN.

The first part of the research was an online survey. To participate in the survey, respondents needed to have experience in sourcing and/or sales, engagement with AI and ML, and an organizational role. The survey included Likert-scale questions and open-ended responses to capture views (Allison et al., 2002) on FBN, AI, ML, challenges, and opportunities. The second part of the research included in-depth interviews with survey participants who expressed their interest in being contacted for the interviews. The interviews were designed to better understand their experiences and perceptions of AI and ML roles in FBN. The interview protocol consisted of structured and semi-structured questions.

An invitation to participate in a survey was sent to 450 professionals in various industries, of which 232 responses were received. Of these, 22 were incomplete and therefore excluded from the analysis. From the remaining 210 completed surveys, a sample of 33 professionals from the sourcing, sales, HR, and legal departments was created (i.e., 15% of the survey participants) to ensure a broad perspective. Data collected from surveys and interviews was analyzed with SPSS.

This research has several limitations, although the efforts to secure diverse samples from different industries and geographical locations to reach a fully representative cross-section of the sourcing professionals' population can be constrained. The second limitation lies in the sample size. In terms of considerable differences in practices and culture, the targeted sample size (210 surveys + 33 interviews) may not be sufficient for generalizing conclusions for companies' different sectors and sizes.

4. Research results and discussion

Survey results

A total of 210 completed survey responses were analyzed for this research. The largest segment of participants (30%) comes from the technology sector, which shows the prevalence of technology-driven companies in modern business (Büyükbalcı et al., 2021). The second largest segment comes from service industries (23.81%) and manufacturing sectors (19.06%). Regarding their company roles, most respondents work in supply chain management (51.43%) and sales (31.43%).

Companies involved in this research have a strong international presence since 35.71% operate in more than 20 countries, but on the other hand, a significant part (34.29%) operates only in their home country. The most significant segment of companies (67.15%) involved in the research have more than 1,000 employees, and their departments in most cases (40%) have more than 100 employees. The most involved companies (64.28%) have more than 100 million USD turnover; the highest share (49.6%) is in more than 20 countries worldwide. The duration of employment in the company can significantly impact the employees' level of engagement in the company (Markos & Sridevi, 2010). The largest share of respondents has been in the company for 1 to 3 years (33.33%), followed by long-term employees (26.19%) who have been there for more than 10 years.

When asked about familiarity with FBN, more than 83% of respondents are thoroughly and somewhat familiar with FBN. Figure 1 provides insights into the survey participants using FBN across different functional domains.

Figure 1 Current use of FBN in organizational functional domains
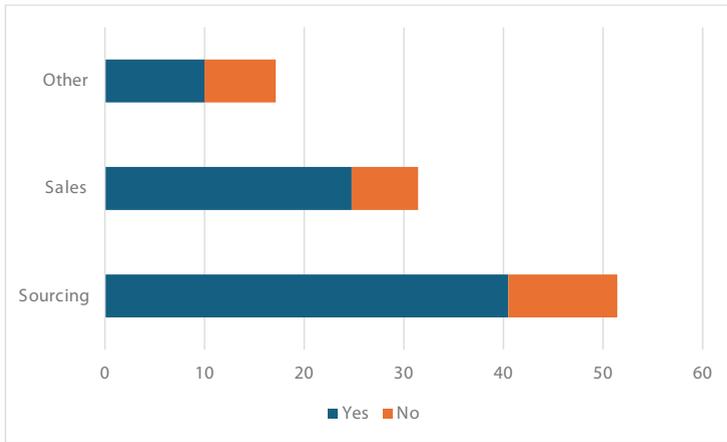
Figure 1 shows that a significant share of respondents (75.24%) use FBN in their work. Within this group, most respondents come from sourcing (40.48%), followed by sales. These findings indicate that FBN is perceived as particularly applicable within these two functional domains of companies.

The increased adoption of AI and ML in FBN has been the subject of recent scientific studies (Westermann et al., 2023). Figure 2 shows survey participants' perspectives on their companies' plans for implementing these tools.

Figure 2 Adoption of AI and/or ML to support FBN
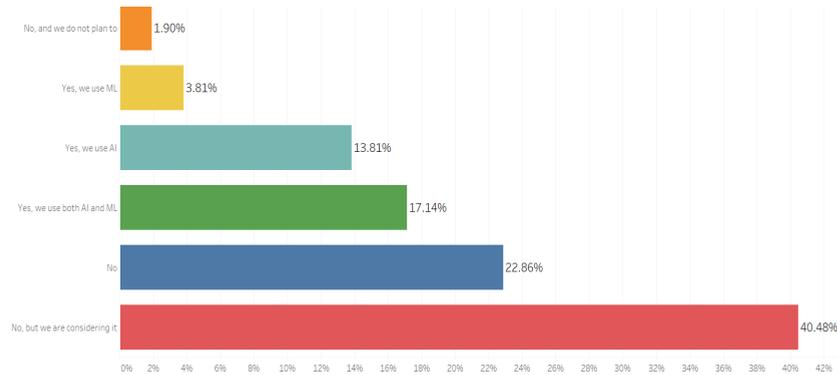
Survey results reveal a mixed landscape: a significant proportion of companies are already using AI and ML, which is consistent with previous studies (Buch et al., 2022). It is important to state that a relatively significant share of respondents (24.76%) reported that their companies are not using nor do they plan to use AI and ML.

Respondents (59%) agree and strongly agree that integrating AI and ML could reduce negotiation cycle times and simplify sourcing processes. Their responses show that AI and ML integrated into FBN can help companies address critical factors (e.g., supplier and contract management, effective e-procurement implementation (Angeles & Nath, 2007)) and streamline their sourcing workflows. Research showed that a significant share of companies (46.19%) still need to involve AI and ML in their negotiations. However, when asked about the potential impact on negotiation results, almost a quarter of respondents (22.86%) perceived the im-

pact of AI and ML as very low or low. This is aligned with findings by Krafft (2020), who indicated that most common visions of AI impact cause significant anxiety.

On the other hand, a large segment (62.38%) of respondents rated the impact as moderate to very high, which aligns with the research conducted by Lane et al. (2023). As a result of integrating supportive intelligence into negotiations, 42.86% of respondents reported a decrease in negotiation time. However, with the growing trend of AI and ML integration in company operations, the potential for substantial improvements in negotiation efficiency remains favorable (Hemalatha et al., 2021).

Since implementing supportive intelligence in FBN leads to changes in processes, it is necessary to understand the barriers and facilitate smoother integration of advanced technologies (Figure 3).

Figure 3 Types of training or support received to use AI and ML in negotiations effectively

Source: Authors

Results indicate that many companies faced resistance and challenges that must be addressed. Research participants indicated the following four barriers that may prevent the effective use of AI and ML in sourcing: (i) access to technology and data, (ii) cost considerations, (iii) data quality and security, and (iv) human factors and skills. One of the areas that can help is training and support during integration (Figure 4).

Figure 4 Types of training or support received to use AI and ML in negotiations effectively


Source: Authors

Some respondents indicated that they have received advanced training in AI and ML, while some are still in the early implementation phases or have not implemented those technologies at all. Training courses in some companies included basic information and awareness raising on AI and ML concepts, suggesting limited integration. In contrast, in other companies, the training was tailored to their specific needs, demonstrating a higher level of investment and prioritization, as found in research by Ma et al. (2024).

The correlation heatmap presented in Figure 5 shows the relationships between various factors influencing the adoption and efficacy of AI and ML in sourcing, sales, and HR negotiations.

Figure 5 Correlation analysis of key factors influencing the adoption of FBN and the role of supportive intelligence
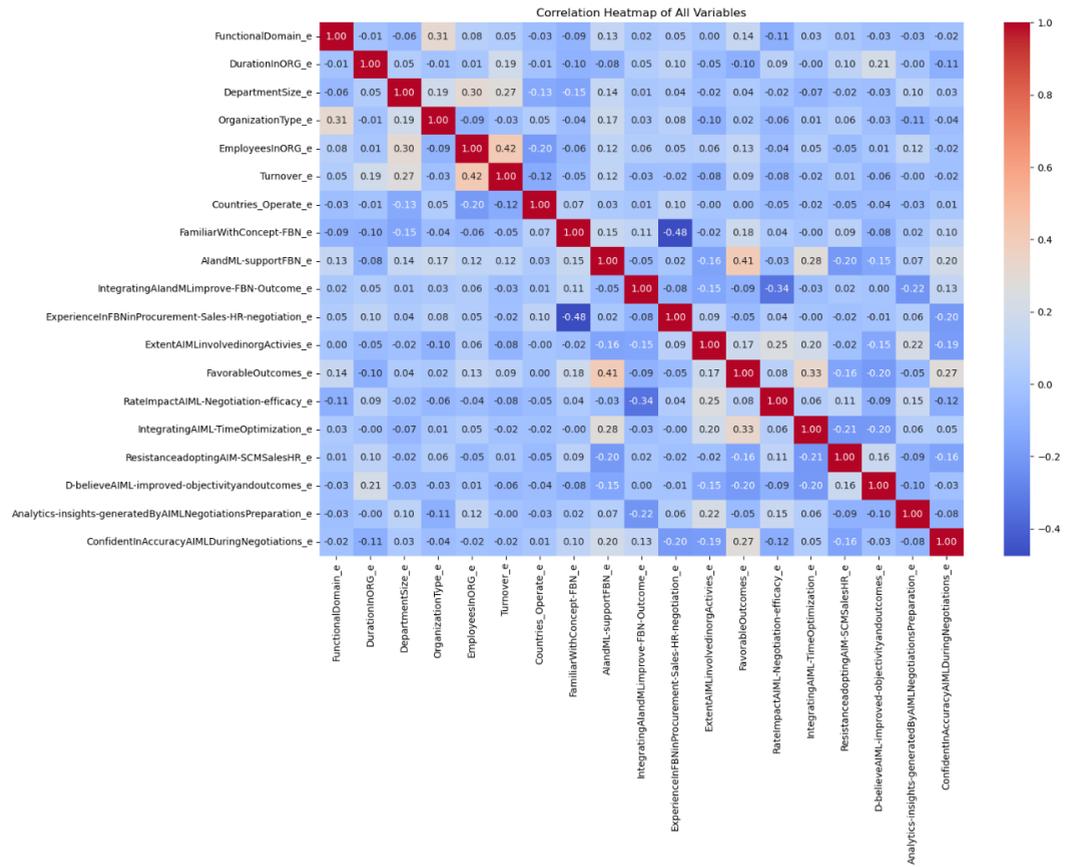
Based on the correlation analysis, the heatmap showed that the functional domain of an organization shows a moderate positive correlation with the type of organization. A moderate positive correlation between functional domains and familiarity with FBN concepts indicates that certain domains are more likely to be acquainted with these approaches. There is a positive correlation between tenure and perceived resistance to adopting AI and ML in sourcing, sales, and HR. Furthermore, a positive correlation exists between the size of departments and perceived improvement in FBN results after AI and ML integration. This shows that employees in larger departments perceive greater value in leveraging advanced analytics and supportive intelligence in enhancing their FBN prac-

tices (Jöhnk et al., 2021). The correlation heatmap highlights that certain functional domains within specific organization types might be more inclined toward AI and ML. Factors like human skills, quality, and accessibility strongly influence perception and integration outcomes, and experienced sourcing professionals in FBN are more likely to report favorable outcomes and express confidence in using AI and ML. The correlation analysis showed a strong positive relationship between familiarity with FBN concepts and FBN adoption in sourcing, sales, and HR, indicating that integrating AI and ML into FBN could increase the efficiency and effectiveness of sourcing negotiations.

Figure 6 One-Way ANOVA outcome
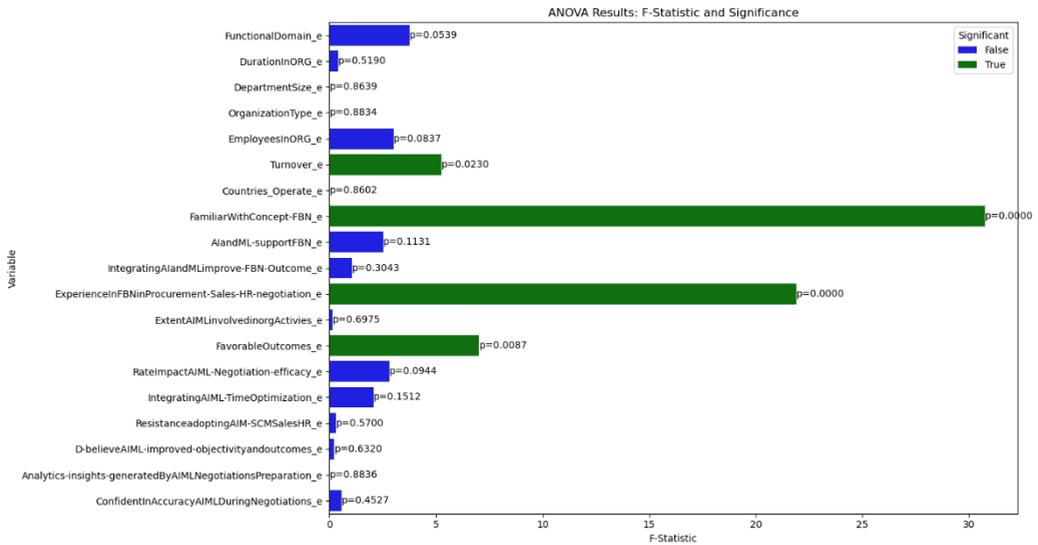
Source: Authors

The ANOVA results highlighted the significant influence of variables like 'Turnover_e', 'FamiliarWithConcept-FBN_e', 'ExperienceInF-BNinProcurement-Sales-HR-Negotiation_e', and 'FavorableOutcomes_e' on the 'CurrentlyFBN-SCMHRSales_e' outcome. The ANOVA results demonstrated that experience with FBN in sourcing, sales, and HR significantly influences FBN adoption in these areas. This suggests that combining FBN with supportive intelligence technologies could reduce negotiation cycle times and simplify sourcing processes.

In-person interviews

To better understand the survey results, 33 in-person interviews were conducted with selected survey participants, who had an average of 23 years of professional experience. Most of them (52%) work in sourcing, followed by sales (18%) and IT (15%). Most of the participants are mid- and high-management members of their respective companies.

The majority (84.5%) of participants are very familiar with the FBN concept, and more than two-thirds of participants reported the positive impact AI and ML have on their negotiation results, rating the impact as "better" or "significant". Interviewees expressed their confidence and trust in AI and ML during FBN because introducing AI in the workplace has placed a premium on "soft" skills, such as collaboration and creativity, which may be just as important as technical skills, further enhancing the perceived value of AI-driven insights. A significant share of participants, 87.88%, agreed that integrating AI and ML in FBN could significantly increase the efficiency and effectiveness of sourcing negotiations. This consensus among participants suggests a strong belief in the potential benefits of incorporating these technologies into the negotiation process.

Figure 7 presents a word cloud with the key terms and implications associated with the efficiency and effectiveness of FBN with implemented AI and ML.

Figure 7 Efficiency and effectiveness of FBN with implemented AI and ML

Source: Authors

Figure 7 indicates that implementing AI and ML in FBN can improve both efficiency and effectiveness. The central position of the word 'negotiation' underlines the primary focus of the discussion, which revolves around how AI and ML can enhance the negotiation process. Efficiency is shown by terms such as 'Efficiency' and 'Improve', suggesting that data collection, analysis, and decision-making automation can improve the negotiation process, making it quicker and more resource-efficient. Effectiveness is highlighted by the emphasis on 'Effectiveness' and 'Improve', implying that data-driven insights from AI and ML can increase the quality and success of negotiation strategies, leading to better outcomes.

Figure 8 shows a word cloud with terms and implications related to confidence in the accuracy and relevance of information provided by AI and ML.

Figure 8 Confidence in the accuracy and relevance of the information provided by AI and ML

Source: Authors

The size of the word 'high' suggests that many participants have strong confidence in the information provided by AI and ML, which is consistent with findings by Sindermann et al. (2020). This notion is further reinforced by the word 'confident', which exhibits the participants' assurance in the accuracy and relevance of insights gained from AI and ML. The central position of the word 'data' stresses the

significant role that data quality and relevance play in building confidence in the information generated by these technologies. The emphasis on 'validate', 'validating', and 'validation' stresses the importance of continually verifying the accuracy of AI and ML predictions against real-world outcomes, representing an important step in sustaining trust in

technology. The position of 'need' suggests that participants recognize a strong necessity for reliable data and validated insights to support negotiation processes effectively.

Figure 9 presents participants' opinions on the use of data analytics generated by AI and ML.

Figure 9 Use of data analytics generated by AI and ML for negotiation

Source: Authors

The status of words like 'effective', 'used', and 'data' in the above figure underline the significant role these technologies play in improving negotiation strategies and decision-making. The centrality of 'data' and 'analytics' highlights the importance of these elements in providing detailed insights into market trends, competitor activities, and historical negotiation outcomes, helping negotiators make

informed decisions. The accent on 'validation' further stresses the need to ensure the reliability and relevance of data analytics, building trust in the accuracy of information, as seen in Taddy (2018).

Figure 10 presents participants' key recommendations for improving the implementation and utilization of AI/ML and FBN within companies.

Figure 10 Participants' proposals for improvement of better implementation and utilization of AI/ML in FBN

Source: Authors

The accent on 'quality' underscores the importance of maintaining high-quality data and processes to ensure the reliability and accuracy of AI-driven insights (Kshetri, 2021). Leveraging the tacit knowledge and judgment of human actors is crucial in effectively using AI and ML capabilities. Comprehensive and high-quality 'data' is the foundation for robust AI and ML negotiation applications, enabling more informed decision-making (Vertsel & Rumiantsau, 2024). To have a more significant impact, companies must focus on increasing the 'adoption' of AI/ML tools and FBN methodologies, integrating them seamlessly into regular business processes (Budach et al., 2022). A transition toward 'digital' platforms and tools can further enhance the effectiveness of these technologies, streamlining negotiation workflows (Hicham et al., 2023). Investing in 'training' and equipping employees with the necessary skills to utilize AI/ML and FBN techniques is crucial for successful implementation (Vertsel & Rumiantsau, 2024).

5. Conclusion

Strategic sourcing significantly impacts several aspects of a company's performance. Sourcing results contribute to cultivating effective communication and long-term relationships between suppliers and buyers, which are antecedents of financial performance. A combination of strategic sourcing and digital technologies can increase company competitiveness. It provides companies with various benefits, such as inventory reduction, optimization of transaction costs, and establishing effective communication networks between buyers and suppliers.

FBN has emerged as an increasingly helpful model for contract negotiation, distinguishing itself from traditional methods that often rely on subjective judgment and circumstantial experiences. This approach leverages data-driven strategies that advise decision-making with measurable and objective criteria, enabling more effective and informed contract negotiations. In modern business negotiations, the integration of AI and ML has gained significant attention, particularly in FBN. Integrating AI and ML in FBN could significantly increase the efficiency and effectiveness of sourcing negotiation. Companies already adopting these technologies have reported improvements in their negotiation processes, while those in the observation phase may benefit from increased awareness and readiness for technological integration. Previous studies have emphasized the potential of AI and emerging human augmentation technologies for enhancing negotiation practices, enabling the automation of specific tasks, leveraging big data, and facilitating more efficient and effective decision-making. At the same time, integrating AI into negotiation processes has raised concerns about confidentiality, model bias, and the need for negotiators to develop new skills to work effectively with these tools.

Research results showed widespread adoption and recognition of FBN as a valuable approach. Integrating AI and ML with FBN significantly enhances negotiation processes by offering advanced analytics, predictive modeling, and real-time data insights. These technologies facilitate improved decision-making, adaptability, and responsiveness in sourcing negotiations. By automating routine tasks, enhancing data analysis, and facilitating real-time information sharing, companies can direct the complexities of global supply chains with greater agility and precision. These data-driven approaches enable sourcing teams to anticipate market fluctuations, identify optimal sourcing partners, negotiate more effectively, and, as a result, improve company outcomes.

Further research is needed to empirically investigate the real-world implementation of AI-powered supporting tools, their impact on negotiation outcomes and processes, and the specific ethical challenges and the best practices for addressing them at the right time. Based on the key findings and implications of this paper, the following research recommendations are proposed: (i) develop comprehensive strategic plans for the integration of AI and ML into FBN processes, considering the company's readiness, training requirements, and change management strategies; and (ii) conduct targeted studies to explore the sector-specific opportunities and challenges of AI-enhanced FBN, enabling the creation of customized strategies and benchmarks.

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Preliminary communications

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development in the Republic of Croatia*

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DIGITAL TRANSFORMATION AS A FUNCTION OF RURAL TOURISM STRATEGIC DEVELOPMENT IN THE REPUBLIC OF CROATIA

Abstract

Purpose: The research, which holds significant importance, analyzes the key factors influencing the digital transformation in the strategic development of rural tourism in the Republic of Croatia. It aims to determine the impact of county locations, categorized into clusters: Adriatic Croatia, Continental Croatia, and Slavonia-Baranja. The study aims to investigate specific factors that support sustainable digital transformation in rural areas, which is a topic of increasing interest and relevance.

Methodology: Primary data were collected through survey questionnaires sent to relevant stakeholders in rural areas. The analysis was carried out using the Kruskal-Wallis test in the Jamovi application to assess the influence of an ordinal variable (location) on the factors of digital transformation, including external, technological, organizational, and socio-demographic factors.

Results: The results show significant differences among the clusters: Continental Croatia and Adriatic Croatia highlighted the importance of external factors (e.g., economic support) and technological factors (e.g., IT infrastructure), respectively, while socio-demographic factors were identified as key factors in the Slavonia-Baranja cluster. These findings confirm the need for a tailored regional approach.

Conclusion: The research conclusions underscore the practical implications of the identified factors for stakeholders in designing sustainable digitalization models. These findings can serve as actionable guidelines, equipping stakeholders with the necessary insights to increase the engagement of the local community in the digital transformation in the strategic development of rural tourism in Croatia. While the research acknowledges limitations, such as sample size and the subjectivity of responses, the results provide a valuable contribution to future research and the policy of digitalization of rural tourism strategic development in Croatia.

Keywords: Digital transformation, rural tourism, strategic development, Republic of Croatia

1. Introduction

Tourism has undergone intense transformation in recent decades. Its accelerated growth is a consequence of its connection with other economic sectors, making it one of the largest and most dynamic industries on a global scale (Parte & Alberca, 2021). Today, tourism is a powerful social, economic, and ecological driver, directly contributing to developing states, cities, and rural areas. With the advent of digital transformation and the concept of Industry 4.0, the tourism industry has experienced a revolution that has become essential for the competitiveness, growth, and sustainability of participants in the sector. Digital marketing, as one of the most effective tools, enables tourism stakeholders to reach the target audience and attract tourists effectively.

Although the relevance of digital marketing in rural tourism is widely recognized in the scientific literature, clear guidelines still need to be established for implementing digital transformation and identifying key factors that influence its success. In addition, the impact of digital technologies on tourist behavior and the development of rural areas still remains insufficiently explored. This research gap highlights the need for a deeper understanding to improve the management and promotion models of rural destinations.

One of the main challenges in the modern tourism market is growing competition, which leads to the need to develop new strategies. Modern tourists are increasingly looking for authentic experiences and destinations that allow them to get in touch with nature, history, and local culture (Lapuz, 2023). Individuals and organizations face pressure to redefine their approaches, focusing on innovative, sustainable, and technologically supported tourism attraction strategies. Adaptation that includes long-term thinking, active cooperation, and networking of all stakeholders is critical. New opportunities provided by digital technologies can significantly enhance the visibility of rural destinations, enabling

personalized services and easy access to information (Zhu et al., 2023).

According to research by Maquera et al. (2022) and Roblek et al. (2021), digital technologies can improve the tourist experience and make the travel process less stressful. However, the problem arises due to fragmented and unreliable information, which makes planning difficult and requires significant time to find optimal options. Therefore, digitalization processes must be strategically implemented to enable better coordination of all stakeholders, including politicians, companies, and research centers, to stimulate economic development and increase the competitiveness of tourist destinations.

The research problem addressed in this paper concerns the impact of the digital transformation in the strategic development of rural tourism in the Republic of Croatia. The main questions to be answered are how various factors affect the digital transformation in rural tourism in the Republic of Croatia and whether there are differences between the factors referring to the position of individual counties.

The objectives of the research are:

– To investigate the influence of the analyzed factors using the Novianto model on the digital transformation in the strategic development of rural tourism in the Republic of Croatia.

– To analyze whether the county position influences the digital transformation factors.

– To identify the critical challenges in the process of rural tourism digitalization.

– To recommend the effective use of digital technologies in the strategic development of rural tourism.

In order to investigate the influence of the county position on the digital transformation factors in the strategic development of rural tourism in the Republic of Croatia, the authors divided all counties into three clusters according to the Novianto model.

Table 1 Counties in the Republic of Croatia divided into clusters

Cluster name	Counties
Adriatic Croatia	Istria, Primorje-Gorski Kotar, Lika-Senj, Zadar, Šibenik-Knin, Split-Dalmatia, Dubrovnik-Neretva
Continental Croatia	Krapina-Zagorje, Varaždin, Međimurje, Koprivnica-Križevci, Zagreb County, City of Zagreb, Sisak-Moslavina, Karlovac, Bjelovar-Bilogora
Slavonia and Baranja	Osijek-Baranja, Vukovar-Srijem, Brod-Posavina, Virovitica-Podravina, Požega-Slavonia

Source: Authors

In this research, a fundamental hypothesis was set that enables the examination of the influence of the position of individual counties on the digital transformation factors in the strategic development of rural tourism in the Republic of Croatia using the Novianto model. The null hypothesis (H0) is based on the assumption that the county position within the defined cluster has no statistically significant influence on the digital transformation factors in the strategic development of rural tourism in the Republic of Croatia. In contrast, the alternative hypothesis (H1) suggests that the county position within the defined cluster has a significant statistical influence on the digital transformation factors in the strategic development of rural tourism in the Republic of Croatia.

The methodological approach includes comparative, qualitative, and quantitative analysis. Primary research includes in-depth semi-structured survey questionnaires with key stakeholders, followed by quantitative and qualitative data analysis. The collected data comes from primary and secondary sources, emphasizing the latest trends in digital transformation and the strategic development of rural tourism. The Jamovi application was used to analyze the correlations between the variables that analyze the influence of the county position on the digital transformation factors.

The structure of the paper is as follows: The first section provides a detailed overview of rural tourism and considers the impact of digital transformation on its strategic development. The second section focuses on the analysis of the stakeholder approach to rural tourism. The third section describes the methodology used and presents the research results. The fourth section discusses the obtained results, while the final section presents key findings and recommendations for future research and practical applications, highlighting the novelty of the research to engage the reader.

2. Theoretical framework - digital transformation and the stakeholder approach in the strategic development of rural tourism

As pointed out by Istanti (2021), as a form of travel that occurs in rural areas, rural tourism offers a distinct experience. These areas, characterized by agriculture as the primary source of income, low population density, and a rich, authentic culture, provide a unique window into different lifestyles and cultures connected to natural environments. Thilakarathne & Dassanayake (2020) further underline that rural tourism is currently one of the fastest growing forms of tourism, offering travelers a unique experience. The need to implement new development dynamics in rural regions is one of the critical topics of the rural tourism sector, especially considering that the digital transformation process is currently starting through the adoption of advanced digital technologies and tools (Rodrigues et al., 2021). The literature emphasizes that digital marketing, as a tool with high promotional potential, enables a more efficient and successful reach of a broader target audience. The lack of a conceptual and functional vision for planning and implementing these initiatives points to the need to develop a model that would improve the destination's image and influence tourists' decisions about visiting.

Although there is a global focus on research and understanding of digital transformation, whereby authors strive to define the topic precisely, there is no established definition, which is why each author interprets it in their own way (Kraus et al., 2021). The one by Hinings et al. (2018) stands out among the more recent definitions. It is defined as "the combined effect of several digital innovations that bring about new players, structures, practices, values and beliefs that change, threaten, replace or complement the existing rules of the game within organizations, ecosystems, industries, or fields." Digital innovations have a significant impact on the tourism industry as they enable the creation of a more inclusive experience for tourists and improve their overall satisfaction. According to Kindzule-Millere and Zeverte-Rivza (2022), information, communication, and digital technologies have become a global phenomenon and a constant driver of tourism. Digital technologies are crucial to making rural communities active, "smart," and sustainable tourist destinations, reducing distance problems, and improving access to services, information, and quality (Vučetić, 2012). Rural tourism plays an important role and is one of the drivers of rural development (Jurakić et al., 2020). Digital transformation has turned tourist destinations, including rural ones, into intelligent destinations. In this process, decision-makers in tourism destinations should consider the knowledge they use to develop their development strategies, information systems, traveler behavior, marketing, urban plan-

ning, destination management, administration, and increasingly important data analysis and data science (Roblek et al., 2021).

Digitalization and computerization have become essential in the socio-economic development and improvement of the quality of life. Digitalization processes have become essential for directing the tourist destination to innovation initiatives and networking with all stakeholders (from politics and companies to universities and research centers) to work together toward a more successful economic development. The processes above enable the regional transformation of rural areas into innovative regions (Roblek et al., 2021). The development of an intelligent economy is based on creating new companies and business models based on digitalization processes and developing and implementing citizen-oriented technologies. In this context, people are essential and key to achieving development strides and represent qualified human capital for working in new digital ecosystems (Sepasgozar et al., 2019).

Similarly, ICT enables a reduction in production costs, increases productivity, improves the efficiency and effectiveness of companies in rural tourism, and positively affects the performance, growth, and development of new products (Vučetić, 2017). Intelligent villages aim to bring together different policies to find better and more innovative ways to promote rural development. Namely, it is about exploiting existing and new social innovation technologies to add value to the lives of both tourists and citizens. It is essential to equip rural areas with the tools to address their challenges while also contributing to solving society's more significant challenges (Hogan, 2018). Modern digital travelers are today keen to participate more actively in the processes that concern them, and they are also increasingly interested in using social tools to highlight their identity and reputation (Roblek et al., 2021). They also evaluate and purchase tourism products and services and express their perceived value. New technologies have increased the tendency of tourists to participate in the co-production and evaluation of tourism products (Roblek et al., 2021).

Companies should choose and decide which digital technologies they need and want to implement because each has a crucial role in creating a specific solution or providing a new experience. Digital transformation is critical in rural tourism because it can be used to reach solutions related to the

process, functionality, performance, and the experience of all participating stakeholders. Murphy (1983) first noticed the stakeholder approach in tourism because he claimed that tourism is based on resources. A symbiotic relationship should be developed to ensure the industry's survival. Stakeholder cooperation represents two competitive advantages for tourism service providers, namely the active participation of stakeholders in the development of the tourism region and broader support for tourism development (Lankford & Howard, 1994). As far as rural tourism is concerned, cooperation between stakeholders can be demonstrated in different ways. For example, joint efforts can maintain the competitiveness of a region or its destination image or protect the heritage and tourism industry in a particular region (McComb et al., 2017). On the other hand, stakeholder networks can be viewed as collaborative networks in which a limited number of entities (e.g., hotels) work together toward a common goal but retain control over their resources (Raab & Kennis, 2009).

For an effective process of community cooperation in tourism, it is necessary to create a cooperative or reference organization that helps in the development and growth of tourism and the joint formulation of the vision and strategic goals of the destination (Eskerod & Larsen, 2018). Stakeholder access is critical to rural tourism development, and attention should also be paid to digitalization. Namely, it permeates the daily lives of both individuals and businesses because people learn through social media, communicate with intelligent machines in the workplace, transmit and receive data through tablets or smartphones, and benefit significantly from integrated, shared, and updated mobility systems in real time. Given the broad impact of digitalization, stakeholders must face digital change systematically.

The authors adapted the model used in this research according to Novianto (2023, pp. 180-181). The research results showed that external, technological, organizational, and socio-demographic factors influenced the digital transformation in rural tourism. External factors include capital, legislation, political situation, and economic environment, while technological factors comprise data security, digital (IT) infrastructure, and digital system networking. Organizational factors include management capacity, required employee competencies, organizational culture, clear vision and strategy, whereas socio-

demographic factors are the digital connection of the public and private sectors, lifelong education and demographics (Brunetti et al., 2020). Below is a figure representing the model.

Figure 1 Model of digital transformation in rural tourism

External factors:
Capital Legislation
Political Situation
Economic Environment

Organizational factors:
Managerial Capacity
Necessary Employee
Competencies
Organizational Culture
Clear Vision and Strategy

Digital Transformation in Rural Tourism

Technological factors:
Data Security Digital (IT)
Infrastructure
Digital System
Networking

Socio-demographic factors:
Public and Private Sectors
Digital Connection
Lifelong Education
Demographics

Source: Created by the authors according to the Novianto model (2023), pp. 180-181

3. Research methodology and results

This research analyzes the influence of the position of a particular county in the Republic of Croatia on the factors of the digital transformation in the strategic development of rural tourism in the Republic of Croatia using the data obtained through primary research in the entire Republic of Croatia. The research was conducted in two phases. During the first phase, which lasted from September 20 to October 27, 2024, primary research was conducted throughout the entire Republic of Croatia. From each county, including the City of Zagreb (a total of 21), four tourist boards, three communal companies, and two agencies operating in rural areas were selected. The survey questionnaires were sent to legal representatives of those bodies so that they could fill out the survey questionnaires. A total of 189 questionnaires were sent. The authors collected 72 fully completed questionnaires (38.1%) and 18 incomplete questionnaires (9.5%) that were not considered valid. In total, 31 questionnaires were received from the Primorska Croatia cluster, 27 from the Continental Croatia cluster, and 14 from the Slavonia and Baranja cluster. The questionnaire consisted of both closed and open-ended questions, and the research results were analyzed using the adapted Novianto model.

In defining the structured questions, to which the respondents answered by circling their responses, the authors began with a general question about the impact of the examined factors on the digital transformation in the strategic development of rural

tourism. This was followed by a question in which the respondents assessed the level and intensity of the influence of each factor on the digital transformation of rural tourism strategic development. General questions were followed by questions in which the respondents assessed the intensity of individual factors of external, organizational, technological, and socio-demographic factors. In the end, the respondents assessed the potential impact of individual stakeholders on the digital transformation in the strategic development of rural tourism, including the key challenges that need to be overcome along the way and the positive effects of digital transformation in rural tourism. In the last question, the respondents were allowed to suggest in an unstructured way what their organization can do to achieve long-term sustainable development of the digital transformation in the strategic development of rural tourism. After processing all the received questionnaires, the data were analyzed and presented in graphical form.

In the second phase of the research, an analysis of the relationship between the variables was conducted using the Jamovi program (Jamovi, 2024). The analysis focused on the relationship between one ordinal variable with three classes (county locations divided into clusters) and four additional variables (external, technological, organizational, and socio-demographic factors) that were not adequately distributed, employing a non-parametric statistical method. Since the data do not meet the assumption of normal distribution, a non-parametric test is the optimal approach to analysis. To analyze the relationship between the ordinal variable and other dependent variables, the Kruskal-Wallis test was used, which is a non-parametric equivalent of ANOVA for comparing multiple groups. This test enables a comparison of the median among the three classes of an ordinal variable, providing insight into the differences between groups without the need for a standard data distribution. The Kruskal-Wallis test was used to determine whether there was a statisti-

cally significant difference between the groups with respect to the dependent variables. The test results showed a statistically significant influence on three variables, while one variable was found to have no statistically significant influence. The analysis was carried out using the Jamovi statistical software, where the ordinal variable with three classes was set as a group variable. In contrast, the other four variables were included as dependent variables. The results generated in Jamovi will show information on the significance of differences between groups.

The application of the Kruskal-Wallis test and accompanying procedures will enable a reliable and detailed analysis of the relationship between the ordinal variable and other dependent variables, despite the irregular distribution of the data. The statistical significance of the correlations was assessed at the $p<0.01$ and $p<0.05$ levels. Particular emphasis is placed on determining the role of the location of an individual county in the digital transformation factors, that is, the analysis of whether the location of the county affects a particular digital transformation factor and to what extent.

It is important to note that this research has certain limitations. For instance, the selection of tourist boards, utility companies, and agencies to which the questionnaires were sent could be perceived as subjective. It is possible that a different selection could have resulted in different research outcomes. Additionally, there is a chance that some questionnaires were filled out by individuals who may not have the most relevant information about the subject. However, it is important to emphasize that this is only a potential assumption.

The following is an analysis and graphical representation of the research results.

The following graph shows the views of the respondents on the impact of individual factors on the digital transformation in the strategic development of rural tourism.

Chart 1 *The impact of the examined factors on the digital transformation in the strategic development of rural tourism*
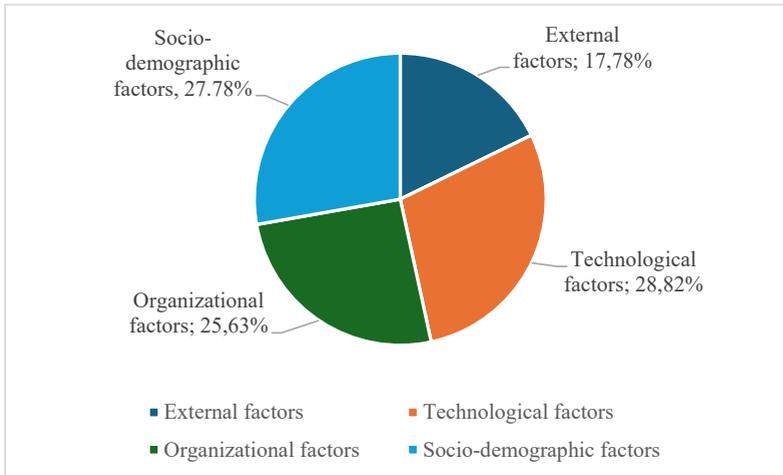
Source: Authors

It is obvious from the views of the respondents in the pie chart above that the digital transformation in the strategic development of rural tourism is most affected by technological factors, followed by socio-demographic and organizational factors, while it is least affected by external factors.

The following chart shows the views of the respondents on the intensity of the influence of certain external factors on the digital transformation in the strategic development of rural tourism.

Chart 2 *The impact of EXTERNAL factors on the digital transformation in the strategic development of rural tourism*
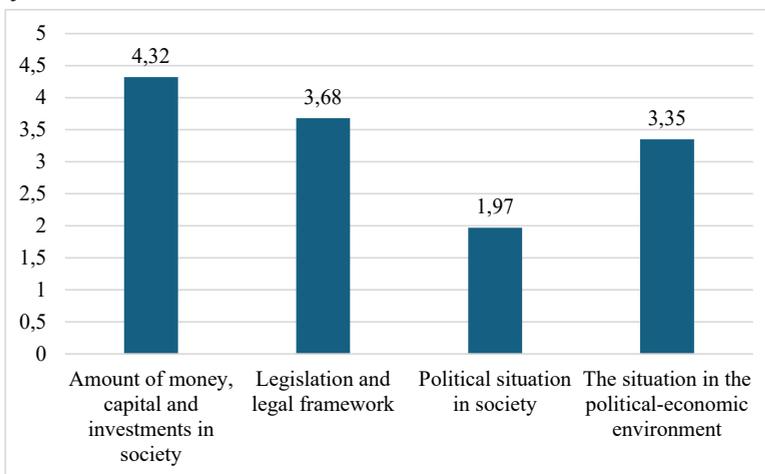
Source: Authors

By analyzing the respondents' answers, it was concluded that of all the external factors, the amount of money and capital invested in that sector, but also

in society in general, had the greatest impact on the digital transformation in the strategic development of rural tourism. This is followed by legislation, the

legal framework and the situation in the political-economic environment, while the political situation in society has the least influence.

The chart below shows the views of the respondents on the impact of organizational factors on the digital transformation in the strategic development of rural tourism.

Chart 3 *The impact of ORGANIZATIONAL factors on the digital transformation in the strategic development of rural tourism*
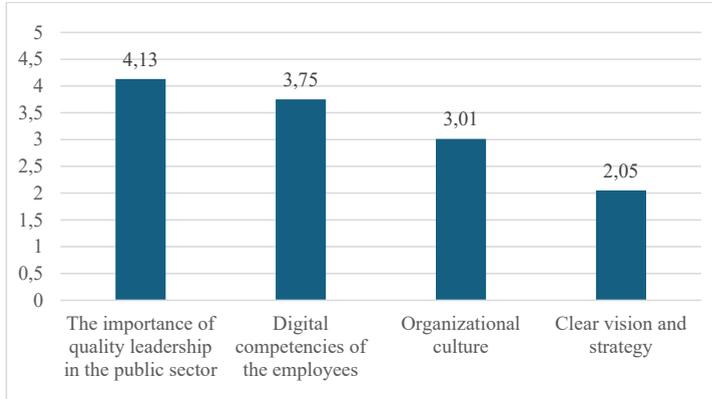
Source: Authors

The analysis of the graph leads to the conclusion that the respondents believe that quality leadership is the most important organizational factor that affects the digital transformation in the strategic development of rural tourism. This is followed by the digital competencies of employees and organizational culture, while the respondents believe that a clear vision and strategy have the least influence.

The following graph shows the respondents' views on the impact of technological factors on the digital transformation in the strategic development of rural tourism.

Chart 4 *The impact of TECHNOLOGICAL factors on the digital transformation in the strategic development of rural tourism*
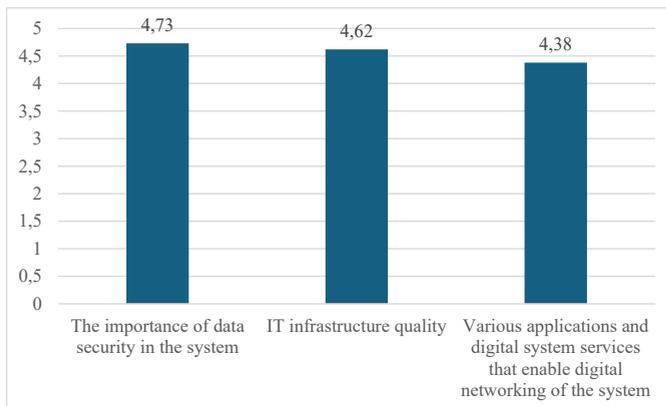
Source: Authors

By analyzing the views of the respondents on the impact of technological factors on the digital transformation in the strategic development of rural tourism, it is concluded that the respondents believe that technological factors have the greatest impact on this development. All factors received nearly maximum scores.

The following graph illustrates the views of the respondents on the impact of socio-demographic factors on the digital transformation in the strategic development of rural tourism.

Chart 5 *The impact of SOCIO-DEMOGRAPHIC factors on the digital transformation in the strategic development of rural tourism*
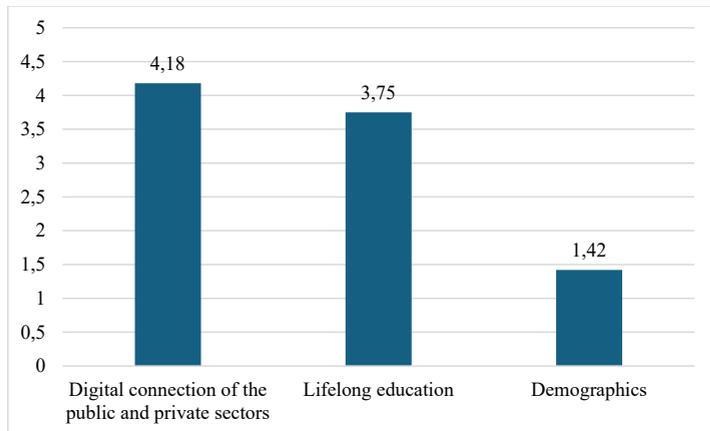
Source: Authors

The respondents stated that among all socio-demographic factors, the digital connection between the public and private sectors had the greatest influence on digital transformation, followed by lifelong education. They believed that demographics had the least influence, as it is not directly related to digital transformation.

The following graphs show the respondents' views on the potential influence of stakeholders on the digital transformation in the strategic development of rural tourism, the key challenges or threats of digital transformation in rural tourism, and the potentially most important effects of digital transformation in rural areas.

Chart 6 *The impact of STAKEHOLDERS on the digital transformation in the strategic development of rural tourism*
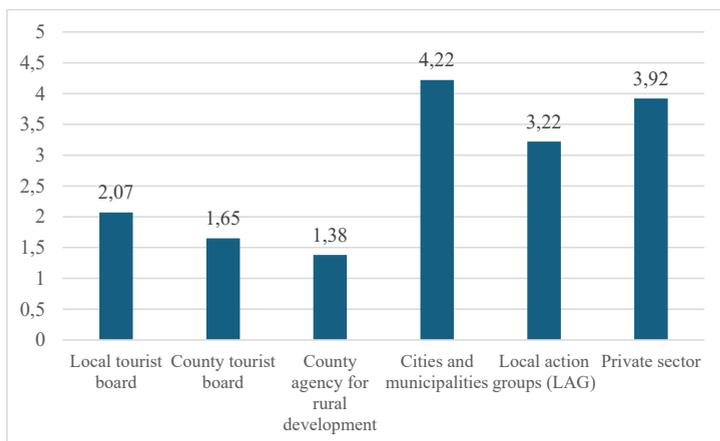

Source: Authors

The survey showed that respondents believe cities, municipalities, and the private sector can have the greatest influence on the development of digital transformation in rural tourism, followed by local action groups and the local tourist community. The respondents expect the least influence from the county tourist board and the county development agency.

The graph below presents the key challenges or threats of the digital transformation in the strategic development of rural tourism.

Chart 7 Key challenges (or threats) of applying the digital transformation in the strategic development of rural tourism
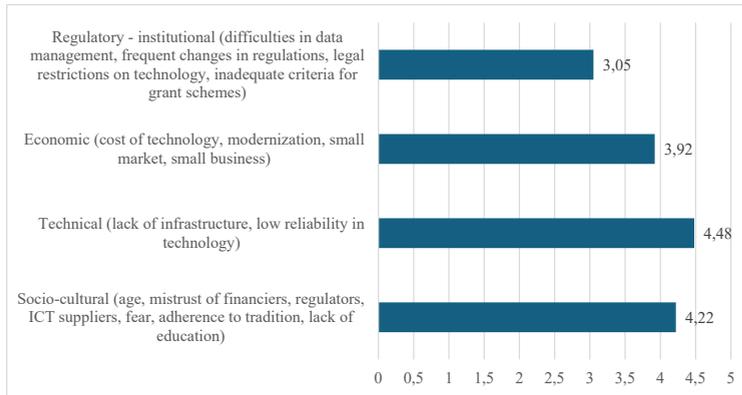
Source: Authors

In addition to quantified values and structured questions, the respondents were offered the option to independently write what they consider to be the greatest threat or challenge to the future digital transformation in the strategic development of rural tourism. By analyzing all the answers, it was concluded that the respondents believed that additional threats to the accelerated development of digital transformation could include young people leaving the countryside, unstimulating subsidies for young people, a very complex procedure for obtaining EU funds, and the higher cost of living in the countryside due to the distance from larger urban areas.

Chart 8 The most important positive effects of digital transformation in rural areas
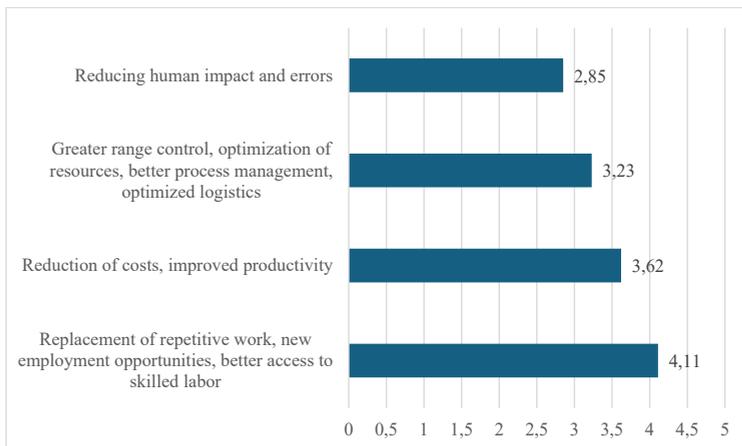
Source: Authors

In addition to the structured responses, the respondents also mentioned other positive effects of digital transformation. They repeatedly highlighted the benefits of better connectivity between people in rural areas, the ability to perform most jobs through digital applications, saving on travel costs, the potential for digitizing agricultural processes or mechanization, as well as the much greater availability of information and the latest knowledge online.

As shown in the previous charts, all stakeholders, municipalities and cities have the greatest potential impact on the digital transformation in the strategic development of rural tourism, followed by the private sector and local action groups, and only then tourist boards and agencies involved in rural development. The respondents believe that the greatest threat to the future development of digital transformation is of technical nature, i.e. insufficient development of digital infrastructure, followed by socio-cultural and economic factors, and finally the legislative-institutional framework. They believe that the development of digital transformation in rural areas could contribute most in cases involving repetitive actions, then to the reduction of business costs in general and the optimization of business processes, and slightly less to the reduction of human influence and errors.

The final question in the questionnaire was unstructured, allowing the respondents to express their own opinions on how the public organization they work for could influence the digital transfor-

mation in the strategic development of rural tourism. Dozens of responses were received, which the authors grouped, concluding that public organizations could actively participate in the digital transformation in the strategic development of rural tourism in the following ways:

- Additional employee education and transfer of knowledge to potential users

- Organization of additional training for end users

- Organization of study trips to regions with positive examples of good practice

- Creating basic conditions to prevent young people from leaving rural areas

- Informing owners of rural facilities about current trends in the tourism market

- Subsidizing the start-up of activities in rural areas

- Subsidizing production in rural areas

- Creating a range of events that will attract guests throughout the year.

The following is a crucial overview of the Kruskal-Wallis test results, a significant tool that demonstrates the impact of a county's location on various digital transformation factors in the strategic development of rural tourism clusters in the Republic of Croatia.

Table 2 Kruskal-Wallis test results on the influence of the location of an individual county on various digital transformation factors in the context of rural tourism clusters in the Republic of Croatia

Kruskal-Wallis test			
	χ^2	df	P
EXTERNAL FACTORS	15.82	2	< .001
TECHNOLOGICAL FACTORS	9.87	2	0.007
ORGANIZATIONAL FACTORS	2.19	2	0.334
SOCIO-DEMOGRAPHIC FACTORS	6.25	2	0.044

Source: Created by the authors based on research using the Jamovi application (Jamovi, 2024)

The table shows the Kruskal-Wallis test results, which was used to examine the impact of various factors on the digital transformation in the strategic development of rural tourism, grouped according to clusters of counties. The test showed statistically

significant differences for some factors, but not for all. External factors (EXTERNAL)–(χ^2 = 15.82, df = 2, p < .001) show a vital statistical significance. This means that external factors vary significantly across the clusters, which supports the claim that exter-

nal factors are more pronounced in the Continental Croatia cluster. Technological factors (TECHNOLOGICAL)–($χ^2$ = 9.87, df = 2, p = 0.007) also show a statistically significant difference between the clusters. This result indicates that the Adriatic Croatia cluster is probably more focused on technological factors, confirming the previous analysis. Organizational factors (ORGANIZATIONAL) are not statistically significant ($χ^2$ = 2.19, df = 2, p = 0.334), meaning that they do not differ significantly between clusters and do not constitute significant variability in this analysis. Socio-demographic factors (SOCIO-DEMOGRAPHIC)–($χ^2$ = 6.25, df = 2 and p = 0.044) show a statistically significant difference between the clusters, but at a slightly lower level. This result supports the claim that the socio-demographic aspect is more pronounced in the Slavonia-Baranja cluster.

These results show that external, technological, and socio-demographic factors significantly differ between clusters, confirming the existence of regional differences in approaches to and readiness for the digital transformation in the strategic development of rural tourism. Organizational factors, however, do not show significant differences between clusters, suggesting that regional specificities do not strongly impact this aspect. The following table shows the average distribution of digital transformation factors by clusters in Croatia.

Table 3 Average distribution of digital transformation factors by clusters in the Republic of Croatia

Cluster	External Factors	Technological Factors	Organizational Factors	Socio- Demographic Factors	Total
Adriatic Croatia	16.45	30.32	25.81	27.42	100.00
Continental Croatia	20.00	27.41	25.93	26.67	100.00
Slavonia and Baranja	16.43	28.21	24.64	30.71	100.00

Source: Authors

The data analysis, performed using the Kruskal-Wallis test, refuted the initial null hypothesis (H0), which suggested that the location of the county has no significant influence on the digital transformation factors in the strategic development of rural tourism in the Republic of Croatia. Instead, the results showed a statistically significant difference between the groups, supporting the alternative hypothesis (H1). Namely, the position of the county within the defined cluster has a significant influence on most digital transformation factors. External factors are more pronounced in the Continental Croatia cluster, which suggests the importance of external influences such as economic opportunities and support from the local community. On the other hand, technological factors are more pronounced in the Adriatic Croatia cluster, indicating that the region shows greater readiness for and access to new technologies that support digital transformation. The Slavonia-Baranja cluster stands out for its more pronounced socio-demographic factors, where the population's demographic characteristics significantly influence the approach to digital transformation.

The obtained conclusions suggest that each cluster shows specific characteristics that influence the development of digital transformation in rural tourism, emphasizing the need for adapted strategies that will consider local needs and potentials. Further analysis could help understand the specific factors within each cluster and enable the adaptation of policies and strategies for rural tourism development to regional differences.

4. Discussion of research results

Research conducted on a sample of all counties in the Republic of Croatia showed that the position of the county significantly affects the digital transformation factors in the strategic development of rural tourism. Using the Kruskal-Wallis test, the cluster differences were statistically significant in most critical factors. Based on the obtained results, the null hypothesis (H0) was refuted, which was based on the assumption that the position of the county has no statistically significant influence on the digital transformation factors. The alternative hypothesis (H1), which suggests that the position of

the county within the cluster influences the digital transformation factors, was supported. The analysis showed that external factors are more pronounced in the Continental Croatia cluster than technological factors in the Adriatic Croatia cluster. In contrast, the Slavonia-Baranja cluster is particularly sensitive to socio-demographic factors.

The obtained results reveal the complexity of the influence of location on the digital transformation of rural tourism in different regions of Croatia. External factors, which include economic and local community support, are most pronounced in the Continental Croatia cluster. This can be attributed to the need for financial and economic investments in this region, as it traditionally has a weaker tourism infrastructure. These factors emphasize the importance of external funding sources, such as state grants or international funds that could stimulate digital transformation in the continental parts of Croatia. Technological factors are most significant in Adriatic Croatia, which is not surprising given the development of the tourism infrastructure along the coast and the higher share of investments in digital technologies. The Adriatic region already has experience using technology to promote and provide tourism services, which is further reinforced by the need to attract international visitors, who expect a strong digital presence and availability. Technological infrastructure, including digital systems, applications, and quality IT support, are critical to coastal tourism facing growing global competition. The Slavonia-Baranja cluster shows significant sensitivity to socio-demographic factors. Since this region faces the challenges of depopulation and low economic activity, socio-demographic factors play a crucial role in the digital transformation process. The importance of the digital connection of the public and private sectors and lifelong education, which enables the inclusion of the local population in digitized tourist activities, was particularly emphasized. In such regions, training the local population to use new technologies and supporting small and medium-sized enterprises in their digitalization efforts could significantly contribute to the development of rural tourism.

This analysis confirms the findings of previous research that highlighted the importance of contextual factors in the success of digital transformation in tourism. Thees et al. (2021) and Roblek et al. (2021) also concluded that factors such as technology and demographic characteristics play an essential role in the digitalization of tourism. However, most previous studies focused on the general impact of these factors, while this research analyzes their specific roles within each cluster in Croatia. This approach enables a deeper understanding of the specifics of digital transformation in rural parts of the country, which is particularly important for developing regionally adapted strategies. The literature also emphasizes the importance of involving all stakeholders in the digital transformation process, which the research further confirms. Digital transformation is not only a technical process. However, it involves the coordination of the public and private sectors, the involvement of the local community, and the adaptation of technology to the specific needs of different stakeholder groups (Ferrari et al., 2021). As shown by the results, the success of digital transformation largely depends on each region's social, economic, and cultural factors.

These findings have significant practical implications for the implementation of the digital transformation in the strategic development of rural tourism. For example, in the Continental Croatia cluster, it is necessary to provide greater economic support and encourage the local community to get involved in digital projects. This may include subsidies for digitalization and strengthening cooperation between local authorities and tourism boards. In Adriatic Croatia, the focus should be on the further development and integration of advanced technologies that enable an improved digital presence. The development of applications and digital solutions for visitors can further improve the tourist experience. In the Slavonia-Baranja cluster, socio-demographic factors such as education and digital connectivity should be a priority. The organization of lifelong education and programs focused on digital literacy could significantly improve local readiness for digital transformation, which would encourage the retention of young people in rural areas and reduce economic migration. Also, the adaptation of technological solutions to the older population, which is often less inclined to use digital tools, can help in the integration of all demographic groups in the tourism digitalization process, thereby making digital transformation more inclusive.

The limitations of this study include a small sample size per cluster, which may limit the ability to obtain more accurate data at the national level. Another limitation relates to the subjectivity in the selection of respondents. For example, some questionnaires

may not fully reflect the real challenges of digital transformation, as they were completed by individuals who lacked complete insight into the topic.

Future research could include a more comprehensive national level and more respondents from all clusters, thus obtaining a more representative sample. International comparative research could also enable a deeper understanding of how cultural and social factors influence the digital transformation in the strategic development of rural tourism in different countries. Qualitative methods, such as interviews with local stakeholders, could provide additional insights into each region's specific challenges and opportunities, and enrich the understanding of the interaction between stakeholders in the transformation process.

In conclusion, this research underscores the importance of context in digital transformation. Different clusters within the Republic of Croatia exhibit specific characteristics in terms of access to and readiness for the digital transformation in the strategic development of rural tourism. While Adriatic Croatia is focused on technological factors, Continental Croatia emphasizes external factors, and Slavonia-Baranja highlights socio-demographic aspects. These findings highlight the need for regionally adapted strategies and policies that will take into account local characteristics, needs, and potential. The approach to the digital transformation in the strategic development of rural tourism requires the systematic involvement of all stakeholders, from the local community and the private sector to state bodies and institutions. Developing regional strategies for digital transformation in rural areas could significantly improve the competitiveness and sustainability of tourism in Croatia. This paper opens up guidelines for future research that can further shed light on the interrelationships of the digital transformation factors.

5. Conclusion

This research identified key factors influencing the digital transformation of rural tourism in the Republic of Croatia, emphasizing regional differences between clusters. Using the Kruskal-Wallis test, it was determined how specific factors differ be-

tween the clusters of Adriatic Croatia, Continental Croatia, and Slavonia-Baranja. Thus, the research provided clear answers to the research questions, confirming that the county's location significantly influences the digital transformation factors. The results of this research highlight the importance of contextual factors, such as economic support, technological infrastructure, and demographic characteristics, in shaping the approach to digital transformation. This further expands the existing knowledge about digitalization in tourism, highlighting specific opportunities and challenges for rural tourism within different clusters. Understanding how socio-economic conditions and local specificities can influence the application of digital technologies is essential, as it contributes to the more effective implementation of policies and strategies for developing rural tourism. Among the main limitations of the research are the size of the sample and its representativeness by clusters, which can affect the generality of the conclusions for all rural parts of Croatia. Another limitation lies in the possible subjectivity of the responses, as some participants may have needed more insight into all aspects of digital transformation. With this in mind, future research could include more extensive and diverse samples and expand to an international level, enabling comparative analysis and a deeper understanding of the role of cultural and social factors. Further research could also use qualitative methods, such as in-depth interviews, to explore specific challenges and opportunities in the digital transformation in the strategic development of rural tourism. This would provide additional insights into the interaction of different stakeholders in the transformation process, which could facilitate the application of tailored and sustainable digital strategies. In conclusion, this research highlights the importance of adapting strategies for the digital transformation in the strategic development of rural tourism to local conditions. A stakeholder-based approach can significantly improve the effectiveness of digital transformation, fostering the sustainable development of rural communities. The findings of this study offer valuable guidelines for further research and practical interventions, contributing the development of competitive and technologically advanced rural tourism in Croatia.

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EVENTS AS A CATALYST FOR THE DEVELOPMENT OF RURAL TOURISM IN OSIJEK-BARANJA COUNTY

Abstract

Purpose: The aim of this paper is to present the state of tourism in Osijek-Baranja County based on tourist arrivals and overnight stays collected from 2016 to 2021. It analyzes the events held throughout the year in Osijek-Baranja County and, through primary research, aims to determine whether these events can serve as motivators and catalysts for tourism development.

Methodology: Primary research was conducted on event attendance in Osijek-Baranja County using a random sample in September to gather opinions on whether these events can indeed serve as catalysts for tourism development. Additionally, internal statistical data from the Osijek-Baranja County Tourist Board covering the period from 2016 to 2021 were analyzed. These data were collected via the e-Visitor system and internal Tourist Board records.

Results: The results show that Osijek-Baranja County hosts numerous cultural and tourist events that significantly contribute to the development of rural tourism. The majority of respondents confirmed that these events are strong motivators and catalysts for tourism development. Spearman's correlation coefficient indicated no significant relationship between age and event attendance. The Mann-Whitney U test revealed a significant difference in the number of events attended by men and women, with men attending significantly more events than women, contrary to initial expectations.

Conclusion: The research concludes that the events analyzed have a significant impact on the development of rural tourism in Osijek-Baranja County. These events greatly enhance the visibility, promotion, and popularity of the county, positioning them as important catalysts for tourism development.

Keywords: Catalyst for tourism development, cultural and tourist events, overnight stays, rural tourism, tourist arrivals

1. Introduction

As one of the selective forms of tourism, rural tourism is a collective term used for various types of tourism (such as rural, hunting, wine, gastronomic, etc.) that take place in rural areas. Today's tourists are increasingly seeking to "purchase" experiences, meaning they want to experience something new and different. Along these lines, various civil society organizations, often associations, have emerged

to take on the role of organizers of "experiences" or public events that either are or have the potential to become tourism products and the reason why tourists visit a destination.

The aim of this paper is to present the most significant tourist events in Osijek-Baranja County and how important these events are for attracting tourists. Additionally, the research was focused on the attendance of specific events, which were selected based on their popularity, as outlined in the 2023 Annual Report on the Work Program Implementation of the Osijek-Baranja County Tourist Board.

Three hypotheses were formulated for the purposes of the research:

H1: The majority of respondents believe that events are significant catalysts for attracting tourists and developing tourism.

H2: There is a correlation between the age of tourists and event attendance.

H3: On average, women attend more events in Osijek-Baranja County.

2. Literature review

Rural tourism has a history, but in the Republic of Croatia, it remains relatively new, with less attention and fewer investments directed toward this branch of tourism compared to its primary forms. Rural tourism has the potential to become, and in certain micro-regions it already is, a primary driver of economic development, which is a prerequisite for the growth of gross domestic product and employment.

"Rural tourism is a type of tourism activity in which the visitor's experience is related to a wide range of products generally linked to nature-based activities, agriculture, rural lifestyle/culture, angling and sightseeing. Rural tourism activities take place in non-urban (rural) areas with the following characteristics: i) low population density, ii) landscape and land-use dominated by agriculture and forestry, and iii) traditional social structure and lifestyle" (Belošević et al., 2018, p. 9). Velimir Srića argues that "Croatia needs rural development projects that would integrate tourism and food production" (Srića, 2010, p. 238), thus potentially attracting a larger number of visitors.

Ballesteros and Hernández (2021) also discuss the promotion of rural tourism that is constrained by limited financial resources and marketing inefficiencies. They argue that rural areas often lack sufficient promotional strategies to highlight their unique offerings, which hinders their ability to attract a broader range of tourists. Addressing these limitations

through more effective marketing and collaboration among stakeholders could significantly enhance the visibility and appeal of rural tourism destinations.

"Rural tourism takes place in rural areas, so space is the dominant element that characterizes it. The term 'rural' is not clearly defined, and the theoretical definition of rural areas and rural tourism depends on the country and the author of the work dealing with it" (Nejašmić & Barišić, 2020, p. 5). The term 'rural tourism' is the broadest concept that encompasses all activities and forms of tourism taking place in rural areas. The concept of rural tourism is not identical to the concept of countryside tourism, nor to the concept of agrotourism. Both countryside tourism and agrotourism are subtypes of rural tourism. Countryside tourism encompasses only those tourist activities related to the village and rural environment, while agrotourism refers to the tourist offer of family-owned agricultural farms that provide them with additional income. According to Baćac (2011), the concept of countryside tourism is narrower than rural tourism and at the same time broader than farm tourism (a tourist rural family farm). It is related to the village environment and its immediate surroundings, as well as all its activities (agriculture, events, gastronomy, folklore, ethnology, and other economic activities).

In 1986, the Council of Europe defined the concept of rural tourism as tourism encompassing all activities in rural areas, not only those that can be classified as farm or agrotourism. Demonja and Ružić (2010) argue that rural tourism is tourism in rural areas with all the activities carried out in these places, and the most important features of such tourism are a peaceful environment, absence of noise, a preserved environment, interaction with hosts, local food, and acquaintance with rural activities.

Martínez et al. (2019) analyze the stability of rural tourism as a key factor for ensuring sustainable tourism development. They emphasize that maintaining stability in rural tourism operations is crucial for long-term success, as it allows destinations to balance environmental conservation with economic growth.

Yu et al. (2018) examine resident support for tourism development in rural communities in the Midwestern United States, focusing on the perceived impacts of tourism on community quality of life. Their findings indicate that positive perceptions of tourism-related economic benefits often lead to greater support among residents.

Today, clear criteria exist for defining the framework of rural tourism, but there is still a significant problem in practice related to determining the

boundary between tourism in general and rural tourism. More precisely, when discussing the development of rural tourism in continental Croatia, all previous research by most authors emphasize that it is an area with an exceptional natural and social potential but insufficiently valorized in Croatian tourism (Petrić, 2006; Ružić, 2009; Bartoluci, 2013; Bartoluci et al., 2014; Bartoluci & Petračić, 2015).

Bartoluci, Hendija & Petračić (2015) believe that rural tourism in Croatia may have a significantly more important role than the present one if the size of this area be taken into account. Furthermore, their research study shows that rural tourism in Croatia lags behind sun-and-beach holiday tourism in coastal Croatia and that numerous and diverse natural and social resources in continental Croatia are insufficiently employed.

Page & Connell (2006) argue that there cannot and does not exist a universal definition of rural areas due to the multidimensional, dynamic and complex nature of this type of tourism. According to Johnston et al. (2000, p. 718), as cited in Lukić (2010), rural areas encompass: areas dominated by agriculture and forestry or extensive land use; areas with small settlements and less centralization but with a pronounced connectedness to landscapes perceived as rural by most; and areas that promote a lifestyle that respects the environment and one's own life.

"Tourism in rural areas has today become a reality, a need and a wish of tourists, but also a carrying force and an instrument of rural areas development. In the new rural economy, the co-modification of rural landscape, culture and lifestyle is more important than the physical exploitation of rural land" (Todorović & Bjeljac, 2009, p. 455).

Rural tourism is based on an image or a set of images, shaped by the history, geography, and culture of the territory. These images must be communicated to 'sell' these places, this territory. But the images are coconstructed by both the tourist and the 'sellers' (Canoves et al., 2004, p. 756).

"Rural areas motivate tourist visits with their characteristics" (Ružić, 2009, p. 220).

The motives that make rural tourism interesting and acceptable (Duk-Byeong, &Yoo-Shik, 2008) are classified according to typology (Goeldner & Ritchie, 2003) as:

- physical, such as relaxation
- cultural, such as discovering new spaces

- interpersonal, such as socialization and meeting new people
- prestige, such as self-awareness and self-actualization.

Various works and research studies offer different approaches to understanding motivation in rural tourism, such as by nationality (Cha et al., 1995), destination (Jang & Cai, 2002), satisfaction and location (Yoon & Uysal, 2005), seniors (Jang & Wu, 2006), and events (Lee et al., 2004).

According to research by Bolfek et al. (2012), key starting points for the promotion and branding of Slavonia can be: rural tourism, events (various festivals, cultural and entertainment events), special interests, health tourism, and nautical tourism.

"Rural tourism's future lies in its ability to adapt to changing visitor expectations, particularly in offering authentic, personalized, and sustainable experiences that resonate with modern travelers seeking connection with nature and local cultures" (Lane & Kastenholz, 2015, p. 1148).

The Organisation for Economic Cooperation and Development (OECD) methodology, utilized for determining and distinguishing urban from rural areas, is based on population density. According to this methodology, the Republic of Croatia is categorized into predominantly rural regions, covering "more than 50% of the total area of Croatia" (Demonja & Ružić, 2010, p. 46), significantly rural regions, and predominantly urban regions. The Rural Development Program for the period 2014-2020 states that 99.24% of the total area of the Republic of Croatia, which belongs to predominantly rural or mixed regions, is inhabited by 3,217,117 residents, constituting 75.08% of the total population of Croatia.

According to the Croatian Tourism Development Strategy until 2020 (Government of the Republic of Croatia, 2013), seven rural regions are distinguished, one of which is the 'Slavonia, Baranja and Srijem' region, encompassing the entire Osijek-Baranja County. "It is estimated that rural tourism, including mountainous areas, accounts for approximately 3% of total international travel, with an annual growth rate of about 6%. Faced with underdeveloped domestic demand and an uninspiring environment, the Croatian rural tourism offer is developing extremely slowly. The exception is only Istria, and to some extent Osijek-Baranja County" (Government of the Republic of Croatia, 2013, p. 9).

2.1 The connection between tourism and events

Tourism is closely connected to events, as they often form an important part of the tourist offer that a destination can provide to its visitors. Likewise, events that are held at the international level can also be the main reason why tourists choose to visit a particular destination. In this way, tourism influences events, but events also influence tourism and can significantly increase the demand for a certain destination.

The relationship between events and tourism is a dynamic one, as events can significantly enhance the attractiveness of a destination, driving both visitor numbers and economic impact. Events, ranging from festivals and cultural celebrations to sports competitions and conferences, serve as focal points that draw tourists and foster community engagement.

Events can generate substantial economic benefits for local communities. They attract visitors who spend on accommodation, food, transportation, and souvenirs, contributing in that way to the local economy (Getz, 2012). For instance, sports events often lead to increased hotel bookings and restaurant patronage, significantly boosting local businesses (Duran & Pérez, 2020).

Patterson and Pan (2019) argue that events play a crucial role in promoting local culture and heritage, allowing communities to showcase their traditions and identity. Cultural festivals, such as music or art events, often attract tourists interested in authentic experiences and cultural immersion. This not only enhances community pride but also helps preserve local traditions. Patterson and Pan (2019) conclude that cultural events significantly enhance tourist interest and visitation, providing authentic experiences that attract diverse audiences to various destinations.

Overall, the connection between tourism and events is dynamic and can have a significant impact on the development of regions. In summary, the interplay between events and tourism is multifaceted, encompassing economic, cultural, and sustainable dimensions. Events serve as catalysts for tourism growth, fostering community development and enhancing the overall appeal of destinations.

According to Getz (2008), from a consumer perspective, it is necessary to understand who travels specifically for events and why, as well as who attends events while traveling. It is also important to explore the activities and spending patterns of 'event tourists' during and after events. Any demand-side approach should include an assessment of the value of events in promoting a positive destination image, place marketing in general, and

co-branding with destinations. On the supply side, destinations develop, facilitate and promote events of all kinds to meet multiple goals: to attract tourists (including reducing seasonality), to serve as a catalyst for urban renewal and increase the infrastructure and tourism capacity of destinations, to foster a positive destination image and contribute to general place marketing (including contributions to fostering a better place in which to live, work and invest), and to animate specific attractions or areas.

"Events offer a unique form of tourist attraction, ranging in scale from small community festivals, through to international trade fairs, and on to the largest of global sporting events. Events (sporting, cultural, business etc.) are an increasingly important motivator for tourism, figuring prominently in the development and marketing of most destinations and playing a growing role in destination competitiveness. When considering the scale and impact of events, they fall into four broad categories: i) local, ii) regional, iii) major, and iv) mega-events." (OECD, 2017, p. 11).

All kinds of events can act as a really important motivator for tourism and also "have the potential to act as catalysts for local development, and to deliver a range of economic, socio-cultural, environmental and other benefits associated with image, branding, and expansion of the visitor economy" (OECD, 2017, p. 11).

Apostolakis and Viskadouraki (2017) analyze the economic impact of cultural festivals on the local economy and the contribution of festivals to the local area in economic terms.

Bowdin et al. (2011) provide an overview of events management and its significance within the tourism sector. They highlight the strategic importance of events in enhancing destination appeal and fostering visitor engagement, underscoring the essential role of effective event planning.

According to Faizieva and Ruziev (2023), successful events place a high priority on creating a unique brand and achieving accurate market positioning. Research on marketing strategies has confirmed that defining a clear image and target audience has a significant impact on the ability to attract and retain tourists.

Eshuis et al. (2020) note that all kinds of events carry not only short-term impacts but also form long-term consequences in the spheres of tourism, culture, and economy. They also examine the role of festivals as key elements in shaping the image of regions and increasing their attractiveness.

Nordvall and Brown (2020) emphasize the economic aspects associated with festivals. It is important to note that festivals have a significant impact on the economy of the region in which they are held. One of the key points that the authors emphasize is the ability of festivals to attract a large number of tourists.

Duffy and Mair (2021) introduce dynamics into the discussion of the relationship between festivals and local traditions. They provide an analysis that raises doubts about whether festivals are always inextricably linked to unique local customs and practices. Instead, the authors identify that globalization and commercialization can influence festivals, changing their character and impact on culture and tourism.

All in all, understanding and comprehensively analyzing all the aspects highlighted by different researchers greatly enriches the understanding of the key role that events play in helping to stimulate the development of tourism. All kinds of events play an important role as an instrument of socio-cultural dynamics, contributing to economic development, shaping the image of the territory, and stimulating innovation processes in the region or town where they are held.

3. Methodology

For the purposes of this paper, empirical research was conducted in Osijek-Baranja County during September 2024. The questionnaire was compiled in Croatian and domestic visitors completed the questionnaire in Croatian. In addition to demographic questions about gender and age, the questionnaire included questions about the number of previous visits to 15 events held throughout the year in Osijek-Baranja County, as well as respondents' familiarity with each of these events. The research was conducted using online questionnaires distributed through various channels such as e-mails, social networks, instant messaging, and others. Respondents had to express their agreement or disagreement with the statements on a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The research was conducted through random selection of respondents, and the only condition was that they had heard of or visited one of the events in Osijek-Baranja County. A total of 150 valid questionnaires were collected during September 2024. The descriptive and inferential statistics were used in data analysis using a software package R Studios v. 4.3.

For the purpose of this work, the following methods were used: inductive and deductive methods, analysis and synthesis, comparative method, and content analysis method. Secondary data collected from the e-Visitor system of the Osijek-Baranja County Tourist Board were used and analyzed for the period from 2016 to 2021.

4. Tourist profile of Osijek-Baranja County

Located in eastern Croatia, Osijek-Baranja County is a region rich in cultural heritage, natural beauty, and diverse tourism offerings. The area is known for its historical sites, wine routes, and unique gastronomy, making it an appealing destination for both domestic and foreign tourists. The region is home to numerous historical landmarks, such as the city of Osijek, which features a well-preserved fortress and vibrant Baroque architecture. Cultural events, such as the Osijek Summer Festival, highlight local traditions and attract visitors interested in experiencing the region's rich cultural tapestry (Klemenčić, 2021).

Osijek-Baranja County is part of the Slavonia wine region, known for its high-quality wines, particularly whites like Graševina. Wine tours and tastings are popular activities that allow tourists to engage with local winemakers and learn about traditional viticulture practices (Škvorc, 2019). The region's cuisine is characterized by hearty dishes that reflect its agricultural roots, featuring local ingredients such as fish from the Drava River and seasonal vegetables (Berglund & Mandeville, 2020).

The natural landscapes of Osijek-Baranja County provide opportunities for various outdoor activities, including hiking, birdwatching, and cycling. The Kopački Rit Nature Park, one of Europe's largest wetlands, is a UNESCO Biosphere Reserve and offers a unique ecosystem that attracts nature enthusiasts and eco-tourists (Petrović & Pavić, 2021).

Osijek-Baranja County abounds in a multitude of natural and cultural attractions. These are the most significant cultural and tourist potentials that contribute to the recognition, visibility and promotion of the county:

- Osijek and Tvrđa
- State Stud Farm Đakovo
- Bizovačke Toplice (Bizovac Spa)
- Kopački Rit Nature Park
- Pejačević Castle in Našice
- Cathedral of St. Peter in Đakovo, Đakovo Embroidery and Đakovo Horsemen's Procession. "UNESCO has included the 'Spring

Procession of Queens or Ljelje from Gorja-
ni' on the Representative List of the Intangi-
ble Cultural Heritage of Humanity." (Osijek-
Baranja County, 2017, p. 20)

- Prandau-Mailath Castle in Donji Miholjac
with a protected landscape

- Prandau-Normann Castle in Valpovo with a
protected park and Valpovo Summer, one of
the most famous tourist events in the town
of Valpovo.

According to the Tourism Master Plan of Osijek-
Baranja County, rural tourism in the county ap-
pears in two forms:

"- Rural lifestyle - experiencing authentic village life

- Active rural tourism - using rural areas for
various (contemporary) activities" (Osijek-
Baranja County, 2017, p. 12).

The following section of the paper analyzes the
e-Visitor system data for the period from 2016 to
2021 for Osijek-Baranja County.

4.1 e-Visitor data analysis

For the purposes of this paper, internal statistics
from the Osijek-Baranja County Tourist Board were
analyzed, mostly based on data reported through
the e-Visitor system.

The situation in Osijek-Baranja County in terms of
arrivals and overnight stays during the observed
period from 2016 to 2021 is shown in Table 1.

Table 1 Arrivals and overnight stays of tourists in accommodation facilities in Osijek-Baranja County

2016	2017	2018	2019	2020	2021
ARRIVALS					
88,586	94,098	100,415	111,195	47,849	79,970
OVERNIGHT STAYS					
178,826	188,562	202,287	234,029	119,298	180,734

Source: Authors (based on the statistics provided by the Osijek-Baranja County Tourist Board)

Based on Table 1, it is evident that the number of
tourist arrivals and overnight stays increased each
year, with a decrease occurring in the COVID-19
pandemic year. A noticeable recovery in the num-
ber of tourists occurred in 2021, with a significant

increase in the number of both arrivals and over-
night stays. Table 2 shows the proportion of domes-
tic and foreign tourists in the total number of tour-
ist arrivals and overnight stays in Osijek-Baranja
County.

Table 2 The ratio of domestic/foreign tourists in Osijek-Baranja County in terms of arrivals and overnight stays

2016	2017	2018	2019	2020	2021
ARRIVALS – Domestic tourists					
57,298 (64.7%)	59,052 (62.8%)	62,121 (61.9%)	69,923 (62.9%)	37,129 (77.6%)	57,759 (72.2%)
ARRIVALS – Foreign tourists					
31,288 (35.3%)	35,046 (37.2%)	38,294 (38.1%)	41,272 (37.1%)	10,720 (22.4%)	22,211 (27.8%)
OVERNIGHT STAYS – Domestic tourists					
110,292 (61.7%)	113,070 (60%)	118,600 (58.6%)	137,767 (58.9%)	78,586 (65.9%)	111,436 (61.7%)
OVERNIGHT STAYS – Foreign tourists					
68,534 (38.3%)	75,492 (40%)	83,687 (41.4%)	96,262 (41.1%)	40,712 (34.1%)	69,298 (38.3%)

Source: Authors' analysis (based on the statistics provided by the Osijek-Baranja County Tourist Board)

Table 2 clearly shows that the majority of tourists arriving and staying in Osijek-Baranja County are domestic. However, it is worth noting that in 2019, which the employees of the Osijek-Baranja County Tourist Board emphasize as an exceptionally successful year for tourism, the ratio between foreign and domestic tourists was the lowest ever recorded. This suggests that the concerted efforts to promote rural tourism in Osijek-Baranja County, along with the awards given to tourism entities in the area, have extended beyond Croatia's borders, which is certainly a valuable guideline for further work and improvement in the tourism and hospitality sector.

The age distribution of guests in the years 2019, 2020, and 2021 is as follows:

Table 3 Structure of tourists by age groups from 2019 to 2021

Age	Overnight stays	Arrivals	Overnight stays	Arrivals	Overnight stays	Arrivals
	2019		2020		2021	
0-5	1,802	718	1,185	309	1,583	606
6-11	4,510	1,777	1,876	658	3,108	1,468
12-17	9,921	3,917	5,173	1,218	5,903	2,299
18-24	24,698	9,417	12,611	4,474	20,470	7,446
25-34	47,794	22,538	29,075	11,531	40,733	17,812
35-44	52,668	26,954	29,644	12,995	42,264	20,239
45-54	43,847	22,278	21,641	9,643	35,011	16,587
55-64	29,943	14,873	12,316	5,227	20,325	9,224
65 plus	18,846	8,723	5,777	1,794	11,337	4,289

Source: Authors' analysis (based on the statistics provided by the Osijek-Baranja County Tourist Board)

It can be seen in Table 3 that the travelers aged 35 to 44 generated the highest number of arrivals and overnight stays in all years analyzed.

5. Events in Osijek-Baranja County

An event as a tourism product can be extremely important for any destination because it can attract a large number of visitors and tourists who spend money in that specific destination, thereby generating revenue for tourism service providers and producers of tourism products. The event can be the primary motive for tourists to visit a destination or it can be an additional attraction within the destination. Moreover, an event can be a decisive factor in choosing a destination because it often serves to brand a specific location, so a tourist may become interested in the destination itself, even if the particular tourism event is not the main attraction for them.

Hernandez Mogollon et al. (2014) state that events have become an essential element in the tourism development of destinations, as they attract visitors, encourage investment, improve the image of a place, and boost the local economy.

"The attractiveness of cultural, sports, entertainment, religious, scientific, and economic events is determined by the type and significance of the event, as well as the location and timing of their occurrence. Practice has shown that entertainment and sports events are the most visited ones" (Vrtiprah & Sentić, 2018, p. 271).

An increasing number of global and European tourist destinations are seeking to occupy a specific niche in the tourism market by positioning themselves through various marketing tools, often centered around attractive events. Vrtiprah (2006) emphasizes that the task of tourism organizations worldwide, including those in the Republic of Croatia, is to transform the culture of a destination into a tourism product. She points out that culture or heritage is not limited to heritage and historical traditions, but also represents a valuable resource that can be commercialized for the purpose of promoting a tourist destination. In this way, she links heritage with tourists' need for active vacation and experiences. Furthermore, she connects the experi-

ences with event tourism, arguing that it becomes the task of tourism organizations to integrate events and natural attractions of a destination to create a complementary tourism product. In other words, all these elements serve as a catalyst for the development of tourism in a destination.

There is no systematic platform at either national or local level through which event attendance in Croatia could be tracked and statistically recorded. Few event organizers keep records of attendance, especially for non-ticketed events. Events with tick-

et sales can provide data based on the number of tickets sold and the actual number of actual attendees. Other attendance data may be obtained from interviews with organizers or from their statements in the media, but these are usually subjective estimates. Another source of data on event attendance is the number of overnight stays recorded on the days and at the locations of specific events.

Table 4 below shows the most significant events, along with attendance figures for some of them, for which visitor numbers were available.

Table 4 *The most popular events in Osijek-Baranja County according to event attendance*

EVENT	DATE/PERIOD OF EVENT	EVENT ATTENDANCE
ĐAKOVAČKI VEZOVI	June	over 150,000
VINKOVCI AUTUMN FESTIVAL	September	over 150,000
THE DAYS OF THE FIRST CROATIAN BEER	September	over 50,000/a couple of days
PANNONIAN CHALLENGE	May and June	over 20,000
PANNONIAN BOOK FESTIVAL	May	over 17,000
HEADONEAST	October	over 12,000
DANUBE ART FESTIVAL	June	over 10,000
WINE AND ART EVENING – WINE FAIR	June and July	over 4,000
WINE OS	January	over 4,000
UFO-URBAN FEST OSIJEK	August	No data available
DOBRO WORLD CUP–GYMNASTICS WORLD CUP	May	No data available
SUMMER OF YOUNG PEOPLE IN OSIJEK	June	No data available
FERIVI HALF MARATHON	April	No data available
CRAFT BEER FESTIVAL	May	No data available
OSIJEK SUMMER OF CULTURE	June, July	No data available

Source: Made by authors based on different sources

As shown in Table 4, events in Osijek-Baranja County take place throughout the year, with the majority occurring during the summer. The most attended events are also the most popular ones, including Đakovački vezovi, the Vinkovci Autumn Festival, the Days of First Croatian Beer, Pannonian Challenge, the Pannonian Book Festival, HeadOnEast, and the Danube Art Festival. Additionally, for many of the selected events, we were unable to find data due to the lack of a unified platform or system that tracks such information. All the events analyzed, for which attendance data were available, are exceptionally well-attended and popular among visitors.

Getz (2005) emphasizes the equal importance of both the visibility of an event and the visibility of a

destination, noting that both are equally important for making a region attractive and thereby increasing the number of tourist visits and overnight stays. The websites of Osijek-Baranja County tourist boards provide information about almost all events taking place in these communities. However, these events are generally not categorized, only a few websites provide detailed information, and very rarely do they include links to the events' websites or social media pages. For example, the Baranja Tourist Board website displays only current events, typically posted no earlier than a month before the event, which often prevents tourists from planning their visits in a timely manner.

6. Results and discussion

The research was conducted online (via private e-mails and social networks) in September 2024 on a random sample of 150 respondents. The goal of the research was to get an insight into how many people had heard about events in Osijek-Baranja County, how many of them had attended these events, and ultimately, to what extent these events motivated them to visit the county. Although the sample size is relatively small, the results of this research can serve as preliminary research for some future, more extensive studies. All data were processed using the statistical software R Studio.

Table 5 shows the gender distribution and number of respondents in the conducted research.

Table 5 Age of participants by gender

GENDER	N	%	M	SD	Min	Max
FEMALE	80	53.3%	39.5	9.7	23	72
MALE	70	46.7%	43.7	13.0	22	72
Total	150	100.0%	41.4	11.4	22	72

M – mean; SD – standard deviation; Min – minimum value; Max – maximum value.
Source: Authors

In Table 5, it can be seen that there were a total of 150 respondents, of whom 80 were female (53.3%) and 70 were male (46.7%). The age of female respondents ranged from 23 to 72 years, while the age of male respondents ranged from 22 to 72 years.

Graph 1 Respondents by gender
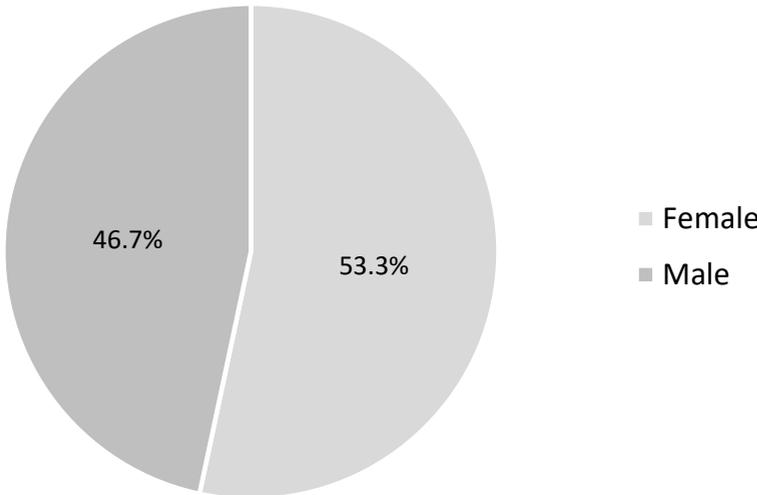
Source: Authors

Graph 2 shows the respondents' level of familiarity with events taking place in Osijek-Baranja County.

**Graph 2 Familiarity with events in Osijek-Baranja County**
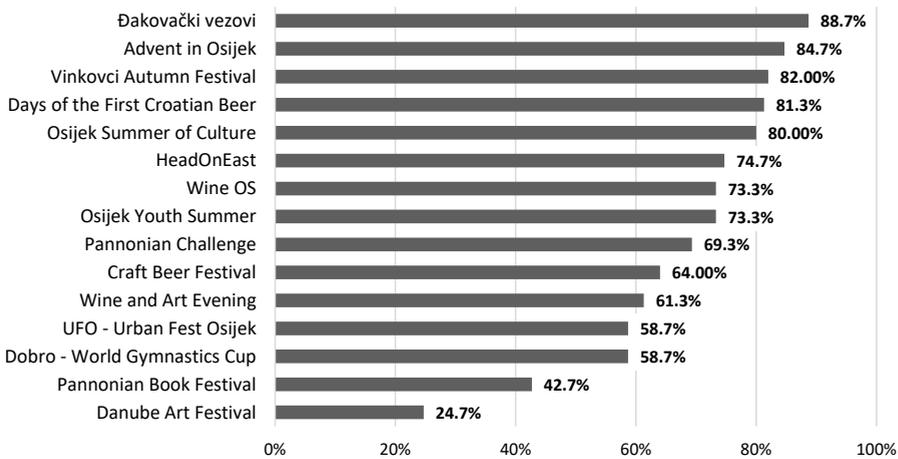
Source: Authors

Most of the participants heard about Đakovački vezovi (88.7%), Advent in Osijek (84.7%) Vinkovci Autumn Festival (82.2%), the Days of the First Croatian Beer (81.3%), the Osijek Summer of Culture (80.0%), and HeadOnEast (74.7%), while the fewest respondents heard about the Danube Art Festival (24.7%).

Graph 3 below shows the events most frequently attended by respondents.

Graph 3 Event attendance in Osijek-Baranja County
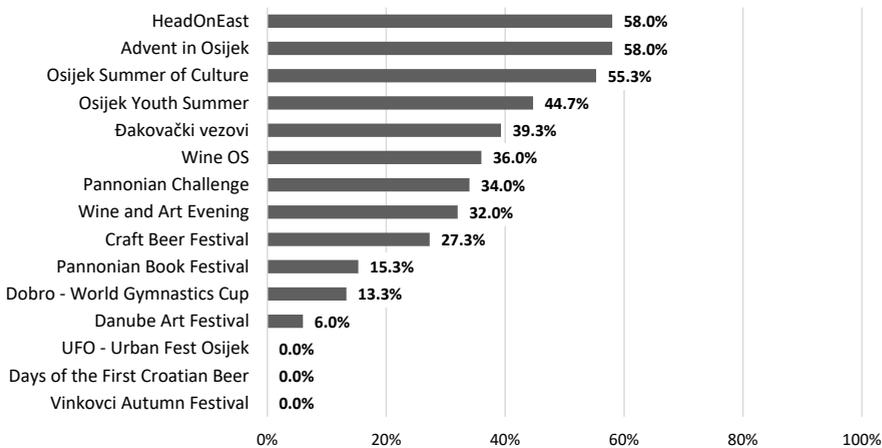
Source: Authors

HeadOnEast, Advent in Osijek (58%), and the Osijek Summer of Culture (55.3%) are the events most frequently attended by the respondents. On the other hand, Urban Fest Osijek, the Days of the First Croatian Beer, and the Vinkovci Autumn Festival were not attended by any of the participants in this study.

Table 6 below presents a summary of events that respondents were familiar with and had attended.

Table 6 Number of known and attended events (total number of events = 15) among 150 respondents

EVENTS	n	M	SD	Min	Max	Median
Known events	15	10.5	3.8	1	15	11
Attended events	15	5.6	3.6	0	15	5

N – the total number of events that respondents could choose from.
Source: Authors

As shown in Table 6, respondents were familiar with an average of 10.5 events and attended an average of 5.6 events.

The following sections analyze the research hypotheses.

H1: The majority of respondents believe that events are significant catalysts for attracting tourists and developing tourism.

Table 7 shows the distribution of participants' responses as to events that can be a significant catalyst for attracting tourists. Responses were measured using a 5-point Likert scale, where 1 indicates strong disagreement and 5 indicate strong agreement with the statement.

Table 7 The distribution of participants' responses to the statement: "Events can be a significant catalyst for attracting tourists to a destination" (N = 150)

Answers	f	%
1 – I completely disagree	0	0.0%
2 – I disagree	2	1.3%
3 – I neither agree nor disagree	6	4.0%
4 – I agree	27	18.0%
5 – I completely agree	115	76.7%
Total	150	100.00%

Source: Authors

As shown in Table 7, the majority of participants (76.7%) agree with the statement that events can be a significant catalyst for attracting tourists to a destination. Only 1.3% of respondents disagree with this statement, while 4% remain neutral.

Table 8 The distribution of responses to the question: "Do you think that events are a good catalyst for the development of tourism in Osijek-Baranja?"

Answers	f	%
Yes	146	97.33%
No	2	1.33%
I don't know	2	1.33%
TOTAL	150	100.00%

Source: Authors

A total of 97.3% respondents believe that events are a significant catalyst for the development of tourism in Osijek-Baranja County.

Table 9 The distribution of responses to the question: "Do events motivate you to visit Osijek-Baranja County?"

Answers	f	%
Yes	128	85.33%
No	11	7.33%
I don't know	11	7.33%
TOTAL	150	100.00%

Source: Authors

A total of 85.33% respondents believe that events motivate them to visit Osijek-Baranja County.

Tables 7, 8, and 9 show that the majority of respondents agree that events can be a significant catalyst for them to visit a destination. Therefore, **hypothesis H1 is accepted.**

H2: There is a relationship between the age of tourists and event attendance.

We tested the relationship between age and the number of events attended using Spearman's correlation coefficient. The results are shown in Table 10.

Table 10 Relationship between the age of respondents and the number of events attended tested using Spearman's correlation coefficient

Parameter	Values
N	150
Spearman's correlation coefficient	0.07
Degrees of freedom (df)	148
p-value	0.42

Source: Authors

Table 10 shows that there is no correlation between age and event attendance ($r = 0.07$, $p = 0.42$). Based on these results, **hypothesis H2 is rejected.**

H3: Women attend more events within the Osijek-Baranja County

We tested the difference in the number of attended events with the non-parametric Mann-Whitney U test. The results are presented in Table 11.

Table 11 Difference in event attendance between male and female participants tested by the Mann-Whitney U test

Parameter	Values
N	150
Mann-Whitney U test	3549.5
p-value	< 0.01

Source: Authors

Table 11 shows that there is a significant difference in the number of events attended between women and men in this sample ($U = 3549.5$, p-value < 0.01). Contrary to expectations, male respondents attended significantly more events than female respondents ($Median_{Male} = 7$, $Median_{Female} = 4$). Based on these results, **hypothesis H3 is rejected.**

7. Conclusions

The rural tourism offer in Osijek-Baranja County is rich, diverse and attractive, greatly supported by various events held throughout the year. The region attracts a large number of visitors, testifying to the quality of its tourism offering. Osijek-Baranja County, with its rich cultural and tourist offerings, provides a wide array of interesting events throughout the year, which significantly contributes to the promotion and visibility of this region. Ultimately, this is reflected in the growth of tourist arrivals and overnight stays. This paper analyzes data from 2016 to 2021, collected through the e-Visitor system and provided by the regional Osijek-Baranja Tourist Board. The analysis shows that the number of tourists has increased year by year, with a noticeable drop only in 2020 and 2021 due to the COVID-19 pandemic, which temporarily halted many activities.

For the purposes of this paper, primary research was also conducted among randomly selected respondents in Osijek-Baranja County to gain insight into their familiarity with events in the county, whether they had attended any of these events, and ultimately, to what extent they view events as a motivator or catalyst for visiting Osijek-Baranja County.

The research results showed that the majority of respondents consider events to be a significant incentive, motivator, and, therefore, a catalyst for visiting Osijek-Baranja County. Respondents were presented with a list of 15 events held throughout the year in Osijek-Baranja County and were asked to indicate how many of these events they had heard of them and how many they had attended. The results indicated that the most well-known events, according to the respondents, were Đakovački vezovi (88.7%), Advent in Osijek (84.7%), the Vinkovci Autumn Festival (82.2%), the Days of the First Croatian Beer (81.3%), the Osijek Summer of Culture (80.0%), and HeadOnEast (74.7%). On the other hand, only 24.7% of respondents were familiar with the Danube Art Festival (24.7%).

HeadOnEast, Advent in Osijek (58%), and the Osijek Summer of Culture (55.3%) were the most attended events among respondents. Urban Fest Osijek, the Days of the First Croatian Beer, and Vinkovci Autumn Festival were not attended by any participants in this study.

The results of our primary research confirm that events can indeed be a significant motivator and catalyst for visiting Osijek-Baranja County. However, efforts should be made to improve their visibility and popularity. For some of the events analyzed, we were unable to obtain specific information, such as attendance data.

We recommend the creation of a unified platform dedicated to events, which would enable event news and participant registration, offering clearer insights into individual event attendance. If this platform proves successful and useful, it could be expanded to other counties in Croatia and beyond.

Although our research included only 150 respondents, this study can serve as a pilot for more detailed and larger-scale research with a broader sample of respondents, focusing on events as important catalysts for tourism development. Future studies could include additional variables such as age, gender, number of children, income, and similar factors, allowing for correlations and comparisons with event attendance.

During the research, certain limitations were observed. The primary limitations included the lack of statistical data and general information about tourism in rural areas of Croatia, specifically in Osijek-Baranja County, as well as the absence of a theoretical distinction between rural and countryside tourism (by the Ministry of Tourism). Another limitation was the lack of valid information on the number of visitors for most events analyzed in this paper. To address this, it is necessary to develop a model for collecting data on the number of visitors, allowing for effective monitoring and providing a foundation for future event development.

Additionally, there is a need to develop a new strategy focusing on rural tourism, especially emphasizing the continental parts of Croatia, as rural tourism in the continental region differs significantly from that in coastal regions. Furthermore, it would be ideal to create a unified platform at the Osijek-Baranja County level where all rural tourism stakeholders could collaborate, network, and offer a unique tourism product. If it were established and successful, the platform could be expanded to encompass all rural regions of Croatia and beyond.

In conclusion, our research study shows that events hold significant potential and serve as powerful motivators and catalysts for attracting tourists to Osijek-Baranja County.

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CONSUMER PERSPECTIVES ON PHYSICAL GOLD: EXPLORING HEDONIC VALUE ACROSS GENERATIONS THROUGH MULTIDIMENSIONAL SCALING

Abstract

Purpose: The study explores the perceptual differences between pre- and post-liberalization generations in India regarding the hedonic value of physical gold. The objective was to map and compare the perceptions of women from two generations regarding the hedonic value of gold.

Methodology: A survey was administered to consumers from two generations within the same household to ensure homogeneity, specifically targeting married daughters and their mothers. Participants rated various attributes of gold on a ten-point scale based on their perceived similarity to gold. The study employed the Multi-Dimensional Scaling technique for the analysis.

Results: The analysis highlights generational differences in the perception of gold. The pre-liberalization generation viewed gold as fashionable but not durable or precious, valuing its glitter but not its elegance or beauty. In contrast, the post-liberalization generation saw gold as durable and precious but not fashionable, associating it positively with glitter and elegance. Both generations agreed that gold does not enhance beauty but appreciated its glitter. The perception of the younger generation is shaped by globalization and the availability of alternatives like imitation jewelry.

Conclusion: The findings of the study highlight how cultural shifts and market changes influence generational attitudes toward a cultural good like gold in India, with implications for marketers and retailers in the jewelry and similar industries.

Keywords: Gold jewelry, hedonic value, perception, culture, consumer behavior, gold buyer behavior

1. Introduction

Gold is the oldest known precious metal that holds ample significance in human history and culture. Gold is the most malleable and ductile of all metals. Beyond its physical attributes, gold's signifi-cance also extends to its role as the reserve asset for central banks. It possesses outstanding physical and chemical properties ideal for technological applications. Due to all these properties, gold exists in several forms, with more than half of it found in the form of jewelry–primarily because of the cul-

tural and religious significance associated with gold across different cultures worldwide. Considered synonymous with luxury and wealth, it serves as an important financial asset, regarded as a currency, a store of wealth, and a risk diversifier (Mehrotra, 2004).

Gold offers multiple values: firstly, as a hedge against risk and its other financial attributes, and secondly, through the cultural meanings associated with it (Starr & Tran, 2008). Liu (2016) examined the determinants of gold consumption in emerging markets, identifying three broad categories influencing gold demand: consumer disposable income, environmental factors, and the perceived value of gold. Perceived value is influenced by hedonic, symbolic, and utilitarian values.

The application of gold spans several fields, including electronics, medicine, and dentistry. Even as an innovation enabler in new technologies, the metal is multifaceted (Appadurai, 1986). This multidimensional nature of gold would mean that gold's perception across different generations is subject to change due to varying cultural contexts, and a study addressing this would be highly insightful. Gold in India serves many functions and wearing it carries several implications. Most obviously, it is a form of adornment and a status symbol (Prasad, 2010).

Using data from the World Values Survey, Inglehart and Baker (2000) found pieces of evidence of both massive cultural changes and different cultural traditions. The study identified a shift from absolute norms and values to those which are rational, tolerant and trusting, and driven by economic progress. This is critical as economic progress is one of the key outcomes of globalization. Appadurai (1990) discussed the five popular scapes of globalization, i.e. ethnoscape, mediascape, technoscape, financescape, and ideoscape. All of this can lead to transformations in culture. While the direction of culture change may be ambiguous, the change itself is definite. Hassi and Storti (2012) explained the three possible directions of change: heterogenization, homogenization, and hybridization. Homogenization refers to stronger differences or distinctiveness between cultures as a result of the flows, while homogenization is the other extreme, which refers to a scenario where all the societies fall into a homogenous (undifferentiated) culture. The last form of change is hybridization, which is between heterogenization and homogenization, wherein both external and internal flows interact and lead

to a unique hybrid blend of different cultures. The present study will hence attempt to measure the direction of this change when it comes to the perception of gold.

Andrlić et al. (2023) looked into the change in perception toward the symbolic value of gold. Building on this, the present study adopts a similar methodology to measure the shift toward another critical dimension of gold: its hedonic value. The study (Andrlić et al., 2023) provided evidence of polarization in the perception of gold's symbolic value, with the younger generation holding on more strongly to its symbolic significance. This finding can be justified since symbolism is deeply linked to the sociocultural context that produced it (Pizzimenti, 2013). Hedonism is the psychological feeling a customer undergoes while buying or consuming a product, which distinguishes it from symbolism. However, the foundation of hedonic value lies in culture, as individual differences, such as ethnicity, gender, etc., influence the emotions and beliefs of a consumer, and hence the feelings as well (Hirschman & Holbrook, 1982).

2. Theoretical framework

2.1 Hedonic consumption

Consumer behavior is a multifaceted field, with its interdisciplinary nature highlighted by numerous studies (Macinnis & Folkes, 2010). Early research in this area emphasized the rationality of consumers, positing that individuals make decisions aimed at maximizing their satisfaction (Friedman, 1957; Marshall, 1890; Samuelson, 1938; Smith, 1776). Over time, theories of consumer behavior have evolved to incorporate the complexities underlying consumer actions (Alyahya et al., 2023). Broadly speaking, the factors influencing consumer behavior can be categorized into hedonic, utilitarian (Scarpi, 2020), and symbolic dimensions (Kriaučiūnaitė-Lazauskienė & Zitkiene, 2019).

As societies progress economically, there is often a shift in consumer values from basic, rational considerations to more hedonic ones, focusing on feelings, leisure, and enjoyment (Maslow, 1943; Hirschman & Holbrook, 1982; Campbell, 2018). Recognizing hedonic values—those that address the experiential aspects of consumption—is crucial as they extend beyond mere functional needs (Chitturi et al., 2008; Babin et al., 1994; Hirschman & Holbrook, 1982). Furthermore, economic progress,

particularly following the liberalization of an economy, can lead to shifts in consumer perceptions of commodities, reflecting these evolving values.

2.2 Hedonic value of gold

Hedonic value refers to customer perception of gold's appearance and aesthetic properties (Liu, 2016). Attributes include whether gold ornaments are perceived as fashionable, appealing, elegant, enhancing beauty, the best option for making jewelry, retaining glitter, durable, and precious. This is more subjective compared to the utilitarian values (Moors, 2013).

Perceptions of gold vary significantly across cultures, influencing consumer preferences. In markets such as China and India, the demand for gold-colored iPhones is notably high. CNBC reported that gold is the most popular color among Apple iPhone customers in China (McClam, 2013), while Apple does not typically offer gold-colored iPhones in most Western markets.

Gold artifacts, particularly jewelry, are aesthetically pleasing and highly valued in these cultures. The hedonic value of gold is reflected in its use as jewelry or adornment, where it is considered both beautiful and precious (Fernandez & Veer, 2004). Gold's reflective quality makes jewelry shine, a feature highly sought after in China and India. Additionally, the bright color of gold is appealing in these countries. Unlike other metals, gold does not oxidize or tarnish, ensuring that it retains its appearance over time. Furthermore, gold is seen as fashionable by women of earlier generations (Chitradevi, 2017).

2.2.1 Components of hedonic value of gold

The hedonic value of gold encompasses various factors that shape consumer preferences and perceptions. Aesthetic appeal is a key component, as the design and appearance of a product significantly influence consumer preferences (Bloch, 1995; Reimann et al., 2010). Another crucial factor is durability, with the longevity of a product playing a critical role in consumer decisions (Liu, 2016; Zeithaml, 1988). The color of gold also affects purchase decisions, with preferences for color varying across different cultures (Madden et al., 2000).

Beauty and preciousness are additional factors that contribute to a consumer's identity, with perceptions often shaped by the cultural meanings and values associated with the product (Fernandez &

Veer, 2004; Mihaly & Rochberg-Halton, 1981). Elegance, defined as a quality of being graceful in appearance, can significantly influence a consumer's sense of extended self (Huang & Yang, 2010). The concept of appeal is particularly relevant in the context of wearing gold jewelry during special occasions, where it serves as an extension of the self, enhancing its prominence (Belk, 1988; Chaisuriyathavikun & Punnakitikashem, 2016).

Furthermore, as the economy opens up to competing products, preferences for gold as the metal of choice for jewelry may evolve. This shift can impact perceptions of fashionability, making it essential to assess whether gold continues to be viewed as fashionable amid changing preferences (Chitradevi, 2017).

3. Objective of the study

Research objective	Research question
To analyze and compare the perception of the hedonic value associated with gold among female consumers from pre-liberalization and post-liberalization cohorts.	How does the perception of the hedonic value of gold differ between pre-liberalization and post-liberalization generations of female consumers?

4. Hypothesis

Inglehart (1997) explores the cultural changes brought out by modernization and post-modernization and explains how the shifts affect values and behaviors. Liberalization and Globalization have triggered drastic transformations in the social realms of India, with economic policies driving changes in elements of society such as employment, income, etc. (Naidu, 2006). Statt (1997) discusses the influence of social class on consumer behavior, noting that differences in social classes lead to a stratified society, albeit unintentionally. Different strata exhibit different sets of behavior, as emphasized by Shavitt et al. (2016). The second most important component that impacts the perception of physical gold is hedonism. Hedonic value is primarily related to the self, encompassing dimensions such as stimulation and identification, with identification addressing the need to express one's ideal self (Hassenzahl, 2004).

H1 – Liberalization in India has an impact on consumer perception of the hedonic value of gold.

H0 – Liberalization in India does not have an impact on consumer perception of the hedonic value of gold.

The present study hence aims to measure the differences in perception between the pre- and post-liberalization generations regarding the hedonic dimension of physical gold. By examining two generational cohorts based on their marriage timing relative to India's globalization era, the research seeks to uncover cultural dynamics and shifts in values toward gold. Utilizing a generational dyad method, where samples from both generations within the same household were studied, this research provides a nuanced understanding of how perceptions of gold have evolved.

5. Materials and methods

The researchers opted for a descriptive design. The methodology included primary data collection from gold consumers at different stages, focusing on the transformation in the socio-cultural connotations associated with gold in households in Kerala. The study was conducted among two generations of gold consumers. To capture generational changes, the researchers administered questionnaires to consumers belonging to two generations within the same household, identifying each category's perception of the hedonic value of gold. Measuring processes that happen across dyads–such as parent and child, teacher and student, etc.–cannot be captured by surveys conducted in isolation (Kenny et al., 2006). Given that the commodity under study was gold, women were selected as the target, because women tend to dominate all buying roles in the gold purchase decision-making process (Pathy et al., 2021).

5.1 Population and sample

The population was divided into two cohorts: women who married before the impact of liberalization and those who married afterward. The average marriage age of women in India, identified as 22, was used as a reference point. Accordingly, women born before 1976 and those born after 1976 were thus selected as the two sample sets. Women born in 1976 would have been 20 years old by 1996, around which time they would have begun to experience the effects of liberalization over the next 6 to 8 years.

The study employed a generational dyad sampling method to account for possible diversity between the two sets of customers, considering factors such as income, religion, and lifestyle, which may impact perceptions. Using this method, the researcher selected pairs from each generation within the same family (van Gaalen et al., 2008). In this context, each pair included a mother, born before 1976, and her married daughter, born after 1976.

5.2 Research instrument

The study examined the hedonic values of gold and the various components associated with it. In the data collection tool, the researcher listed these components and asked the respondents to rate each aspect on a ten-point scale, based on how strongly they associate each property with physical gold. A rating of 10 indicated a strong association with gold, while a rating of 1 indicated no association at all. This approach allowed for the visualization of perceptual differences, making comparisons between respondents possible.

5.3 Generational dyad method

Shapiro (2004) used a generational dyad methodology to collect data, aiming to measure and compare how parents and their adult children perceived their relationships with each other. The study revealed significant disagreements between parents and children regarding their views on their relationships.

Similarly, Curasi and Arnould (2004) employed the same methodology, though for a different purpose. Their study focused on inalienable possessions—goods that people would not give up or exchange, and that are often kept within a kinship structure. By conducting interviews among generational dyads in families, they sought to identify how an object transforms from being alienable to inalienable.

The present study adopts a similar methodology to measure differences in perceptions of a culturally significant good. Since this commodity is deeply embedded in the culture, parental influence is likely to impact children's perceptions. This approach helps understand how perceptions of such goods vary across generations.

The key premise of the study was to identify perceptual difference between customers from two generations regarding gold. For this purpose, the respondents were asked to rate each factor on a ten-point scale based on their perceptions. The researcher used the Multidimensional Scaling (MDS) technique to visually map and compare these perceptions.

Data was collected from 220 respondents (110 pairs) in the specified categories. Given the specific nature of the population and the challenges of identifying such pairs through probability sampling, snowball sampling was considered the most appropriate method. Snowball sampling involves participants identifying other individuals who meet the study criteria, which is effective when targeting a specific, hard-to-identify population (Naderifar et al., 2017).

5.4 Sample size estimation

A pilot study was conducted with 20 pairs of samples (40 samples), from which the means and standard deviations of the attributes were calculated to estimate the sample size.

5.5 Sample size

Among the estimated sample sizes for each attribute, the highest was selected, resulting in a required sample size of 206. Data was collected from 224 respondents, and after editing and removing incomplete forms, the final sample consisted of 220 respondents or 110 generational dyads.

In response to the rapidly changing global environment, Craig and Douglas (2006) explored cultural dynamism, identifying three possible outcomes: cultural contamination, cultural pluralism, and hybridization. Holton (2000) also identified three consequences of cultural dynamism: homogenization, polarization, and hybridization. Cultural contamination refers to changes in a culture's natural development due to exposure to other societies (Ramesh & Bisht, 2017). Homogenization refers to the convergence toward a common culture. Cultural pluralism involves accepting and living within a diverse cultural context (Demangeot & Sankaran, 2012). Polarization, on the other hand, involves aggressively holding onto one's own culture (Bramson et al., 2017). Hybridization, similar to Craig and Douglas's definition, involves an exchange of cultural elements from various sources or cultures (Kraidy, 2006; Stockhammer, 2011). These outcomes can be viewed on a spectrum, with homogenization and polarization at opposite ends, and any outcome potentially falling at any point along this scale.

To capture the influence of liberalization, the population included representations from both pre- and post-liberalization generations. Panel discussions and consultations with experts in the gold industry highlighted the significance of marriage and gold. The average marriage age in India was identified as 22, leading to the classification of respondents into pre- and post-liberalization eras based on birth years (before and after 1976).

5.6 Scope of the study

The study aimed to identify the difference in the perception of one of the key cultural goods: gold. There are two fundamental reasons for studying the difference in the perception of gold. Firstly, gold is a significant commodity for the Indian economy, impacting national income due to its status as a heavily imported commodity. The government's measures to reduce imports highlight the importance of gold in the balance of payments. Secondly, industries dependent on gold, such as the gems and jewelry industry and the gold loan industry, are large employers in India. Changes in demand patterns and perceptions of gold are vital for the survival of these industries.

Given these considerations, the researcher reviewed the possibility of change due to globalization and resultant changes in culture, beliefs, and value systems. Globalization can lead to multicultural societies, influencing consumption patterns, especially of culturally significant goods. The study attempted to consider the changes in customer perception of physical gold, focusing on two sets of consumers: those from the pre-liberalization era and those from the post-liberalization era in India.

5.7 Multidimensional scaling technique

Multidimensional scaling (MDS) is a data reduction technique that helps discover variable relationships and identify reasons for these relationships. It visualizes spatial representations of structures that would otherwise be difficult to observe, providing insight into behavioral data.

6. Results

The study focused on the hedonic aspect, which refers to the physical gold's property of appearance and appeal. The perception map for the pre-liberalization generation regarding the hedonic value of physical gold showed an R-squared value of 0.82, indicating a very good fit (Malhothra, 2015). Additionally, the s-stress value was 0.18, which is close to 0, thereby indicating a good fit (Kruskal, 1964).

Figure 1 Mapping the hedonic perception of the pre-liberalization generation
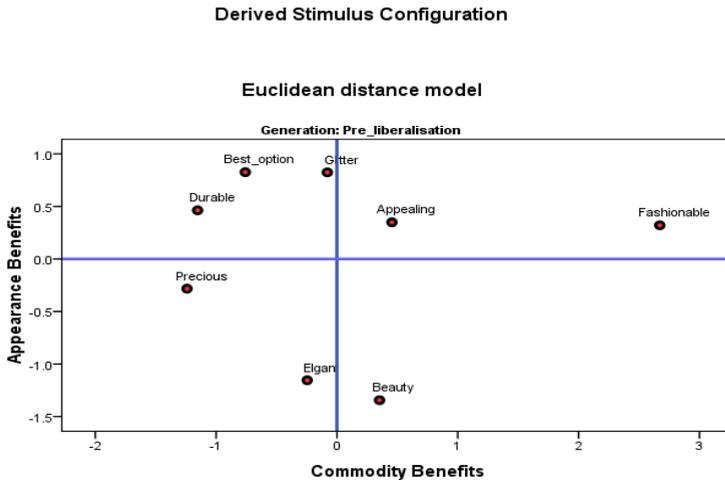
Source: Computed using SPSS based on primary data

Figure 1 represents the perceptual mapping of the pre-liberalization generation's perceptions of the hedonic values of gold. The attributes positioned at the extreme ends were analyzed to identify the underlying dimensions.

Table 1 Stimulus coordinates for pre-liberalization customers in relation to the hedonic value

Attribute	Dimension 1	Dimension 2
Elegant	-0.24	-1.15
Beauty	0.35	-1.34
Best option	-0.75	0.82
Precious	-1.24	-0.28
Durable	-1.15	0.46
Glitter	-0.07	0.82
Appealing	0.45	0.34
Fashionable	2.67	0.32

Source: Data analysis

The most positive attribute on Dimension 1 is "Fashionable", with the highest loading of 2.6718. It is followed by "Appealing", which has a loading of 0.4547. Although "Appealing" is closer to the average, it remains on the positive side and is second only in relation to "Fashionable" on Dimension 1. On the other hand, attributes such as "Precious" and "Durable" are extreme elements on the negative side. All four attributes are related to the commodity benefits of gold and have thus been categorized as such.

The highest positive values on this dimension are from the attributes "Gold is the best option for making jewelry" (0.8261) and "Glitter" (0.8238) In contrast, the attributes "Elegant" and "Beauty" are placed on the negative side. These four attributes are related to the appearance benefits of gold and have thus been categorized as such.

6.1 Perception summary

The older generation, or pre-liberalization generation, considers gold a fashionable commodity and find gold ornaments appealing. However, they do not perceive gold as durable or precious, which is an interesting finding. On the appearance benefits side, they acknowledge that gold retains its glitter and is the best option for making jewelry. However, their perception is lower regarding the elegance of gold, and they do not believe that gold ornaments can enhance the beauty of the person wearing them.

The perceptual map for the post-liberalization generation was developed and is presented below. An R-squared value of .84537 was observed, which indicates a very good fit. The s-stress value was .15853, indicating an excellent fit.

Figure 2 Mapping the perception of the hedonic value of gold among the post-liberalization generation
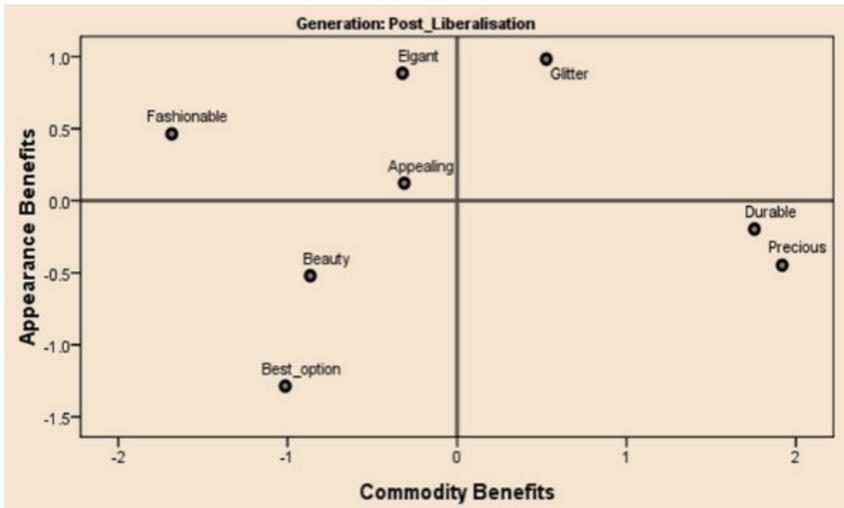
Source: Computed using SPSS based on primary data

Figure 2 represents the perceptual mapping of the post-liberalization generation's perceptions of the hedonic values of gold. This generation, being younger of the two, is likely to have been impacted by globalization, having witnessed and experienced the changes it brought during their formative years.

Table 2 Stimulus coordinates for post-liberalization customers in relation to the hedonic value

Attribute	Dimension 1	Dimension 2
Elegant	-0.32	0.88
Beauty	-0.86	-0.52
Best option	-1.01	-1.28
Precious	1.91	-0.44
Durable	1.75	-0.19
Glitter	0.52	0.98
Appealing	-0.31	0.12
Fashionable	-1.68	0.46

Source: Data analysis

On the extreme positive side of Dimension 1, the attributes "Precious" and "Durable" are ranked highest (1.9184 and 1.755, respectively), while on the negative side, those are "Fashionable" (-1.6843) and "The best option to make ornaments" (-1.0145). This pattern is similar to the previous map and is therefore categorized under 'commodity benefits'. In Dimension 2, "Glitter" and "Elegance" are on the positive side, while "The best option to make ornaments" and "The capability to enhance the beauty of the wearer" are on the negative side. Thus, this dimension is categorized as 'appearance benefits'.

7. Discussion and insights

The younger generation perceives gold as a precious and highly durable metal. However, they do not view gold as fashionable, likely due to the availability of modern alternatives. In terms of appearance, this generation associates gold with glitter and elegance but does not consider it the best option, possibly because of the presence of alternatives like diamonds. They hold a neutral opinion on gold's ability to enhance the beauty of the wearer. Gold is stable and does not react like most other metals, ensuring it retains its form for thousands of years (Bullivant, 2007). This stability likely explains why customers associate durability with gold from a commodity perspective, as they are confident it will last. However, its appearance depends on several other factors and thus cannot be considered equally durable.

7.1 Points of parity

Both generations share similar perceptions of the dimensions of gold in some aspects. However, there are more differences than similarities in their perceptions of the hedonic value of gold. Both generations agree that gold does not significantly enhance beauty, with the younger generation rating this attribute low in both the appearance and commodity benefits dimensions. Another similarity is their perception of gold's glitter attribute, which both generations rated highly on the appearance benefits dimension but relatively low on the commodity benefits dimension.

7.2 Points of difference

While the overall dimensions are similar, there are significant differences in the perception of specific attributes within these dimensions.

A) Commodity benefits dimension

The factors are looked at from two different dimensions, one is the benefit that the commodity offers, while the other is from the appearance side.

Fashionable: From a commodity benefits perspective, the pre-liberalization generation (older generation) considers gold ornaments fashionable, whereas the younger generation does not, placing this attribute at the opposite extreme in the commodity benefits dimension. This shift may be attributed to the availability of imitation jewelry made from materials like cut and uncut stones, plastic beads, cast iron, brass, nickel, American diamonds, and other attractive materials (Joseph, 2016). The increased availability of such alternatives may explain why younger consumers no longer perceive gold as fashionable. This evidence points to a movement toward cultural heterogenization or a reduction in homogeneity in consumer behavior within a culture (Cleveland & Laroche, 2007).

Durability: The younger generation views the durability of gold very positively within the commodity benefits dimension, while the older generation rates it lower. Consumers from emerging countries have traditionally viewed gold as durable (Liu, 2016). This finding suggests that customers hold on to the tradition more strongly.

Preciousness: Similarly, the perception of gold as precious differs between generations. Previous studies have indicated that consumers from India, China, and the Middle East view gold as precious due to its yellow color (Fernandez & Veer, 2004; Moors, 2013). In contrast, consumers in Western countries often see gold alloy as a symbol of beauty. These differences can be viewed as evidence of Westernization of culture.

B) Appearance benefits dimension

Best alternative for jewelry: The older generation views gold as the best material for creating jewelry, while the younger generation does not, likely due to the availability of alternatives (Joseph, 2016).

Elegance: The younger generation considers gold ornaments elegant, whereas the older generation does not. Traditionally, consumers from countries like India and China have viewed the yellow color of gold as beautiful and graceful (Moors, 2013), whereas Western consumers have different perceptions. These suggests a movement toward polariza-

tion, where there is a strong attachment to traditional values and beliefs.

In terms of fashionability, the younger generation exhibits signs of cultural contamination, where they no longer consider gold fashionable post-globalization. Cultural contamination refers to the dilution of cultural identity, making it hard to discern the original cultural ethnicity (Liu, 2016).

When it comes to the perception of gold as 'precious', the pre-liberalization generation does not consider gold to be precious, while the younger generation's perception of gold as precious indicates cultural polarization, where globalization has led to a defense of unique cultural aspects. Cultural polarization refers to the desire to preserve cultural, regional, or national distinctiveness (Holton, 2000).

Customers do not consider gold to be fashionable, which means that the jewelers must focus on aspects such as culture and tradition, rather than the price in terms of making charges and the like. Past studies have identified a shift in consumer preference toward lighter forms of jewelry (WGC, 2023; Ramachandran & Sajjanan, 2014).

8. Conclusion

This study provides a nuanced understanding of how India's economic liberalization in the 1990s influenced generational perceptions of the hedonic value of physical gold. By comparing the pre- and post-liberalization generations within the same households, the research reveals significant shifts in consumer attitudes toward gold, driven by broader cultural and market changes.

The pre-liberalization generation, which experienced gold as a symbol of fashion and appeal, primarily valued it for its glitter and suitability for jewelry, despite not considering it durable or precious. In contrast, the post-liberalization generation perceives gold more as a durable and precious commodity, with less emphasis on its fashionability or its role in enhancing beauty. These divergent perceptions underscore the profound impact of globalization, the increased availability of alternatives like imitation jewelry, and the changing cultural narratives surrounding luxury and value.

The study's findings suggest that marketers and retailers in the jewelry industry must consider these generational differences when targeting consumers. For the older generation, strategies that emphasize gold's traditional allure and fashionability may resonate, while for the younger generation, highlighting gold's durability, preciousness, and evolving symbolic meanings could be more effective.

Moreover, the shared belief across generations that gold does not enhance beauty, coupled with a consistent positive perception of its glitter, offers a focal point for crafting marketing messages that appeal to both cohorts.

Ultimately, this research contributes to the broader discourse on cultural hybridization and consumer behavior in post-liberalization economies. It demonstrates that economic reforms can lead to significant shifts in consumer perceptions, particularly in commodities deeply intertwined with cultural identity, such as gold. Future studies could extend this research by exploring other hedonic values of gold or by investigating similar perceptual shifts in other cultures undergoing economic transformation.

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Book review

Dražen Novaković
Book review "Banke i bankarstvo – izazovi i trendovi"

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BOOK REVIEW
"Banke i bankarstvo – izazovi i trendovi"

Editor-in-chief: Pavković A.

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The monograph *Banks and Banking – Challenges and Trends*, authored by a group of contributors and edited by Anita Pavković, PhD, Full Professor, is a fresh and welcome contribution to the study of both the theory and practice of managing commercial banks in an increasingly challenging environment. The book addresses the trends and phenomena impacting banks and the financial sector in a professional yet accessible manner. A distinctive feature of the book is its broad, interdisciplinary approach, presenting perspectives of several authors coming from different walks of life, i.e., university professors, regulators, and financial experts. The book is also interesting because it contains numerous business presentations that illustrate and support the main arguments with practical examples, as well as "food for thought" that encourages deeper thinking about the subject.

Comprising eleven chapters and a total of 333 pages, the monograph begins with a foreword by the editor-in-chief. The opening chapter, titled *The New Era of Banks and Banking: Trends and Challenges for Management*, also by Pavković, discusses the most important trends and phenomena that have significantly changed the business models of banks in recent decades. The author also highlights the most relevant indicators for analysing banking operations and their interpretation, particularly in terms of contemporary perspectives on profitability and risk. The second chapter, *Legal Framework for the Activities of Credit Institutions in the EU*, by Dario Hlupić Radić, reflects on the methods and objectives of determining regulatory elements in the activities of credit institutions in the EU and Croatia.

The third chapter, *Innovative Principles of Corporate Governance in Banks*, by Bojana Olgić Draženović, PhD, Associate Professor, and Ivan Gržeta, PhD, Assistant Professor, explains the factors and principles of corporate governance, which are constantly evolving and adapting to new challenges, particularly in the banking sector, with particular attention paid to the most recent corporate governance practices, such as the inclusion of ESG reporting, which has become a necessity today. Naturally building on the previous discussion, the fourth chapter, *The Evolution of Market Risk Management – Yesterday, Today, Tomorrow*, by Saša Žiković, PhD, Full Professor, addresses risk management as one of the key areas of corporate governance. The author discusses Basel standards, which provide a framework for market risk management, with a particular emphasis on stress testing as a tool for assessing market risk, which should show future developments in

this segment of banking, especially in light of technological advancements.

The fifth chapter, *Credit Structure of Banks in the EU*, provides a detailed overview of the structure of banks' loan portfolios in both the EU and Croatia, highlighting the importance of credit operations for banks' business results. The authors, Anita Pavković, PhD, Full Professor, and August Cesarec, PhD, focus on emerging challenges that credit policies will soon need to address, such as the use of artificial intelligence, increasing competition, and climate-related risks. In the sixth chapter, *Implementing Sustainability in Business as a Basis for the Synergy of the Corporate and Financial Sectors*, Jasminka Rojko and Ana Keserović—ESG consultants and analysts in controlling—offer valuable practical insight into the challenges posed by sustainable business and finance regulations.

The seventh chapter, *The Impact of Collateralisation of Banking Activities on the Efficiency of the Bank's Business Model: Mechanisms and Consequences*, by Roberto Ercegovac, PhD, Full Professor, explores the increasingly significant role of collateral in banking through the prism of changes towards a more efficient and secure market in the eurozone. The eighth chapter, *Disruptive Innovations as a "Threat" to Banking*, examines the nature of blockchain and cryptocurrencies and their role in the decentralised financial ecosystem. Domagoj Sajter, PhD, Full Professor, provides an accessible and objective insight into these innovative technologies, challenging the often contradictory and controversial perspectives surrounding them, particularly in terms of their impact on banking in the future.

The ninth chapter, *Digital Transformation of Banks*, by Slaven Smojver, PhD, and Martina Drvar, MSc,

provides a detailed analysis of the technological and business drivers behind digital transformation as well as the associated risks, such as cybersecurity, and possible responses to them in the form of adjustments to internal processes and innovations within the company. The tenth chapter, *Implications of the Accounting Model for Financial Instruments on the Bank's Business Model*, by Mirjana Hladika, PhD, Associate Professor, offers a qualitative systematisation of the requirements imposed by accounting standards for the recording and reporting of financial instruments by banks. The final, eleventh chapter, *Internal Auditing in Banks in the 21st Century: Status, Perspectives and Challenges*, by Petra Halar, PhD, and Boris Tušek, PhD, Full Professor, emphasises internal auditing as an important control function of a bank, which is also developing into an indispensable mechanism of corporate management.

Due to its effective combination of challenging content and an accessible writing style, the book is aimed at a very broad spectrum of readers. The modern trends and phenomena in banking are of interest to managers, owners, investors, customers, and the entire professional community. However, as society increasingly acknowledges the importance of financial literacy, this monograph can serve as a valuable resource in financial education. The content of the book can help finance students to prepare adequately for the labour market they are entering, but it also enables financial professionals and regulators to deepen their knowledge of the current challenges in banking and finance. Ultimately, the book offers an excellent foundation for the development and adaptation of training programmes–both in academic settings and beyond.

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The margins (left, right, top and bottom) should be 25mm wide. The text should be aligned with both the right and left margins (justified). The paper should have between 4500 and 7500 words. Above the title, in the upper right corner, the authors state JEL classification of the article.

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