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Contents

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Balkans Journal of Emerging Trends in Social Sciences – Balkans JETSS

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Manuscripts should not exceed 16 pages (450 word per page). This page limit includes all figures, tables, appendices and references.

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Original Scientific Article

INFLATION AND INCOMES POLICY UNDER A CURRENCY BOARD: THE BULGARIAN CASE

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Abstract: *This study examines the relationship between nominal salary and inflation in Bulgaria under a currency board. A theoretical background of the connection between incomes policy and inflation is provided. Autoregression with distributed lag (ARDL) is employed to analyze the relationship between the percentage change of average nominal salary, the rate of inflation, and the percentage change of average real labor productivity. The time-series data include observations from the third quarter of 1997 to the first quarter of 2022. The study results indicate the existence of both short-term and long-term relationships between inflation and the nominal change in average salary. It is also found that the link between the changes in nominal salary and real labor productivity is broken both in the short and the long term.*

Keywords: *Bulgaria, Inflation, Incomes policy, Currency board arrangement.*

JEL Classification E31 · E64

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1. INTRODUCTION

In times of an accelerated increase in the price level, harnessing inflation and implementing adequate incomes policy become priorities of macroeconomic management. This is especially true for a small open economy in a currency board arrangement such as the Bulgarian one, which heavily depends on its overseas commercial and financial relations. It is also deprived of autonomous monetary and exchange rate policies and has the lowest per capita income in the European Union. Under the conditions of the COVID-19 pandemic and the war in Ukraine, the international prices of energy resources, raw materials, goods, and commodities go up and cause a substantial rise in domestic inflation, which reduces the purchasing power and the living standard of Bulgaria's population.

The goal of this study is to investigate the link between inflation and wages in Bulgaria under a currency board since the conduct of successful anti-inflationary and incomes policies requires a substantial and detailed understanding of this link. To achieve this goal, the following tasks are fulfilled:

- Examine the connection between inflation and incomes policy under a currency board from a theoretical standpoint (section two);
- Review and systematize relevant theoretical and empirical research on the nexus between inflation and incomes policy (section three);
- Empirically analyze the relationship between the percentage change of average nominal salary, the rate of inflation, and the percentage change of real labor productivity (section four);
- Formulate advisable anti-inflationary and incomes policy for Bulgaria under crisis conditions (conclusion).

In the empirical analysis, autoregression with distributed lag (ARDL) and quarterly seasonally, and calendar adjusted Eurostat data for the period 1997-2022 are employed. Following the trends in the empirical work on this topic, Granger tests are applied to further clarify the relations of interest and check the bilateral causality hypothesis. The paper is structured as follows. The first section provides a theoretical background of the link between inflation and nominal wage. The second section reviews the literature on inflation-salary nexus. The third section is an empirical analysis of the relationship between inflation and nominal salary in Bulgaria under a currency board. The last section makes a conclusion and recommendations for suitable incomes and anti-inflationary policies in Bulgaria.

2. THEORETICAL BACKGROUND

Classical central banks have three traditional monetary instruments to achieve price stability – the open market operations, the base interest rate, and the minimum required reserves on the deposits of commercial banks. Under the conditions of a currency board regime, the Bulgarian National Bank (BNB) is deprived of the first two instruments and is allowed to set the minimum required reserves only. However, the specific structure of the Bulgarian currency board implies a possibility for monetary impacts with fiscal means. Through changes in the amount of its deposit in the liabilities of the Issue Department of the BNB, the Bulgarian government can influence the rate of inflation in Bulgaria. Still, this influence, although statistically significant, is relatively weak (Todorov et al., 2020). The government's ability for monetary discretion by fiscal means is limited since the stability of the currency board requires strict fiscal discipline and a sound financial system (Nenovsky & Koleva, 2001). In strict terms, Bulgaria's currency board is a system of domestic currency issued under full coverage by convertible foreign currency. This is the primary

purpose of the board adopted in Bulgaria. Thus, the domestic currency is freely exchangeable and convertible into the reserve currency at a fixed exchange rate. A reserve currency must cover only base money (the narrowest monetary aggregate) of the currency board economy (Avramov, 1999).

Domestic currency issuing must be backed only by foreign currency assets that are free of the central bank's policy impacts. These assets however have a strong relation with the national balance of payments and capital flows in particular. Since currency issuing against domestic assets is prohibited, major sources of inflation have been eliminated (Avramov, 1999). Under such a system, monetary authority plays a passive role with regard to money supply (Avramov, 1999). Since the currency board makes the link between the balance of payments and the domestic money supply automatic (Ganchev & Todorov, 2021), inflation in Bulgaria is supposed to depend mainly on external factors (Alawin & Oqaily, 2017; Central Bank of Iceland, 2000). The peg of the Bulgarian lev to the Euro means that the main external determinant of monetary conditions in Bulgaria, including the rate of inflation, is the monetary policy of the European Central Bank (ECB). Other external factors affecting the price level in Bulgaria are the energy policy of the European Union (EU), the COVID-19 pandemic, and the military conflict in Ukraine, which led to an increase in the prices of energy resources, raw materials, and food products.

Inflation in Bulgaria is also impacted by structural factors such as the price convergence with the more developed economies in the Euro area (Patonov & Zhegova, 2019; Rogers et al., 2001; Stoykova & Paskaleva, 2018; Todorov & Stavrova, 2022; Todorov & Boneva, 2022), the changes in the relative prices of goods and services, the digital and green transformation of the economy and society and so on.

The rate of inflation in Bulgaria is influenced by internal factors too which should not be underestimated. Such internal factors are the amount of the fiscal reserve of the government, the size of the minimum required reserves on the deposits of commercial banks, the value of the peg of the Bulgarian lev to the Euro, the indirect tax rates, the payment of compensations to businesses for the increased energy prices, the incomes policy, etc. (Ganchev & Todorov, 2021; Ganchev et al., 2014; Nenovsky & Koleva, 2001; Stoilova & Todorov, 2021, Tanchev, 2021; Vladova & Pachedzhiev, 2008).

The fiscal reserve of the government and the minimum required reserves on the deposits of commercial banks are the tools through which the Bulgarian macroeconomic management can have a limited impact on inflation in the conditions of a currency board. The first instrument is non-traditional, derives from the specific design of the Bulgarian currency board, and is under the control of the government. The use of this instrument for monetary purposes is not advisable (Luis & Terrones, 2003). The second instrument is a traditional monetary tool of the central bank. An increase in the amounts of the fiscal reserve and the minimum required reserves should (at least in theory) lower the rate of inflation, but this would come at the expense of a decrease in the money supply, aggregate demand, and employment, which is not advisable.

The value of the peg of the Bulgarian lev to the Euro is part of the construction of the currency board and deserves special attention. According to expert estimates, the Bulgarian lev is undervalued compared to the euro by about 10-15% (Minassian, 2022). If these estimates are correct, this means an unsanctioned outflow of value from Bulgaria to the rest of the world, both on the current account and on the capital and financial account of the balance of payments. The simplest example is imports at higher prices than the real ones, which further accelerates inflationary dynamics in Bulgaria.

If the estimates of Minassian (2022) about the actual exchange rate of the Bulgarian lev to the Euro are precise, a switch from a fixed to a floating exchange rate would contribute to lower inflation in Bulgaria in two ways: first, the prices of external products, resources, and assets would be lower by 10-15% at an exchange rate of around 1.7 Bulgarian levs per Euro, than at the current rate of 1.96 Bulgarian levs per Euro; second, under a floating exchange rate, price convergence with the Euro area would occur at lower rates of inflation in Bulgaria than under a fixed exchange rate. The abandonment of the currency board provides opportunities for autonomous monetary and exchange rate policies, which can additionally help mitigate external shocks and manage price dynamics.

The rates of indirect taxes are related to the type of tax system, which in Bulgaria is extremely consumption-based. This means that indirect tax revenues exceed direct tax revenues several times. This structure of the tax system has extremely adverse social and economic effects (Todorov, 2012). Low proportional taxes on personal and corporate incomes increase inequality, while high indirect taxes raise the costs of production and the price level and reduce aggregate supply and aggregate demand. A complete reform in the Bulgarian tax system is recommended - an introduction of a non-taxable minimum income and progressive income taxation, as well as a reduction in the rates of indirect taxes. The goal is a shift from a consumption-based to a hybrid tax system, where there is a relative equality of direct and indirect tax revenues in the state budget. The hybrid tax system is more socially and economically efficient than the consumption-based tax system (Tanchev & Todorov, 2019; Todorov & Durova, 2020).

Applicable as a time-limited measure, the government provides partial compensation to private enterprises for saving jobs during pandemic time as well as mitigating the effects of rapidly increased prices of fuels and electricity. Such measures were proposed by the government in hard periods for businesses to help more enterprises survive and keep their working and jobs relatively unchanged. It is important to note, there is a slight border between useful measures and populism. Nevertheless, the contemporary mechanism of compensating businesses for the increased energy prices is an administrative measure that is incompatible with the market economy and has the potential to distort market proportions. It would be difficult to agree on the anti-inflationary character of such a measure. It could be considered a pro-inflationary measure because it accumulates tensions in the economy, which may lead to an even higher future rise in prices. The businesses must increase the efficiency of their activities and cope with the price shock by themselves, without relying on aid and compensation from the state.

There is a two-way relationship between inflation and income. On the one hand, a rise in inflation lowers the purchasing power of incomes and a need appears for their nominal increase in order to compensate for the loss of purchasing power. On the other hand, an increase in incomes raises aggregate demand and price level (generates inflation). This bi-directional link requires an adequate formulation and a precise implementation of the so-called incomes policy (the policy of increasing pensions and wages).

It is recommended that two principles be followed in the incomes policy: first, for pensions, the nominal percentage change should be equal to the rate of inflation; second, for wages, the nominal percentage change should be a sum of the rate of inflation and the real percentage change in labor productivity. These principles apply at all economic levels – individual, firm, industry, region and national economy – and their violation can have severe social and economic consequences.

If the nominal percentage change in pensions is higher than the inflation rate and/or the nominal percentage change in wages is higher than the sum of the inflation rate and the real percentage

change in labor productivity, the interests of employers and the state budget are harmed and the following undesirable social and economic effects can be generated:

- Inflationary spiral "prices-wages", the danger of "overheating" of the economy and increasing probability of recession;
- A decline in price (cost) competitiveness both at the micro level (individual firms) and at the macro level (national economy), which would hinder exports and economic growth;
- Deterioration of the financial situation and bankruptcies of companies;
- Increase in budget deficit and government debt.

If the nominal percentage change in pensions is lower than the inflation rate and/or the nominal percentage change in wages is lower than the sum of the inflation rate and the real percentage change in labor productivity, the interests of pensioners and wage earners are damaged. The possible negative social and economic consequences are a decline in the purchasing power of the vast majority of the population, emergence of social tension, decline in consumption and GDP, strengthening of social stratification and inequality, etc.

3. LITERATURE REVIEW

There are opinions in favor of the efficiency of the currency board in coping with high inflation and significant macroeconomic imbalances (Kiguel, 1999). The last one seems to be a broader macroeconomic goal for a political decision such as the adoption of a currency board. However, the currency board does not enjoy the popularity of a universal instrument for taming inflation. Far more governments turn to wage-price control to promote stabilization in periods of high inflation (Dornbusch & Simonsen, 1987).

It is important to note that currency boards, wage-price control, and other administrative policy approaches for keeping inflation within acceptable limits have temporary character and their success is restricted by the period of time and macroeconomic conditions. In this way, Argentina is referred to as the most famous case of a successful currency board, which collapsed after a decade of undoubted success (Frank, 2005; Spiegel, 1998). The decade after the collapse was a decade of rapid growth and recovery for Argentina's economy but also a period of sustainable high inflation, which reached 22.6% in 2008 (Salama, 2012). The growth in that period was accompanied by positive trends in real wages and labor productivity after 2003. At the same time, high-interest rates and tight discipline are blamed for the decreases in gross capital formation and income level in Argentina (Setiawan, 2003). The lessons drawn from Argentina's case do not seem to be in favor of adopting the system of currency board in Indonesia (Setiawan, 2003). The same surmise about Indonesia was shared by other economists (Spiegel, 1998). His reasoning stemmed from the fact that Indonesia is a large country with intensive foreign trade with other Asia countries. He also noted that 'currency boards have worked in small emerging economies, such as Estonia and Bulgaria, where the creation of a credible fixed exchange rate regime was desirable' (Spiegel, 1998).

Along with descriptive studies, many economists use econometric methods to examine the relations between inflation, wages, and labor productivity. They apply such procedures to single countries or samples of countries with similar macroeconomic conditions. Vector-autoregressive estimations and regression models with lags are popular among empirical economists (Bobeica et al., 2019; Dickens et al., 2006; Du Caju et al., 2009; Peneva & Rudd, 2017; Sbordone, 2002, 2005; Tatierska, 2010). GMM estimation can also be found (Gali & Gertler, 1999). Dickey-Fuller and Phillips-Perron unit root tests are often applied as supplementary statistical procedures for proving non-stationary dynamics and the need for de-trending time series used (Vasilev & Manolova, 2019). As the procedure

for estimating causal relations, the Granger test enjoys wide popularity as well. Granger-causality test applied has the potential to prove the exogenous character of the price level and its causal impact on labor costs or wages and vice versa (Hu & Toussaint-Comeau, 2010; Strauss & Wohar, 2004).

Empirical study on the Euro area found a Granger causality from labor cost to price inflation (Bobeica et al., 2019; Tatierska, 2010). What is more, they found the same causality remains strong over time (Bobeica et al., 2019) which contradicts the results of other empirical studies such as the VAR estimates on data for the United States that found a diminishing relation between labor costs and price inflation (Peneva & Rudd, 2017). The theoretical justification of the last result could be more solid in the short-run perspective. There are limitations with a market, institutional, or administrative character that have the potential to prevent fast adjustments and thus weaken the strong conceptual relation between price inflation and wages (Bidder, 2015; Bobeica et al., 2019; Campbell & Rissman, 1994; Daly & Hobijn, 2014; Edward et al., 2014; Hu & Toussaint-Comeau, 2010; Huh & Trehan, 1995). Market imperfections and short-term nominal wage rigidity are among the most cited factors that prevent fast adjustments between overall price levels and wages. Some confirmation of this logic is found in a low-inflationary macroeconomic environment (Mehra, 2000; Zanetti, 2007).

Granger causality in the opposite direction is established by Hu and Toussaint-Comeau (2010). They estimate the causal relationship between inflation to wages. Similar evidence was found by a wide set of empirical studies (Emery & Chang, 1996; Ghali, 1999; Sbordone, 2002; Schweitzer & Hess, 2000). Thus, Hu and Toussaint-Comeau (2010, p.53) assert that price inflation could be used for predicting changes in wages.

Another significant part of the evidence on the topic of interest is found by economists who study the relations at the industry level or in terms of data for various economic sectors (Bobeica et al., 2019; Du Caju et al., 2009; Tatierska, 2010). No doubt, these studies would find different kinds of relation at the industry level and total economy level (Bobeica et al., 2019; Dickens et al., 2006; Du Caju et al., 2009; Paskaleva, 2016; Tatierska, 2010).

As pointed out, evidence on the topic was drawn from both – cross-country studies and single-country case studies. The study of Zanetti (2007) is based on Swiss data. There are empirical studies on Bulgaria as an interesting case of a small open economy that has chosen a currency board regime. Stepping on survey data, Lozev et al. (2011) conclude about a weak price-wage relationship in Bulgaria. Other survey studies provided evidence in favor of the low percentage of businesses that consider the price-wage relation Vladova (2012). Having in mind these studies, Vasilev and Manolova (2019) concluded that 'price-driven wage changes are not common in the case of Bulgaria'. Using survey data and probability regression, Paskaleva (2016) has drawn interesting conclusions about the relation between inflation and wages in Bulgaria for the period 2009-2013. She found that companies in worse economic conditions lower prices and labor costs more frequently. In this sense, macroeconomic conditions compel enterprises to look for adjusting labor input in both ways – by reducing employment and flexible wage components. The ultimate results of her study suggest that 'wages and prices change relatively infrequently' (Paskaleva, 2016). The comprehensive empirical study of Nenovsky and Koleva (2001) draws general conclusions about Bulgaria's economy and labor market under a currency regime. It concludes about the industry level as well. The results of their regressions prove that 'real wages are flexible in the following industries: commerce, hotels and restaurants, construction, paper and printing industries, food and tobacco industries, leather industry, real estate services, financial intermediation, manufacture of chemicals and their products' (Nenovsky & Koleva, 2001). Among

their significant findings is that 'private companies and entrepreneurship dominate the more flexible industries while state-owned companies dominate industries with rigid labor market' (Nenovsky & Koleva, 2001).

4. EMPIRICAL ANALYSIS

This section focuses on the empirical study in the framework described above. It is intended to describe the methodology adopted, explain the specifics of the data used as well as present the regression results with corresponding discussion. A graphic presentation of the data would make it possible to draw separate conclusions on the trends and developments of each variable plotted.

4.1. Methodology

The general requirement for an efficient income policy is to keep the balance between wages and the real productivity of labor (Quinn, 1967). Disturbing this balance is assumed to have an impact on inflation. The following study is based on the assumption that 'the rate of inflation increases with factor costs, and that productivity impacts positively on real wages but offsets price inflation' (Downes et al., 1990). Within this framework, a simple regression model has been specified for the purposes of the present study. The relationship between inflation and wages in Bulgaria is investigated through an autoregression with distributed lag (ARDL), which includes the following variables:

$CMPS_t$ –percentage change of average nominal compensation of employees in quarter **t** compared to the previous quarter;

$INFL_t$ – inflation rate in quarter **t** (percentage change in the HICP in quarter **t** compared to the previous quarter;

$LBPR_t$ – percentage change of average real labor productivity in quarter **t** compared to the previous quarter.

The target (dependent) variable is **CMPS**, while **INFL** and **LBPR** are independent (explanatory) variables. The regressions will be run along with the diagnostic statistics on the data.

4.2. Data

The database of Eurostat is used as a source of quantitative data on each variable of interest. Quarterly seasonally and calendar-adjusted Eurostat data from the third quarter of 1997 to the first quarter of 2022 are used in the study.

The quarterly dynamics of the average nominal salary, the rate of inflation, and the average real labor productivity in Bulgaria under a currency board arrangement are shown in Figure 1. As seen, the nominal salary sharply decreased between the third quarter of 1997 and the first quarter of 1999. This period was related to the initial reforms for economic liberalization and promoting financial stability. The initial reforms were conducted in terms of lower inflation that additionally prevents the nominal growth of the average salary. It was the period in which the gap between nominal and real income began tightening. The period of stability and low inflation rates was broken in the quarters of the worldwide financial crisis so the higher rates of inflation were replaced with higher rates of deflation. Stabilization was achieved after the second quarter of 2009. As a whole, these years were a period of economic recovery and fast development so the rates of growth were among the highest in the EU. Over the whole period, Bulgaria's economy was successfully integrated with the European Economic Community and achieved excellent values of the indicators for public finance stability and Maastricht convergence criteria.

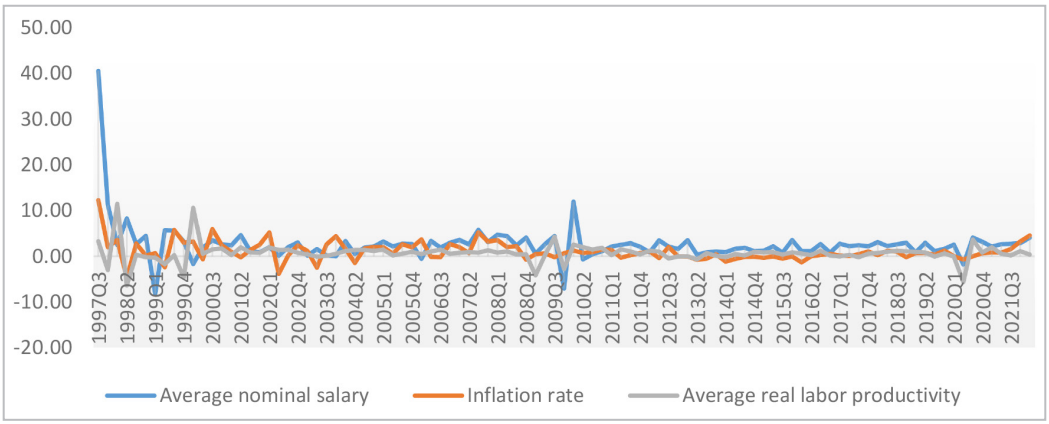

Figure 1. Dynamics of average nominal salary, inflation, and average real labor productivity (percentage change on the previous period) from the third quarter of 1997 to the first quarter of 2022

Source: Own processing; Eurostat

In Figure 2, the movement of the difference between the actual percentage change and the recommended percentage change of the average nominal is displayed. It may be inferred that with the exception of several quarters in crisis times, the actual percentage change of the average nominal salary is near (fluctuates around) the recommended percentage change of the average nominal salary. It is disturbing that during the last quarter of 2021 and the first quarter of 2022, the advisable percentage change of the average nominal salary is lower than the actual percentage change of the average nominal salary, which means that the purchasing power and the standard of living of wage earners are on the decline.

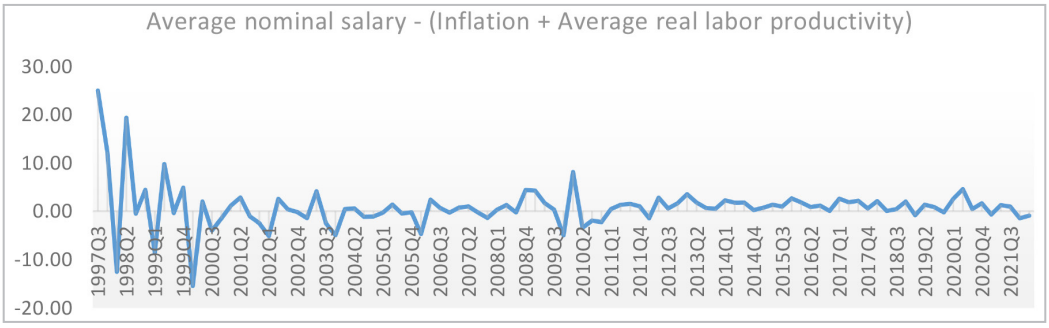

Figure 2. Dynamics of the difference between actual and advisable percentage change of average nominal salary in the previous period from the third quarter of 1997 to the first quarter of 2022

Source: Own processing; Eurostat

4.3. Results

The unit root tests (see Tables 1 and 2) show that **CMPS** and **LBPR** are stationary at level (integrated of order 0), whereas **INFLL** is stationary at the first difference (integrated of order 1). The different order of integration of the variables requires the application of an ARDL.

Table 1. Augmented Dickey-Fuller Unit Root Test on the level values CMPS, INFL, and LBPR

Variable	Probability
CMPS	0.0000
INFL	0.3641
LBPR	0.0001

Source: Own processing

Table 2. Augmented Dickey-Fuller Unit Root Test on the first differences of INFL

Variable	Probability
D(INFL)	0.0000

Source: Own processing

The test for the optimal number of lags in the ARDL indicates that according to the Hannan-Quinn information criteria, this number is one (see Table 3). The ARDL is estimated with one lag.

Table 3. Optimal lag length in the ARDL

Number of lags	FPE	AIC	SC	HQ
0	30.73539	11.93904	12.02182*	11.97244
1	26.23775	11.78066	12.11176	11.91424*
2	24.75340	11.72168	12.30111	11.95544
3	25.04693	11.73171	12.55947	12.06566
4	22.96990	11.64191	12.71800	12.07604
5	24.18412	11.68825	13.01266	12.22257
6	26.70155	11.77966	13.35239	12.41416
7	27.95842	11.81506	13.63612	12.54974
8	20.02940*	11.46738*	13.53677	12.30225

* Shows the optimal number of lags according to the respective criterion

Source: Own processing

The ARDL is expressed by the equation

$$D(CMPS) = C(1) + C(2) \cdot D(CMPS(-1)) + C(3) \cdot D(INFL(-1)) + C(4) \cdot D(LBPR(-1)) + C(5) \cdot CMPS(-1) + C(6) \cdot INFL(-1) + C(7) \cdot LBPR(-1) \quad (1)$$

The results from the econometric estimation of the ARDL are reported in Table 4.

Table 4. Results from the econometric estimation of the ARDL

Variable	Coefficient	Standard error	t-Statistic	Probability
C	2.509436	0.363102	6.911098	0.0000
D(CMPS(-1))	-0.064614	0.058217	-1.109884	0.2700
D(INFL(-1))	0.060787	0.135904	0.447277	0.6557
D(LBPR(-1))	-0.081191	0.126311	-0.642788	0.5220
CMPS(-1)	-1.233122	0.112482	-10.96286	0.0000
INFL(-1)	0.146705	0.194548	0.754078	0.4528
LBPR(-1)	0.053562	0.205487	0.260658	0.7950

Source: Own processing

The value of the coefficient of determination (R-squared = 0.69) implies that 69% of the variation of the average nominal salary in Bulgaria can be explained by changes in the independent

variables in Equation (1). The probability of the F-statistic (0.00) indicates that the alternative hypothesis of adequacy of the model used is confirmed. It should be made clear that this does not mean that the model is the best possible, but simply that it adequately reflects the relationship between the dependent and the independent variables.

The residuals in the ARDL are non-heteroscedastic and serially uncorrelated (see Tables 5 and 6), while the ARDL is dynamically stable (see Figure 3).

Table 5. Results from the serial correlation test on the residuals in Equation (1)

F-statistic	2.75	**Probability F(1,89)**	0.10
Observations R-squared	2.91	**Probability Chi-Square(1)**	0.09

Source: Own processing

Table 6. Results from the heteroscedasticity test on the residuals in Equation (1)

F-statistic	0.32	**Probability F(6,90)**	0.93
Observations R-squared	2.02	**Probability Chi-Square(6)**	0.92

Source: Own processing

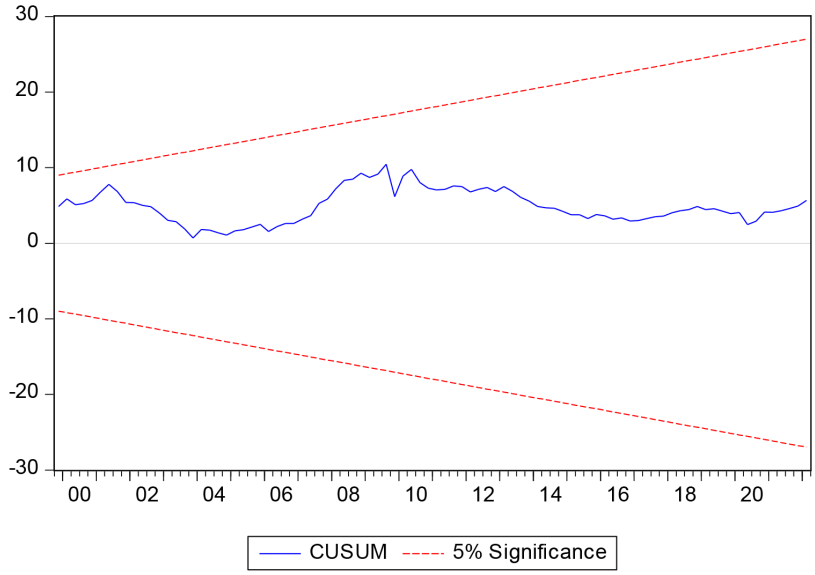

Figure 3. CUSUM test for dynamic stability of the ARDL

Source: Own processing

The ARDL bounds test (see Table 7) provides evidence of the existence of a long-run relationship between the variables in the ARDL, which requires the estimation of an error correction model (ECM).

Table 7. ARDL bounds test

Null Hypothesis: C(5)=C(6)=C(7)=0			
Test Statistic	**Value**	**Degree of freedom**	**Probability**
F-statistic	46.52975	(3,90)	0.0000
Chi-square	139.5893	3	0.0000

Source: Own processing

The ECM has the form

$$D(CMPS) = C(1) + C(2) \cdot D(CMPS(-1)) + C(3) \cdot D(INFL(-1)) + C(4) \cdot D(LBPR(-1)) + C(5) \cdot ECT(-1) \quad (2)$$

The results from the econometric estimation of the ECM can be seen in Table 8.

Table 8. Results from the econometric estimation of the ECM

Variable	Coefficient	Standard error	t-Statistic	Probability
C	-0.027549	0.219107	-0.125731	0.9002
D(CMPS(-1))	-0.298344	0.069377	-4.300358	0.0000
D(INFL(-1))	0.257660	0.097269	2.648958	0.0095
D(LBPR(-1))	-0.096843	0.065398	-1.480824	0.1421
ECT(-1)	-1.071425	0.124351	-8.616151	0.0000

Source: Own processing

The regression coefficient before the error correction term (ECT) is statistically significant and negative, which implies the existence of a long-run equilibrium relationship between the dependent variable and the independent variables in the ECM. The absolute value of this coefficient – 1.07 – means that each deviation from the long-term equilibrium is eliminated at a rate of 107 percent per quarter.

The short-run regression coefficients before D(CMPS(-1)) and D(INFL(-1)) are also significant, which suggests that in the short run, the percentage change of average nominal compensation of employees in Bulgaria is affected by its past values and the previous values of inflation. The short-term regression coefficients before D(INFL(-1)) are positive, which is in agreement with theoretical expectations. Its value of 0.26 indicates that a ceteris paribus 1% change in the rate of inflation will lead to a 0.26% change in the rate of change of the average nominal salary three months later.

The value of the coefficient of determination of the ECM (R-squared = 0.70) means, that 70% of the variation of the percentage change in the average nominal salary in Bulgaria can be explained by changes in the independent variables in Equation (2). The probability of the F-statistic (0.00) implies that the alternative hypothesis of adequacy of the model used can be accepted. This does not mean that the model is the best possible but simply indicates that it adequately reflects the relationship between the dependent and the independent variables.

The residuals in the ECM are non-heteroscedastic and serially uncorrelated (see Tables 9 and 10), while the ECM is dynamically stable (see Figure 4).

Table 9. Results from the serial correlation test on the residuals in Equation (2)

F-statistic	0.19	**Probability F(1,90)**	0.67
Observations R-squared	0.20	**Probability Chi-Square(1)**	0.66

Source: Own processing

Table 10. Results from the heteroscedasticity test on the residuals in Equation (2)

F-statistic	0.66	**Probability F(4,91)**	0.62
Observations R-squared	2.71	**Probability Chi-Square(4)**	0.61

Source: Own processing

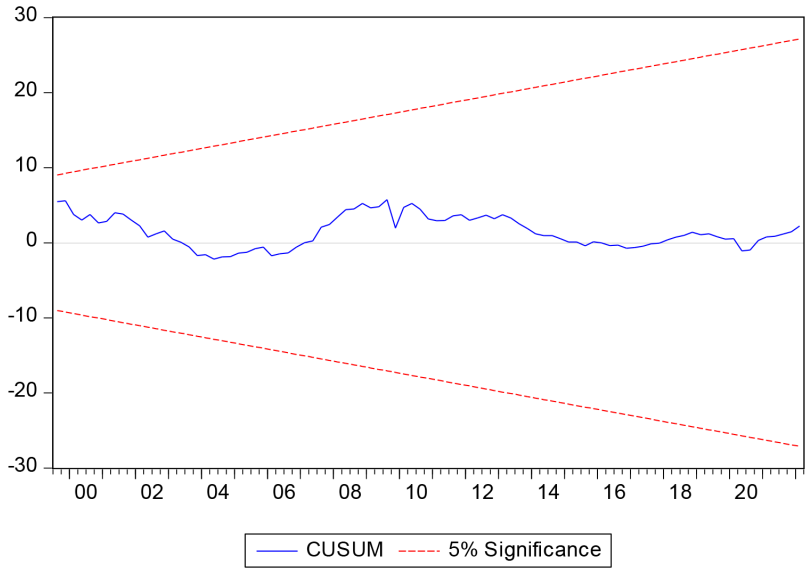

Figure 4. CUSUM test for dynamic stability of the ECM
Source: Own processing

The results from the Granger Causality Tests show that both in the short term and the long run, the percentage change of the average nominal salary in Bulgaria is Granger-caused by the rate of inflation but not by the percentage change in the real labor productivity (see Tables 11 and 12).

Table 11. Results from short-term causality tests

Independent variables	Probability
INFL	0.0090
LBPR	0.8305

Source: Own processing

Table 12. Results from long-term causality tests

Independent variables	Probability
INFL	0.0066
LBPR	0.5445

Source: Own processing

5. CONCLUSION

As understood, the adoption of the currency board started a period of nearly two decades of economic recovery, reforms, development, and the successful integration of Bulgaria's economy with the European Economic Community. It was marked by relatively low rates of inflation and rapid growth of the average salary and labor productivity. The paper regressed inflation, nominal wage, and labor productivity to study the short-term and long-term relationships and causalities among these variables.

The empirical results suggested no connection between nominal salary and real labor productivity in the short and long-term perspective. This result could be interpreted as an indication of two serious problems in Bulgaria's labor market: first, employers do not reward labor productivity gains,

and second, employees do not increase their productivity in response to rises in nominal wages. The existence of those problems would be evidence that the labor market is inefficient and hamper economic growth.

It is important to note, that the result of the study has not exhausted all the considerations on the topic of interest. Their most valuable contribution is the rise of discussion and attracting the attention of economists and policymakers. Nevertheless, taking into account the discussion and its future developments, Bulgarian policymakers must focus their efforts on restoring the broken link between wages and labor productivity.

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Original Scientific Article

EMPLOYMENT OF FOREIGNERS IN MANUFACTURING AND NON-MANUFACTURING BUSINESSES

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Abstract: *In recent years, many manufacturing and non-manufacturing businesses in the Czech Republic as well as elsewhere in the European Union have experienced serious people shortages in manual, technical, and other professions. One possible solution to this personnel issue is the employment of a foreign workforce. Based on a survey of 478 manufacturing and non-manufacturing businesses across the Czech Republic, the paper aims to analyze the experience of surveyed businesses with the employment of foreign workers and propose possible solutions to long-term people shortages. The analysis confirmed that the majority of surveyed businesses need to employ foreign workers to meet present and future labor demands. In addition, dealing with long-term people shortages requires implementing various organizational and technical measures related to working hours, job design, process automation, process outsourcing, and talent development.*

Keywords: *People shortage, Foreign workforce, Employment practice, Manufacturing businesses, Non-manufacturing businesses.*

JEL Classification M12 · M50

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1. INTRODUCTION

One of the most essential personnel issues of every manufacturing and non-manufacturing business is to have enough of the right people at the right time in the right place (Ahsan, 2017). The right people are individuals who meet the business's requirements for knowledge, skills, abilities, and motivation (Deming & Kahn, 2018) to perform assigned work and meet established performance standards regarding both results and behavior (Ployhart, 2021). Such people represent a competitive advantage and help the business meet strategic objectives, such as low-cost productivity, long-term profitability, sustainable competitiveness, social responsibility, etc. (Harvey & Tumbull, 2020).

To meet strategic objectives through people, every business needs to plan the demand for people, that is, the numbers and kinds of people required over the next year as well as over the next three to five years (Abujraiban & Assaf, 2022). The demand for people is usually derived from the demand for goods and services that are realized with the help of people (Hani, 2021). On the other hand, the business also needs to plan the supply of people, that is, the numbers and kinds of people likely to be available from within and outside the business over the next year as well as over the next three to five years (Vankevich & Kalinouskaya, 2021). The internal supply covers existing people employed and potential changes to existing people employed through organizational changes, career programs, and internal promotions (Bidwell & Keller, 2014). The external supply covers potential candidates available in the local, national, and international labor markets (Bidwell & Mollick, 2015).

Both internal and external hiring have their advantages and disadvantages (DeVaro et al., 2019). Internal hiring allows for lowering hiring costs, offering career opportunities, and improving employee engagement (Cassidy et al., 2016). On the other hand, it may result in a less diverse workforce, a lack of new insights, and demoralization of individuals not promoted (Devaro et al., 2018). External hiring brings a potentially larger applicant pool and new perspectives (Frederiksen & Kato, 2018). However, it may take more time and resources due to the more demanding recruitment, selection, and orientation processes (Hong, 2020). Moreover, new hires may not fit well with the organization, team, and job requirements (Deming, 2017). Considering the pros and cons of internal and external hiring, in many cases, it is more beneficial for a business to bring up quality employees on its own by employing talented people outside the organization (Green & Hensеke, 2021). The problem, however, is that, in recent years, many businesses have experienced a serious shortage of talented people in the labor market (Juricic et al., 2021).

For example, the Report on Labour Shortages and Surpluses 2021 by McGrath (2021) for the European Labour Authority has provided details on labor shortages and surpluses between the second half of 2020 and the first quarter of 2021, covering thirty countries and regions including twenty-five European Union countries. The report has revealed significant labor shortages in various professions increasing over few recent years. Persistent labor shortages range from agriculture, manufacturing, construction, and transportation to education, health care, and social services to information and communication technology. Similar findings have been revealed in a report on labor shortages in European Union member states in Central and Eastern Europe by Astrov et al. (2022). The report has pointed out increasing labor shortages in European Union member states in Central and Eastern Europe that will continue to increase over time, particularly due to demographic decline. One of the ways to deal with regional labor shortages is to use immigration policies and hire foreign workers from both European and non-European countries, although this may locally lead to various political, economic, and social issues.

The paper analyses the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers to propose possible solutions to long-term people shortages.

2. LITERATURE REVIEW

The phenomenon of employing foreigners has been noticeable for a long time across European Union member states (Travnicek et al., 2020). Within the European Union immigration rules, individual member states do their best to attract qualified foreigners from the other European Union countries as well as the third countries to deal with the lack of quality workforce in specific industries and professions from agricultural, manufacturing, and construction workers to medical, healthcare and social workers to high-tech engineers and IT specialists (Astrov et al., 2022).

Within the Czech Republic, citizens of the European Union countries, the European Economic Area countries, and Switzerland plus citizens of third countries (e.g., Ukraine, Russia, Belarus, Latvia, Serbia, Moldova, Kazakhstan, Vietnam, Mongolia, Philippines, India, etc.) are employed. The citizens of third countries can be employed in the Czech Republic on condition of receiving a work permit and a residence permit or the Employee Card, the Blue Card, or the Intra-Company Employee Transfer Card. Labor migration programs supported by Czech government institutions and attracting foreign workers are aimed at dealing with the long-term labor shortage in the Czech labor market across industries and professions from low-skilled to medium-skilled to highly-skilled workers. The largest numbers of foreign workers are traditionally in industries with a long-term high demand for people, particularly in agriculture, manufacturing, construction, transportation, wholesale, and retail. These industries employ the majority of foreign workers, mostly low- and medium-skilled. The rest is accounted for by industries requiring medium- and high-skilled workers such as health care, social services, education, information technology, high-tech engineering, science, and research (CSO, 2022).

Among the main reasons for the long-term shortage of suitable workforce in some industries and professions are unfavorable demographic developments associated with the aging of the workforce and social changes in work preferences and attitudes, where younger generations of the workforce are not interested in working in some industries and professions (Simkova, 2021), such as agriculture, manufacturing, construction, or transportation associated with low-skilled jobs and low earnings. On the other hand, there is also a long-term shortage of suitable workforce in industries and professions associated with high-skilled jobs and high earnings (Koisova et al., 2018). The issue is that these industries and professions require individuals with high levels of intellectual ability and motivation, but such individuals are in short supply in the population. These population and social trends mean that the economy is unable to naturally replace an aging workforce (Schon & Stahler, 2020). One possible solution is the employment of a foreign workforce.

Employing a foreign workforce can address people shortages across industries and professions in the short and long term. However, employing foreigners brings new economic and social challenges for the entire state as well as for individual businesses (Barzotto et al., 2019). The state must ensure clear rules for the employment of foreigners and must support the integration of foreigners into society, including overcoming cultural and language barriers, to prevent the social exclusion of foreigners and their potential unemployment, which would mean an additional economic and social burden for the state (Mutilva, 2014). From the point of view of state employment policy, it is also necessary to monitor the effects of employing foreigners on the domestic labor market, when the increasing number of foreign workers may lead to pressure to reduce wages and

increase unemployment of domestic workers (Duszczyk & Matuszczyk, 2018). Foreign workers, especially in low-skilled professions, are often paid less than domestic workers, sometimes at the minimum wage level, and therefore may struggle to earn enough money, which may lead to serious economic and social issues (Gutfleisch, 2022). These negative effects of employing foreign workers should be avoided by rightful state employment policy as well as socially responsible employment policy of individual businesses (Auer et al., 2019).

Individual businesses employing foreign workers face similar challenges as the state itself. Foreign workers can bring missing know-how to the business and often at lower labor costs (Antoniolli et al., 2022), but at the same time they increase the demands on recruitment, selection, and orientation processes (Bills et al., 2017). Businesses can recruit foreign workers themselves or, more often, through the services of specialized HR agencies. The selection should focus on both technical and social skills, but also on the motivation to stay and work abroad. Language skills are a specific problem. The business must consider how important the knowledge of the local language is, or rather the business must determine a common language of communication, such as English (Ahmad & Scott, 2021). Helping to overcome language and other barriers to communication and cooperation in the workplace must be the main purpose of the orientation of foreign workers (Privara et al., 2019). The business must create the conditions for successful performance and prevent potential turnover issues (Schmidt, 2020). All this requires adequate time, effort, and money, but these investments will pay off (Grech, 2017).

3. METHODOLOGICAL APPROACH

The paper analyzes the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers to propose possible solutions to long-term people shortages using relevant data of the HR Analysis in Companies 2023 survey accomplished by the employee search company Grafton Recruitment Czech Republic during November and December 2022.

The collection of relevant data was carried out via an online questionnaire survey. The respondents were clients of Grafton Recruitment Czech Republic including general managers, HR managers, and HR specialists supplemented by HR professionals surveyed through the professional social network LinkedIn.

Originally the online questionnaire used included twenty-five questions related to HR decisions, plans, and challenges in 2022 and 2023. For the paper, six questions regarding the number of employees and the employment of foreigners in 2022 and 2023 were selected: (1) Has the number of your employees changed in 2022? (2) Do you plan to change the number of your employees in 2023? (3) From which countries do you employ foreign workers? (4) Through what sources do you recruit foreign workers? (5) To what extent have you employed foreign workers in 2022 (compared to 2021)? (6) Do you plan to employ foreign workers from third countries (outside the European Union) in 2023?

The sample of 478 businesses included 290 (61%) manufacturing businesses and 188 (39%) non-manufacturing businesses. Among all of these businesses, there were 137 (27%) small businesses (100 or less employees), 213 (44%) medium-sized businesses (101-500 employees), and 137 (29%) large businesses (501 or more employees).

The analysis of relevant data was performed using Microsoft Excel. Relative frequencies of responses were calculated and the dependence of the responses on the nature (manufacturing and

non-manufacturing) and the size (small, medium-sized, and large) of surveyed businesses was evaluated. Within this evaluation process, a Pearson's correlation analysis and a chi-square goodness of fit test with a significance level of 0.05 were applied and a hypothesis (H) was verified:

Hypothesis (H): Surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.

4. RESEARCH RESULTS

The experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers is analyzed to propose possible solutions to long-term people shortages. The analysis and discussion are divided into two sections covering the number of employees and the employment of foreigners in 2022 and 2023.

4.1. The Number of Employees in 2022 and 2023

The first two analyzed questions were related to the number of employees in 2022 and 2023. The first question asked about implemented changes in the number of employees in surveyed businesses in 2022 (see Table 1). The responses revealed that the number of employees increased in 44% of businesses, remained the same in 36% of businesses, and decreased in 20% of businesses.

Table 1. Implemented changes in the number of employees in surveyed businesses in 2022

The number of employees					
		Nature		Size	
Increased	44%	Manufacturing	57%	Small	18%
				Medium-sized	46%
				Large	36%
		Non-manufacturing	43%	Small	45%
				Medium-sized	41%
				Large	14%
Remained the same	36%	Manufacturing	56%	Small	45%
				Medium-sized	36%
				Large	19%
		Non-manufacturing	44%	Small	56%
				Medium-sized	33%
				Large	11%
Decreased	20%	Manufacturing	76%	Small	10%
				Medium-sized	45%
				Large	45%
		Non-manufacturing	24%	Small	10%
				Medium-sized	70%
				Large	20%

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

The 44% of businesses in which the number of employees increased included 57% of manufacturing businesses in which the number of employees most often increased among medium-sized businesses (46%) and 43% of non-manufacturing businesses in which the number of employees most often increased among small businesses (45%). In contrast, the 20% of businesses in which the number of employees decreased included 76% of manufacturing businesses in which

the number of employees most often decreased among medium-sized and large businesses (45%) and 24% of non-manufacturing businesses in which the number of employees most often decreased among medium-sized businesses (70%). These findings indicate that the number of employees most often changed (increased or decreased) among manufacturing businesses including more medium-sized and large businesses than small businesses. This could confirm the assumption that medium-sized and large manufacturing businesses with more than 100 employees are more sensitive to changes in the demand for their production (Paul & Chowdhury, 2021), and therefore must change the workforce demand and the number of employees more often (Awad et al., 2018). However, Pearson's correlation analysis showed a negligible association between the size of the business and the implemented change in the number of employees (r = -0.128).

The second question asked about planned changes in the number of employees in surveyed businesses in 2023 (see Table 2). The responses revealed that in 44% of businesses no changes were planned or no plans had been made related to the number of employees, in 41% of businesses an increase in the number of employees was planned, and in 15% of businesses a reduction in the number of employees was planned.

Table 2. Planned changes in the number of employees in surveyed businesses in 2023

The number of employees					
		Nature		Size	
Increase	41%	Manufacturing	60%	Small	22%
				Medium-sized	44%
				Large	34%
		Non-manufacturing	40%	Small	49%
				Medium-sized	36%
				Large	15%
No changes/plans	44%	Manufacturing	58%	Small	15%
				Medium-sized	48%
				Large	37%
		Non-manufacturing	42%	Small	48%
				Medium-sized	43%
				Large	9%
Reduction	15%	Manufacturing	74%	Small	10%
				Medium-sized	46%
				Large	44%
		Non-manufacturing	26%	Small	35%
				Medium-sized	47%
				Large	18%

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

The 41% of businesses in which an increase in the number of employees was planned included 60% of manufacturing businesses in which the increase in the number of employees was planned most often among medium-sized businesses (44%) and 40% of non-manufacturing businesses in which the increase in the number of employees was planned most often among small businesses (49%). In contrast, the 15% of businesses in which a reduction in the number of employees was planned included 74% of manufacturing businesses in which the reduction in the number of employees was planned most often among medium-sized businesses (46%) and 26% of non-manufacturing businesses in which the reduction in the number of employees was planned most often among medium-sized businesses (47%). These planned changes in the number of employees in 2023 correspond

to implemented changes in the number of employees in 2022. This means that the changes in the number of employees (an increase or a reduction) were planned most often among manufacturing businesses including more medium-sized and large businesses than small businesses. In other words, businesses that implemented changes in the number of employees in 2022 planned changes in the number of employees in 2023. A Pearson's correlation analysis showed a negligible association between the size of the business and the planned change in the number of employees ($r = -0.142$).

4.2. The Employment of Foreigner Workers in 2022 and 2023

The remaining four analyzed questions were related to the employment of foreign workers in 2022 and 2023. The third question asked about countries from which surveyed businesses employ foreign workers. The responses revealed that 20% of businesses do not employ foreign workers at all and 38% of businesses employ foreign workers from the European Union countries only. In addition, businesses employ foreign workers from Ukraine (55%), Russia (9%), Belarus (6%), Kazakhstan (5%), Serbia (5%), Philippines (4%), Moldova (3%), India (3%) or Latvia (1%). The third countries (outside the European Union) from which surveyed businesses employ foreign workers include mostly countries from Eastern Europe, based on the existence of traditional economic relations with the Czech Republic.

The analysis of the dependence of the responses on the nature of surveyed businesses (manufacturing and non-manufacturing) showed (see Figure 1) that in 2022, manufacturing businesses generally employed more foreign workers than non-manufacturing businesses while manufacturing companies also employed more third-country foreign workers than non-manufacturing businesses.

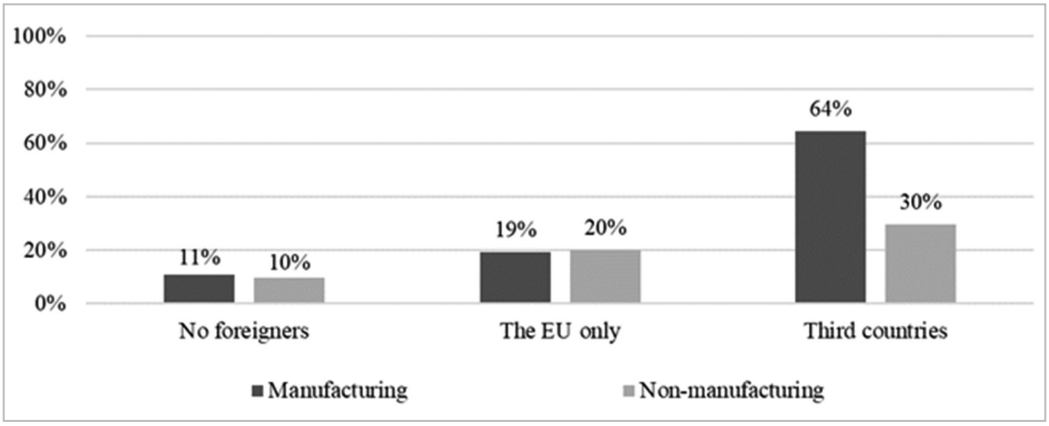

Figure 1. Employment of foreign workers in 2022

Source: Own processing on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

Within the analysis of the dependence of the responses on the nature of surveyed businesses, hypothesis H was verified that surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses (see Table 3). The null hypothesis was tested that the employment of foreign workers does not depend on the nature of the business. Since the chi-square statistic [χ^2] was higher than the critical chi-square value [$\chi^2_{0,05}(1)$], the null hypothesis was rejected. The employment of foreign workers depends on the nature of the business. Based on these and other stated findings, hypothesis H was confirmed. In other words, surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.

These findings could be generalized. Manufacturing businesses usually experience a serious shortage of technical and manual workers and therefore have to use foreign workforce more often and to a greater extent (Thangavelu, 2016).

Table 3. Employment of foreign workers in 2022

	Yes	**No**	**∑**
Manufacturing	206	43	**249**
Non-manufacturing	111	39	**150**
∑	**317**	**82**	**399**
H_0: The employment of foreign workers does not depend on the nature of the business. H_A: The employment of foreign workers depends on the nature of the business.			
Chi square statistic $\chi^2 = 4.370$ Critical chi-square value $\chi^2_{0,05}(1) = 3.841$			
Hypothesis H was confirmed. The employment of foreign workers depends on the nature of the business. Surveyed manufacturing businesses employ more foreign workers than surveyed non-manufacturing businesses.			

Source: Own calculations on the HR Analysis in Companies 2023 survey by Grafton Recruitment Czech Republic, November-December 2022

Following the need to employ foreign workers, the fourth question asked about sources the surveyed businesses use to hire foreign workers. The responses revealed that 65% of businesses hire foreign workers on their own, while 35% of businesses hire foreign workers with the help of HR agencies. The analysis of the dependence of the responses on the nature of surveyed businesses showed that manufacturing businesses hire foreign workers with the help of HR agencies more often than non-manufacturing businesses (48% versus 13% in favor of manufacturing businesses), while non-manufacturing businesses hire foreign workers on their own more often than manufacturing businesses (87% versus 52% in favor of non-manufacturing businesses). This corresponds to the reality when many HR agencies focus on missing technical and manual workers and offer manufacturing businesses a complete service related to their hiring (Wallo & Koch, 2018).

The fifth question asked about the extent surveyed businesses employed foreign workers in 2022 (compared to 2021). The responses revealed that 51% of businesses employed foreign workers to the same extent, 37% of businesses to a greater extent, and 12% of businesses to a lesser extent. Among the 37% of businesses employing foreign workers to a greater extent, there were 44% of manufacturing businesses and 25% of non-manufacturing businesses, while among the 37% of businesses employing foreign workers to a lesser extent, there were 14% of non-manufacturing businesses and 12% of manufacturing businesses. These findings confirm that surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses.

The sixth question asked about the plan to employ foreign workers from third countries (outside the EU) in 2023. The responses revealed that 46% of businesses planned to employ the same number of foreign workers from third countries, 11% of businesses planned to employ fewer foreign workers from third countries, 8% of businesses planned to employ more foreign workers from third countries, and 35% of businesses planned to employ no foreign workers from third countries. Among the 35% of businesses planning to employ no foreign workers from third countries, there were more non-manufacturing businesses (48%) than manufacturing businesses (29%). On the other hand, among the 46% of businesses planning to employ the same number of foreign workers from third countries, there were more manufacturing businesses (52%) than non-manufacturing businesses (35%). These findings confirm again that surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses.

5. DISCUSSION AND PROPOSALS

The analysis of the employment of foreign workers in surveyed manufacturing and non-manufacturing businesses revealed that most of the surveyed manufacturing and non-manufacturing businesses have a significant experience with the employment of foreign workers, which helps them to deal with people shortages (Juricic et al., 2021). Surveyed manufacturing businesses employ foreign workers more intensively than surveyed non-manufacturing businesses (Thangavelu, 2016), mainly due to long-term shortages of technical and manual workers (Wallo & Koch, 2018), who are mostly hired from third countries, outside the European Union (Travnicek et al., 2020). However, the potential solutions to long-term people shortages are similar for both manufacturing and non-manufacturing businesses.

Dealing with long-term people shortages is a challenging issue that should be based on a combination of various organizational and technical measures related to working hours, job design, process automation, process outsourcing, and talent development:

1. The issue of working hours refers to the scheduling of weekly working hours established by labor law (typically no more than 40 hours per week) into daily work shifts (typically five eight-hour shifts per week) to meet the business requirements (Song & Lee, 2021). In the case of a short-term people shortage, it is possible to use overtime work taking into account the maximum limits established by labor law to avoid physical and mental overload of workers (Ko & Choi, 2019). In the case of a long-term shortage of people, it is possible to use various shift work arrangements (typically two twelve-hour shifts or three eight-hour shifts) to ensure the continuous operation of the business. However, as in the case of overtime work, it is necessary to limit the negative impacts on the safety and health of workers (Lu et al., 2022).
2. The issue of job design is about dividing complex work activities into specific tasks, duties, and responsibilities of individual jobs representing fundamental organizational units (Magnier-Watanabe et al., 2019). Dealing with short-term and long-term people shortages, it is possible to apply different job design approaches, such as job rotation (shifting people from job to job), job enlargement (broadening the scope of jobs by expanding the number of tasks and duties that are performed), or job enrichment (increasing the depth of jobs by adding responsibilities for their performance) to enable the business to operate as planned (Hadidi & Abzakh, 2022).
3. The issue of process automation is about replacing human labor with machines wherever it is needed and beneficial for both the business and people (Hyun et al., 2021). The solution to long-term people shortages is that production processes where people are lacking are provided by machines, and available people are used in processes where the use of people is more profitable than the use of machines.
4. The issue of process outsourcing is about ensuring selected internal business processes through external providers and sources, which generally brings cost savings, reduced risks, and missing know-how (Morgulets et al., 2020). From the point of view of the long-term people shortages, it is about an external provision of processes for which the business does not have enough qualified workers.
5. The issue of talent development is about attracting and keeping individuals promising for high performance and development potential (Miceli, 2022). Such talents can be obtained within or outside the business and the investment in their training and development can help to deal with long-term people shortages by preparing them for hiring and promotion from within.

The introduction of such organizational and technical measures to deal with long-term people shortages usually requires investment in changes to the entire human resource management system (Larsson & Edwards, 2022), which should enable the organization to acquire, retain, and develop enough talented people in all key professions and positions (Younas & Bari, 2020).

6. CONCLUSION

Analyzing the experience of a sample of 478 manufacturing and non-manufacturing businesses across the Czech Republic with the employment of foreign workers the paper proposes possible solutions to long-term people shortages of surveyed businesses experiencing a serious shortage of technical and manual workers, who are mostly hired from third countries (outside the EU).

The findings analyzed and discussed confirm a hypothesis that surveyed manufacturing businesses employ more foreign workers, including more third-country foreign workers, than surveyed non-manufacturing businesses. Manufacturing businesses seem to be more sensitive to changes in the demand for their production. They change the workforce demand and the number of employees more often. At the same time, they need more capacity, including employees, which increases the need to employ foreign workers. Dealing with long-term people shortages the manufacturing and non-manufacturing businesses can apply various organizational and technical measures related to working hours (overtime and shift work), job design (job rotation, job enlargement, and job enrichment), process automation (introducing machines instead of human labor), process outsourcing (ensuring selected internal business processes through external providers and sources), and talent development (attracting and keeping individuals promising for high performance and development potential).

Although the sample of manufacturing and non-manufacturing businesses is not very large and includes only businesses in the Czech Republic, the findings analyzed and discussed demonstrate a serious business issue of a lack of quality workforce challenging businesses across the European Union. This situation encourages further research on dealing with people shortages in various industries and professions. The solutions to long-term people shortages presented could be beneficial for both manufacturing and non-manufacturing businesses

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Review Paper

MANAGEMENT OF MIGRATION OF PERSONNEL IN HEALTHCARE WITH AN EMPHASIS ON NURSES AND TECHNICIANS IN THE REPUBLIC OF CROATIA

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Abstract: *Active management of personnel in healthcare is a dynamic process that needs to be decided by the guidelines of the healthcare reform. Health personnel is considered the greatest and most important potential of health care, the basic intention is to strengthen health personnel of all profiles in accordance with the needs of society. The importance of the role of nurses in providing care in hospitals and long-term care facilities under normal circumstances was particularly pronounced during the COVID-19 pandemic. The lack of high- and middle-level health workers is not an isolated phenomenon in Croatia but also exists at the level of the entire EU, therefore the description of jobs and responsibilities increases according to the level of education. The aim of this work is to analyze the management of human resources in healthcare with an emphasis on senior and middle staff, and here we mean nurses and technicians. The scientific contribution of this work is manifested in the detection of socio-political and economic causes of the failure to train an adequate number of qualified health workers, as well as insufficient steps in their attraction and retention.*

Keywords: *Migration, Nurses and medical technicians, Personnel management in health care.*

JEL Classification I11 · O15

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1. INTRODUCTION

The total number of health workers has been steadily increasing over the past two decades. In the health care system, the employees represent the offer, and the demand is the employer, while this demand should be dependent on the needs of the social community and the budget, i.e. the ability to pay (Araujo, 2019). Croatia used to have fewer doctors and nurses than many other EU countries, the ratio of doctors and nurses in relation to the number of inhabitants has gradually increased despite fears about the consequences of Croatia's accession to the EU in 2013 and the potential emigration of health professionals. The Ministry of Health has a management role in the health system and is the main regulatory body responsible for the development, planning, and evaluation of health policy. Many public health programs have been launched, regulatory standards have been set, and opportunities for training health professionals are expanding. The profession is regulated by the Act on Nursing NN 121/03. and 117/08. The National Health Development Plan for the period from 2021 to 2027 aims to establish a human resources management system. Numerous measures are being taken to improve the recruitment and retention of health personnel. According to the methodology, health workers include doctors of medicine, nurses, doctors of dental medicine, masters of pharmacy, masters of medical biochemistry, speech therapists, midwives, physiotherapists, bachelors of physiotherapy, massage therapists, health-laboratory technicians, bachelors of medical-laboratory diagnostics, medical technologists, biotechnologists and biomedical engineers, healthcare biologists, clinical psychologists, medical physicists, phoneticians and nutritionists if they perform healthcare activities in the process of diagnosis and treatment. The efforts are to work on changes in the education of middle and senior health personnel, i.e. nurses and technicians, and thus bring them to a higher professional level that accompanies such educational components. Through its professional associations, it works to promote and strengthen the reputation of the profession. In recent times, the possibility of nurses taking over some of the duties that are now performed by doctors, which is the practice in the health systems of many countries, has been mentioned more and more often as a way to solve the problem of the lack of qualified health professionals. The statistics support the fact that there are more and more employees in this sector and that they are more and more educated. The United Kingdom allows nurses to prescribe drugs and make home visits, in Sweden they medically manage patients' chronic conditions and administer vaccinations, and pharmacists prescribe drugs for certain conditions, the Netherlands, Ireland, and Spain allow nurses to perform certain medical procedures (Jaric Dauenhauer, 2023). Nursing as a profession is in the process of proving itself professionally and seeking greater reputation and autonomy compared to doctors, as well as recognition of its unique role in patient health care (Vuletic, 2013). The problem is that first-degree nursing education is almost not recognized, while no law has been passed for master's degrees in nursing and graduate nurses to perform the position itself in accordance with the level of education, and accordingly it is necessary to harmonize the workload coefficients of the workplace. Dissatisfaction with working conditions, and mismatch of coefficients and benefits as a result cause migration of health workers in search of better opportunities in other countries.

2. PERSONNEL WITH HIGHER AND SECONDARY EDUCATION IN THE FIELD OF HEALTHCARE

The development of the branch of nursing and related branches is continuously encouraged in such a way as to increase enrollment quotas and open up opportunities for the training of nurses, faculties for health studies, and health colleges, which provide various opportunities for education, training, and advancement. Recently, we also have the first doctors of science from the ranks of nurses and technicians. The results of research with 5 Zagreb universities that organize

and implement programs for the education of people over the age of 18 showed that the number of requalifications in healthcare professions has also increased (Koturic-Cabraja, 2020). The first faculty for the education of non-medical health personnel was the Faculty of Health Studies in Rijeka, founded in 2014. In addition to nurses and technicians, it also educates physiotherapists, radiology technicians, and midwives in undergraduate studies (Caleta, 2021). The study of nursing enjoys great popularity in Croatia. It is one of the most sought-after studies in the health profession, in which interest is increasing every year. Table 1 shows the list of nursing study programs according to holders and contractors.

Table 1. List of nursing study programs according to providers and contractors

Name of the study	Program holder	Performer
Nursing	Josip Juraj Strossmayer University in Osijek	Faculty of Dental Medicine and Health Osijek
Nursing	University of Split	University Department of Health Studies
Nursing	University of Zagreb	Faculty of Medicine
Nursing	University of Health in Zagreb	University of Health in Zagreb
Nursing	University of Zadar	University of Zadar
Nursing	Croatian Catholic University	Croatian Catholic University
Nursing	Juraj Dobrila University in Pula	Juraj Dobrila University in Pula
Nursing **Nursing - Promotion and protection of mental health** **Nursing - management in nursing**	University of Rijeka	Faculty of Health Studies
Nursing	University of Dubrovnik	University of Dubrovnik
Nursing **Nursing - management in nursing**	University of the North	University of the North
Nursing	Polytechnic in Bjelovar	Polytechnic in Bjelovar
Nursing	Ivanić-Grad College	Ivanić-Grad College

Source: Author's analysis from data from MOZVAG (2023)

According to statistical indicators, the number of employees in health care and social care, which are activities dominated by middle and senior health workers, is continuously increasing. From 2015/16 the number of persons employed in health care and social welfare activities was 103,211, while in 2020/21 amounted to 117,146, which is shown in Table 2.

Table 2. Persons employed in health care and social welfare activities 2015/2021.

Year	Total	Legal entities	Trade and liberal professions
2020./21.	117 146	104 886	12 260
2019./20.	113 821	101 622	12 199
2018./19.	111 776	99 714	12 062
2017./18.	100 838	88 819	12 019
2016./17.	99 151	87 017	12 134
2015./16.	103 211	91 277	11 934

Source: Author's analysis of data from the Statistic Yearbook of the HZZ (2015, 2016, 2017, 2018, 2019, 2020, 2021)

The number of unemployed in the same activities is falling, and in 2021 there were half as many people in health care and social welfare activities on the labor market than in 2014, which is shown in tables 3 and 4.

Table 3. Unemployed persons in health care and social welfare activities 2014/2021.

Year	2021.	2020.	2019.	2018.	2017.	2016.	2015.	2014.
Total	4 544	4 679	3 548	4 295	5 624	6 743	7 313	8 452

Source: Author's analysis of data from the Statistic Yearbook of the HZZ (2015, 2016, 2017, 2018, 2019, 2020, 2021)

Table 4. Number of unemployed by age and profession, nurse and technician by years 2014/2021

Year/Age	2014.	2015.	2016.	2017.	2018.	2019.	2020.	2021.
15-19	173	446	376	287	228	154	142	1
20-24	1759	1711	1218	908	751	522	417	21
25-29	466	378	317	242	220	177	141	12
30-34	297	270	217	155	113	94	75	5
35-39	107	127	112	96	86	74	87	8
40-44	77	56	43	43	36	30	46	4
45-49	88	62	41	46	34	22	22	1
50-54	77	62	59	53	39	22	31	2
55-59	24	30	31	34	33	32	19	6
60 and more	3	2	2	3	5	4	7	-
Total	3071	3144	2416	1867	1545	1131	987	60

Source: Croatian Employment Service (2021)

The number of registered unemployed places from the records of the Institute in 2014, when there were 16,886, in 2021, it has increased many times and amounted to 26,018 (Table 5).

Table 5. Reported vacancies and employment from the records of the Institute in the field of health care and social welfare in 2014/21.

Year	Registered vacancies	Employees from the Institute's records
2021.	26 018	9 290
2020.	19 612	8 119
2019.	23 810	7496
2018.	22 226	8800
2017.	20 596	7467
2016.	21 164	8 852
2015.	22 378	9 493
2014.	16 886	7 850

Source: Author's analysis of data from the Statistic Yearbook of the HZZ (2015, 2016, 2017, 2018, 2019, 2020, 2021)

According to the statistical indicators of the employment rate according to the occupations of employees in health care and social care at the level of secondary education, the profession of nurse/technician, and at the level of high or higher education, the profession of nursing, a high employment rate has been recorded in recent years, which is shown in tables 6 and 7.

Table 6. Employment rate by occupation at the level of secondary education - occupation nurse/ technician and other related occupations 2016/2021.

Interest	2021.	2020.	2019.	2018.	2017.	2016.
Nurse	76,5%	73,7%	68,0%	64,7%	135%	134,9%
Dental technician	60,9%	51,4%	49,2%	-	-	-
Pharmacy technician	59,3%	48,2%	-	49,8%	-	-
Health laboratory technician	58,5%	51,8%	46,5%	50,6%	-	50,7%

Source: Author's analysis of data from the Statistic Yearbook of the HZZ (2017, 2018, 2019, 2020, 2021)

Table 7. Employment rate by occupation at the level of high or higher education - occupation nursing and other related occupations 2016/2021.

Interest	2021.	2020.	2019.	2018.	2017.	2016.
Nurse	83,8%	75,2%	61,4%	63,0%	204%	121,8%
Radiological technology	75,0%			59,6%		
Medical and laboratory diagnostics	71,2%			57,9%		

Source: Author's analysis of data from the Statistic Yearbook of the HZZ (2017, 2018, 2019, 2020, 2021)

The average monthly net salary in health care and social welfare activities in 2020 was 1,086.00 euros, while in 2021 it was 1,167.00 euros. In health care activities, it is much higher than in social care activities in accommodation. Women are also underpaid in this industry more than men, and her average net salary in 2021 was 1,095.00 euros, while his average net salary was 1,403.00 euros.

Table 8. Average monthly net salary in health care and social welfare activities 2020/21 (in euros)

	2020			2021		
	Total	Men	Woman	Total	Men	Woman
Health care and social welfare activities	1 086	1 300	1 020	1 167	1 403	1 095
Health care activities	1 169	1 384	1 095	1 267	1 501	1 186
Social welfare activities with accommodation	789	850	778	821	876	811

Source: Author's analysis from data from DZS - Statistics in series, Employment and Wages (2023)

The number of hospital beds in Croatia only recently decreased in 2019 to 5.7 beds per 1,000 inhabitants, while in 2000 there were 6.0. A greater decrease in the number of hospital beds per capita was recorded in the entire EU, from 6.2 in 2004 to 5.3 in 2019. In Croatia, the decrease in the number of beds indicates further opportunities to relocate services from hospitals and is not accompanied by a reduction in jobs. (Review of the state of health and health care, 2021). The number of days and cases of hospital treatment by year is decreasing (Table 9). The number of healthcare institutions is increasing slightly, which is accompanied by an increase in the number of new jobs in the healthcare system. Table 10 shows the number of health institutions by year.

Table 9. Number of days and cases of hospital treatment by the year 2017/2021.

Year	2017.	2018.	2019.	2020.	2021.
Days of hospital treatment	5 768	5 616	5 534	4 428	4 656
Hospital treatment cases	659	650	649	518	553

Source: Analysis by authors from Croatia in Numbers (2022)

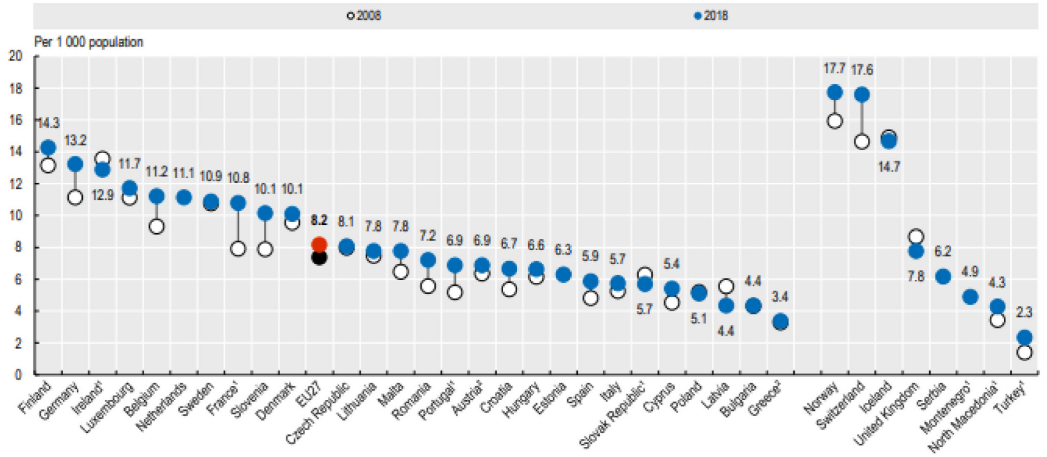
Table 10. Number of healthcare institutions by year 2013/2021.

Health institution	2013.	2014.	2015.	2016.	2017.	2018.	2019.	2020.	2021.
Institutes of public health	22	22	22	22	22	22	22	22	22
General hospitals	22	20	20	20	22	22	22	22	22
Clinics	5	5	5	5	5	5	5	3	6
Special hospitals	34	33	32	33	32	33	34	34	35
Health centers	49	49	49	49	49	49	49	44	44
Pharmacies	187	181	177	178	180	183	186	189	184
Polyclinics	360	350	357	356	353	355	358	330	321
Nursing care institution	199	198	206	214	220	278	280	225	141
Institutions of occupational medicine	9	9	9	8	7	7	6	5	4
Emergency care medicine	21	21	21	21	21	21	21	21	21

Source: Author's analysis of data from the Croatian Health Statistical Yearbook (2017, 2018, 2019, 2020, 2021, 2022)

3. NURSING IN THE EUROPEAN UNION

In the EU, the number of nurses per 1,000 inhabitants in 2018 was the highest in Finland, Germany, and Ireland, while Bulgaria and Greece had the lowest number. Between 2008 and 2018, the total number of nurses per capita increased constantly in most EU countries, except in Latvia, the Slovak Republic, and Ireland where it decreased, while the number increased significantly in Norway and Switzerland. In Norway, with the Competence Lift 2020 action plan adopted in 2016, the Government adopted a series of measures to encourage and recruit medical students into education programs and to improve working conditions. This action plan will be extended for another five years according to Competence Lift 2025 (Health at a Glance: Europe, 2020). Graph 1 shows the number of nurses per 1,000 inhabitants in European countries in the period from 2008 to 2018.



Graph 1. Nurses per 1,000 inhabitants in the EU, 2008 and 2018.
Source: Health at a Glance: Europe (2020)

Figure 1 illustrates the number of nurses and doctors per 1,000 inhabitants. Countries with a small number of doctors and a large number of nurses per 1000 inhabitants are Finland, Ireland, France, the Netherlands, Belgium, Luxembourg, and Slovenia. Countries with a small number of doctors

and nurses per 1000 inhabitants are Croatia, Hungary, Romania, Poland, Slovakia, and Estonia. Countries with a large number of doctors and a small number of nurses per 1000 inhabitants are Bulgaria, Italy, Spain, Portugal, Estonia, Lithuania, Cyprus, and Malta. Countries with a large number of doctors and nurses per 1000 inhabitants are Norway, Germany, Austria, Denmark, Sweden, the Czech Republic (marginal) Iceland (marginal).

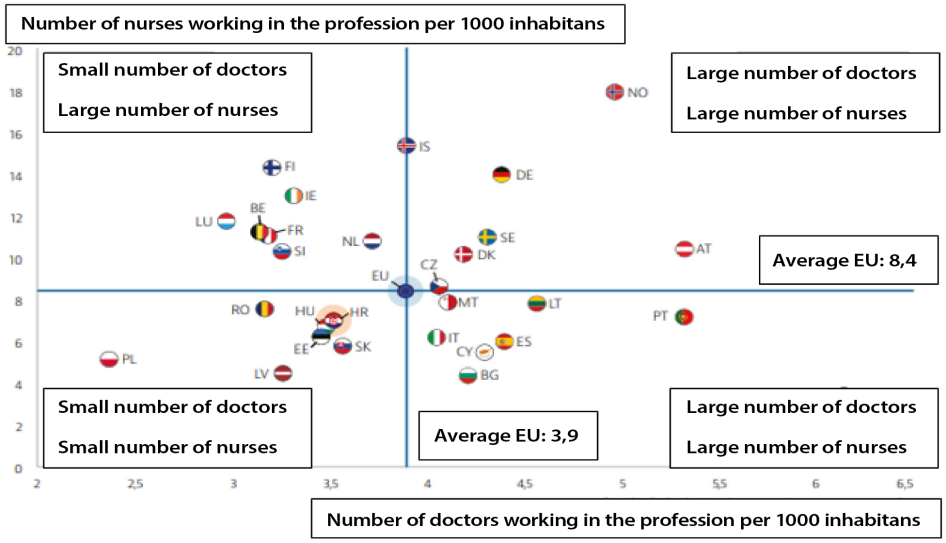
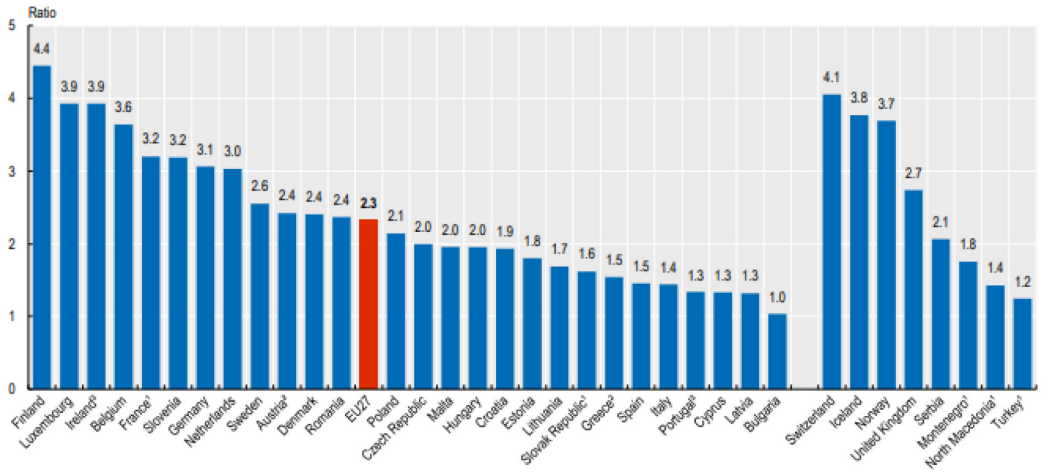


Figure 1. Number of doctors and nurses per 1,000 inhabitants in the EU, 2019.
Source: Eurostat (2019)

The number of nurses greatly exceeds the number of doctors in most EU countries. In 2018, in most EU countries there were on average two nurses for one doctor, while in Finland, Luxembourg, and Ireland the ratio of the number of nurses to doctors is around four or more. The lowest ratio is in Bulgaria, where there is one nurse for every doctor. The graph shows the ratio of nurses to doctors in 2018 in Europe.



Graph 2. The ratio of nurses to doctors, 2018
Source: Health at a Glance: Europe (2020)

4. NURSING IN CROATIA

In Croatia, the entire health system lacks the number of health workers according to statistical data when viewed proportionally to the total population. The criterion for determining the shortage of nurses is based on a comparison of the actual number of nurses in each individual hospital and their number predicted by the systematization of workplaces. The shortage of nurses in some hospitals was alarming even before the outbreak of the COVID-19 pandemic, which was canceled during the pandemic when the staff of other hospitals filled this shortage. Statistically speaking, the number of employees in the healthcare system is continuously growing, and nurses and technicians are the backbone of the healthcare system. According to current data published by the Croatian Institute of Public Health, the most numerous group is in healthcare. In 2019, their number was 31,555, which is 43.5% of the total number of employed workers (Caleta, 2021). In 2018, 41,332 nurses and medical technicians were licensed, of which 26% have bachelor's degrees in nursing with a university or professional degree, 4% have completed professional or university graduate studies and post-graduate (doctoral) studies, making up more than 40% of the total number of health workers (Sestrinska Proclamation of the Republic of Croatia, 2020). There are 2,763 nurses with a university degree employed in Croatia, and 30% of them work in outpatient, emergency, intensive care, or operating units (Hina, 2023). In Croatia, the number of senior nurses per 100,000 was recorded at 166.5, and the number of midwives in Croatia was 40 per 100,000 in 2018 (Eurostat, 2019). Hospitals lack 4,500 nurses, which means that they are working 22% less than the required number. The "Dr. Fran Mihaljevic" hospital is missing 270 nurses, which means that almost half of the nurses are missing in that hospital. Before the outbreak of the epidemic, 80 nurses were missing in Dubrava Hospital, and in 2020, about 50 of them left. In the hospital in Knin, 30 nurses are missing, and 30% of the nurses are working less than the number foreseen by the systematization (Lukic, 2020).

At the end of 2021, a total of 75,186 health workers and associates were employed in the healthcare system of the Republic of Croatia, while in 2020 there were 72,929 of them. In the structure of the total number of employed healthcare workers and associates, observed by years 2016-2021. the largest share is those with a medium level of professional education, followed by the share of those with a high level of professional education, then with higher education, and the smallest number of employees with a lower level of professional education, which is shown in Table 11.

Table 11. Total number of health workers with high, higher, intermediate, and lower levels of professional education in the health system in 2016/2021.

Degree of professional education	Total					
	2016	2017	2018	2019	2020	2021
University degree	1 695	1 782	1 873	2 020	2 127	2 346
Junior college	11 546	12 167	13 210	13 805	14 169	15 553
High school	33 365	33 563	33 538	33 424	33 150	33 278
Semi-skilled	431	457	646	680	699	722

Source: Author's analysis from the Croatian Health Statistical Yearbook (2017, 2018, 2019, 2020, 2021, 2022)

Nurses and technicians, the most numerous group in healthcare, are divided into those with completed high, higher, and secondary education, and those with secondary vocational education dominate, which is shown in Table 12.

Table 12. Total number of nurses and technicians in 2016/2021.

Year	University degree	Junior college	High school
2016.	265	6 419	25 567
2017.	245	6 789	25 505
2018.	380	7 410	25 132
2019.	325	8 017	24 989
2020.	373	8 554	24 774
2021.	436	9 230	24 470

Source: Author's analysis of data from the Croatian Health Statistical Yearbook (2017, 2018, 2019, 2020, 2021, 2022)

Table 13 shows the number of health workers with high, higher, secondary, and lower levels of professional education in the health system broken down by profession in 2021. year. According to the Chamber of Nurses, there are currently 13 nurses who have completed doctoral studies (personal communication, March 29, 2023). In the group of nurses-technicians, 13.6% are men (Croatian Health Statistical Yearbook, 2021). Among the total number of employees, the number of health workers increased by 2,624, and non-health workers decreased by 47, so the shares are 77% of health workers (57,930) and 23% (16,343) of non-health workers. In 2021, compared to 2020, the number of employees increased by 2,577 employees, of which 512 are nurses and 1,721 are other health and non-health workers. In 2020, the number of employees increased compared to 2019 by 1,174, of which 267 were nurses and 422 other employees. In 2019, compared to 2018, 2,781 people were newly employed in the healthcare system, of which 909 were nurses and 1,418 other employees.

Table 13. Number of healthcare workers with high, higher, secondary, and lower levels of professional education in the healthcare system by profession in 2021.

Occupation	Level of education	Total	Male	Female
Nurse technician	University degree	436	53	383
Nurse technician	Junior college	9 230	974	8 256
Nurse technician	High school	24 472	3 378	21 094
Bachelor of nursing	Junior college	8 972	972	800
Bachelor of midwifery	Junior college	258	2	256
Midwifery course	High school	1 404	3	1 401
Midwifery assistant	High school	93	-	93
General direction	High school	22 975	3 375	19 600
Bachelor's degree in dental hygiene	Junior college	3	2	1
Dental assistant	High school	838	25	813
Bachelor's degree in medical laboratory diagnostics	Junior college	1 432	133	1 299
Bachelor's degree in physiotherapist		2 707	662	2 045
Physiotherapy technician	High school	1 171	289	882
Bath massager	High school	24	4	20
Bachelor's degree in radiological technology	Junior college	1 582	776	806
Radiology technician	High school	11	3	8
Pharmaceutical engineer	Junior college	2	0	2
Pharmacy technician	High school	3 012	177	2 835
Dental technician	Junior college	48	16	32
Dental technician	High school	1 177	378	799
Bachelor's degree work therapy technician	Junior college	232	26	206
Orderly	Semi-skilled	224	34	190
Hygienist	Semi-skilled	1	1	-
Dental assistant	Semi-skilled	3	-	3
Massager	Semi-skilled	3	1	2

Source: Croatian Health Statistical Yearbook (2017, 2018, 2019, 2020, 2021, 2022)

This trend also followed expenses for salaries, which increased by more than 40% from 2016 to 2021, by 24% in the last four years, and last year the base increased by an additional 4% (Kovacic Barisic, 2022). Table 14 shows the base salary for the position of nurse, where it is clear that the base is continuously increasing over the years.

Table 14. The basis for salary calculation for the position of nurse by years (in kuna)

Year	Basic salary year
2006.	4 546,85 kn
2007.	4 819,66 kn
2008.	5 108,84 kn
2009.	5 415,37 kn
2010.	5 108,84 kn
2016.	5 211,02 kn
2017.	5 315,24 kn
1.12.2017.	5 421,54 kn
2019.	5 584,18 kn
1.9.2019.	5 694,87 kn
2020.	5 809,79 kn
2021.	6 044,51 kn
1.5.2022.	6 286,29 kn
1.10.2022.	6 663,47 kn

Source: Salary calculation taken from the Chamber of Nurses (2023b)

Health workers are divided into education groups high, middle, and lower. The intermediate levels include dental technicians, pharmaceutical technicians, radiological technicians, massage therapists, physiotherapist technicians, sanitary technicians, laboratory technicians, dental assistants, midwives, and nurses. The lower ones include masseurs, dental assistants, hygienists, paramedics, and childcare providers. The number of healthcare workers with higher and secondary education, referring to nurses and technicians by age, is shown in the table below.

Table 15 shows the total number of hospitals and beds according to institutions: general hospital, clinical hospital center, clinical hospital, spas, general/family medicine, emergency medicine, women's health care, protection of infants, toddlers, and preschool children, protection and treatment of teeth, occupational medicine.

Table 15. Number of health workers with non-university college degrees and secondary school education by year and number of beds by year in total

Year	Hospitals	Beds	Health workers with non-university college degrees and secondary school education
2008.	80	24 282	15 306
2009.	79	13 967	15 341
2010.	71	25 017	17 154
2011.	70	25 671	18 202
2012.	79	25 285	17 827
2013.	81	25 119	17 469
2014.	77	25 219	17 284
2015.	75	23 583	18 095
2016.	75	23 088	18 895
2017.	75	23 049	19 058

Source: Author's analysis from statistical data of the Croatian Institute of Public Health (2016, 2017)

5. MIGRATION FACTORS OF NURSES AND TECHNICIANS

"Medical carousel" is a term that refers to the migration of health professionals to countries that offer better salaries and training opportunities, the poorest countries thus losing their workforce. The loss of nurses represents efforts and obstacles in the quality of providing basic health and public health services. The main observed problems of nurses and technicians are inadequate working conditions, overload with work, bureaucratic and administrative problems, limited possibility of advancement in work, low income compared to other occupations, lack of motivation of health workers, and fixed-term contracts (Juric, 2020a). Due to dissatisfaction with their work status and working conditions, as well as overwork and underpayment, increased migration is recorded. From 2009 to 2013, according to the data of the Croatian Employment Service, 4,279 nurses emigrated (Croatian Employment Service, 2013). 1438 certificates for work abroad were issued. In the period from the entry into the EU in 2013 to 2017, 1,829 of them left. The age range is between 25 and 45 years of age (Ljubic, 2019). In 2017, the largest number emigrated to Ireland, 99 of them, and in 2016, 33 of them emigrated to Great Britain (Svetic Cisic, 2021). The number of those who left directly after completing their education is not known. It is estimated that the healthcare system lacks about 30% of nursing staff trained at the higher education level (Modrusan, 2022). According to the German Economic Institute in Cologne, there will be a shortage of more than 300,000 nurses for hospital care in that country by 2035 (Juric, 2020b). Table 16 shows a report on requests issued for certificates for work abroad by year, a total of 3,072 were issued until December 31, 2022.

Table 16. Number of requests issued for the departure of nurses and technicians to work abroad by the year 2013/2022.

Year	Issued request
2013.	49
2014.	339
2015.	529
2016.	491
2017.	359
2018.	336
2019.	282
2020.	236
2021.	236
2022.	215
Total	3 072

Source: Press release from the Chamber of Nurses (2023a)

The new Law on Foreigners, which entered into force on January 1, 2021, prescribes a model for the employment of third-country nationals, and annual quotas of employment permits in the Republic of Croatia will no longer be determined. Employers will contact the Croatian Employment Service to find a workforce, which will conduct a labor market test. Annual quota for foreign workers nurses and technicians on 18.12.2020. from the health sector, it was 25 and for nurses and technicians from the social welfare sector, it was 55 (data from the website of the Ministry of the Interior, Statistics). Table 17 shows the number of members of the Chamber of Nurses by country of education as of December 31, 2022. since statistics are not kept according to citizenship. In order to obtain a work license, it is necessary to go through the process of recognition of foreign professional qualifications and to obtain a self-employment permit for the profession of nurse.

Table 17. Number of members of the Chamber of Nurses by country of education as of 12/31/2022. years

Country	Number of members of the chamber on nurses
Bosnia and Herzegovina	350
Slovenia	49
Serbia	39
Germany	15
North Macedonia	7
Czech Republic	5
Ukraine	5
Netherlands	2
Slovakia	2
Hungary	2
Austria	1
Kosovo	1
Lithuania	1

Source: Press release from the Chamber of Nurses (2023b)

Various models have been proposed as possible solutions to this problem (Jaric Dauenhauer, 2023):
- that bachelor's degree nurses increase their authority to perform certain medical tasks by training in a one-year specialization;
- that graduate nurses (master's degrees) receive greater powers;
- to enable additional specialization for master's and graduate nurses.

It is necessary to integrate the new advanced nursing roles into the routine provision of nursing care and include them in regular evaluations. Four different trends have been defined in the development of the new role of nurses and the direction of reforms (Svetic Cisic, 2021):
- developing the specific role of nurses;
- introduction of new profiles of caregivers whose focus is the treatment of chronic conditions;
- increase in educational programs with specific skills and competencies;
- the adoption of new laws and regulations, the trend started in 2010 when certain categories of nurses were given a license to prescribe therapy.

Through professional associations, they act together in their positions with the aim of improving the profession by advocating reforms. Associations for the promotion of the rights of nurses demand measures from the Government to improve working conditions and status in the Proclamation (Sestrinska Proclamation of the Republic of Croatia, 2020):
- Recognition of higher vocational education by amending the Regulation on job titles and job complexity coefficients in public services;
- Planning measures to solve the personnel deficit in nursing;
- Accession to amendments to the Law on Nursing;
- Preparation of the document Projection of personnel needs in Croatian nursing 2020-2025. based on the planning of the needs for the education of nurses at the level of health institutions;
- Adopting the Strategy for the Development of Nursing in the Republic of Croatia in 2030 in cooperation with all relevant nursing institutions in the Republic of Croatia;
- Harmonization of the systematization of workplaces in healthcare institutions with the current Ordinance;
- Defining the right of nurses to benefited working experience.

Ljubic (2019) conducted research in which a total of 150 participants took part, of which 112 women and 38 men are nurses and technicians, 96% of them with high school education, 46% of them with undergraduate vocational education, and 8% with graduate studies. 44.7% rated their satisfaction with their previous work in Croatia as bad 16.7% rated it as very bad, while 48.7% rated their satisfaction with their work abroad as excellent and 45.3% rated it as good. Regarding the reasons for their migration to other countries, 67.1% fully agreed that they left for better working conditions, 64% fully agreed that they left the Republic of Croatia for better income, 52.7% fully agreed that left because of insufficient professional training and advancement at work, 47.3% fully agree that they left because of poor work organization. 78.5% fully agree that they were not paid nearly enough for the work they performed, 88% also think that nurses and technicians are overworked in the Republic of Croatia, and 84.7% believe that nurses and technicians are not valued enough in the Republic of Croatia. 86% declared that they are not thinking about returning to Croatia permanently.

In the second survey conducted by Ceglec (2021), 226 participants took part - all nurses/technicians. The countries of work and residence of the research participants are the Republic of Croatia (48.67%), the Republic of Slovenia (10.62%), and the Federation of Bosnia and Herzegovina (40.71%), of which 190 women and 36 men, 39% of them with secondary education by education, 33% of them with undergraduate professional studies, 23% with graduate studies and 3 of them with doctoral studies. 31% of them have less than 5 years of work experience, 31% of respondents are 26-35 years old and 29% of them are 36-45 years old. Among the reasons for leaving, 50.44% of them cite better working conditions and wages; 44.69% of them have greater opportunities for advancement and improvement. 62.83% of respondents declare that nurses and technicians are not valued enough in the health system of their home country. 64.60% declared that nurses and technicians do tasks that are not in their job description, administrative tasks. 68.60% believe that they should have a beneficial working experience.

According to research, nurses and technicians are potential migrants in the age group of 25 to 45 years with less than 5 years of work experience and high school education. What is highlighted in all the research is that job satisfaction, best practice, and retention are key to a healthy work environment. Satisfying the specifics of the health labor market and the challenges in the education and training of nurses and technicians for dignified work and safety is the ultimate goal. Integration, synthesis of policy and organization, and joint interventions are crucial for implementing changes, removing obstacles in practice, meeting local needs, and defining the necessary combinations of knowledge and skills (Maier, 2017).

6. CONCLUSION

The health workforce is based on the needs of society. In it, the most numerous are those with higher and secondary health education. These are active staff in clinical events and are fully equal and involved members in the treatment process. This occupation represents a challenge because it requires continuous improvement and advancement in the development of a professional career, and all professions within the health system must be planned and developed through the prism of the needs of the social community. The constantly growing number of employees in healthcare and the opening of new jobs in that sector are noted, there are numerous opportunities for education and the acquisition of additional competencies, which resulted in the strengthening of the capacity of the profession. The migration of nurses and technicians will slow down and further complicate the development and raising of the quality and standards of the healthcare system. The role and importance of nurses and technicians are unquestionable because they dominate the human potential in health

care, which in the future will assume increasing responsibilities according to the level of education. Today's situation is a reflection of failed planning strategies in the past period, while today's trend is the reduction and stagnation of hospital capacity growth (reduction in the number of beds and duration of hospitalizations, the same or smaller number of institutions providing health services) and an increase in the number of health personnel and educational institutions that each in 2018, they project a new workforce, which will affect the supply and demand relationship, i.e. the competitiveness of jobs. Therefore, it is necessary to manage personnel in health care based on strategic goals that have emerged founded on the detection of the current state of health care and the perception of what is desired in the future. That is why it is necessary to continuously invest in lifelong education and to focus more on professional development for the natural sake of the job itself, and the investment will be returned many times over. The products of the development strategies have made it possible for the offer of jobs to be satisfactory, wages are continuously growing, as well as educational opportunities, but migration is still ubiquitous and slows down the further development of the profession. The most expensive nurse is the one who doesn't have one!

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Original Scientific Article

JOB STRESS AMONG POLICE OFFICERS IN BANGLADESH: AN EMPIRICAL STUDY ON RANGPUR METROPOLITAN POLICE

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Abstract: *This study explores the stress experienced by police officers in the Rangpur Metropolitan Police of Bangladesh, with a focus on gender differences. A total of 55 officers took part in the study, including 36 males and 19 females. The study not only sheds light on the prevailing challenges but also suggests practical strategies and interventions to mitigate job stress among Rangpur Metropolitan Police officers. It turned out that male and female officers had different types of stressors. Male officers felt more stressed when dealing with organizational issues, like having to go to court on their day off or after a night shift. On the other hand, female officers reported higher stress levels when facing interpersonal challenges, such as dealing with family conflicts and crisis situations. Interestingly, women officers reported dealing with family conflicts and crisis situations more frequently than men. Women officers encountered inadequate or poor-quality equipment than men. This suggests that gender differences play a role in the kind of stressors experienced in the police force.*

Keywords: *Bangladesh, Gender differences, Police officer, Organizational stressors, Interpersonal stressors.*

JEL Classification M12 · M54 · H12

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1. INTRODUCTION

Police officers hold a fundamental role within society, bearing the crucial duty of upholding and preserving lawfulness and harmony. However, this duty often comes at a considerable personal cost, as being a police officer is a demanding job that can have adverse effects on officers' performance, physical and mental health, and interactions with the public (Queirós et al., 2020). Stress does not necessarily affect each police officer the same. Police officers are tasked with upholding the law, ensuring citizens' safety, and preventing crime and civil disorder (Kara et al., 2015). They often face violent and traumatic events, which contribute to stress. Additionally, organizational and workplace stressors, such as discrimination, job dissatisfaction, and shift work, can further impact police officers' well-being (Siegel, 1990).

Stress in the context of police work is a complex concept, and there have been various attempts to define and understand it. Stress refers to both a stimulus (stressor) and the response it elicits, making it a challenging concept to study (Murison, 2016). Police officers' stress has significant consequences, including premature mortality, and can be influenced by factors like a lack of employee commitment, imbalanced shift work, managerial partiality, limited career options, and insufficient recognition for outstanding performance (Malach-Pines & Keinan, 2006). The nature of modern civilizations and the characteristics of police work, such as the threat of terrorist attacks, firearm violence in urban areas, inadequate resources, team dynamics, societal criticism, and lack of support from loved ones, contribute to the highly stressful nature of being a police officer.

The concept of "job stress" among police officers in Bangladesh refers to the psychological and emotional strain experienced by law enforcement personnel due to the demands, pressures, and challenges inherent in their work. Job stress can manifest as a variety of adverse physical and mental health outcomes. It's a critical concern in the context of policing, where officers are exposed to high-stress situations. This study connects with various theoretical frameworks. It may draw from stress theories, such as the Transactional Model of Stress and Coping by Lazarus and Folkman (1984), which assesses how individuals perceive and respond to stressors (Folkman, 2013). Additionally, it could link to theories related to occupational stress and burnout, exploring the impact of job-related factors on police officers' well-being (Khalid et al., 2020). The study may also incorporate the Job Demand-Control-Support Model, which examines the effects of job demands, control, and social support on stress levels (Elgmark Andersson et al., 2017).

Discrimination, harassment, and gender bias contribute to higher levels of stress and job dissatisfaction among female officers (Sikder, 2019). Gender roles and expectations further compound stress, as female officers may struggle to balance their work and family obligations. The consequences of stress on female police officers can extend to physical and mental health issues, impacting their overall well-being and performance (Ferson & Siegel, 2008). High-stress levels can also lead to unethical behavior, absenteeism, and turnover, affecting the effectiveness of law enforcement (Regehr et al., 2000). Despite the significant impact of police stress on officers, gender-specific stress is often neglected in Bangladesh. There is a lack of research and policies addressing the unique stressors faced by female police officers. Recognizing and addressing this issue is crucial to supporting the well-being of female officers and optimizing the effectiveness of law enforcement. While several studies have examined stressors among police officers, little attention has been given to gender differences in stress experienced by them. However, research on this topic has gained more attention in recent years (Ermasova et al., 2020). Understanding gender-specific stressors is essential as they can differ between male and female officers.

This study focuses on investigating the highly rated (Territo & Vetter, 1981) and most frequent stressors (Territo & Vetter, 1981) experienced by police officers, with a specific emphasis on gender differences. The research involved surveying police officers from six different police stations under the jurisdiction of the Rangpur Metropolitan Police. During the survey, officers were asked to rate the severity and frequency of various job-related stressors. The main objectives of this research are twofold. Firstly, this study aims to analyze and compare the stressors encountered by male and female police officers. By understanding potential differences in the types of stressors experienced by officers of different genders, one can gain insights into their unique challenges. Secondly, seeking to identify the specific stressors that are most commonly reported by police officers, regardless of gender. This comprehensive analysis will help develop a deeper understanding of the prevailing stressors in law enforcement.

2. METHODOLOGY

A non-probability convenience sampling method was chosen because it was the most suitable approach for the study, as the participants were readily available. In addition, since the study was focused on a specific population, a non-probability sample was also considered appropriate. The sample size consisted of a total of 55 sworn police officers (19 female and 36 male) who met the study's selection criteria. The research design for this study is a cross-sectional survey design. In this design, data was collected at a single point in time, and the study participants were selected based on their gender and job position. The survey has been conducted using a self-administered questionnaire. The questionnaire was developed based on a comprehensive review of the literature related to police officers' work-related stressors and was administered to collect socio-demographic characteristics including gender, education level, marital status, family type, religion, rank, age, years of police service, and sleep duration.

In this study, the researchers aimed to investigate potential gender differences in the perceived stressfulness of events among police officers. They employed a 27-item survey that included three distinct subscales: administrative and organizational pressure (comprising 10 items, such as excessive paperwork and negative attitudes toward police officers), physical and psychological threat (consisting of 8 items, including dangerous situations and experiences), and lack of support (comprising 9 items, encompassing factors like political pressures and relationships with supervisors and coworkers). To assess these differences, officers rated the perceived stressfulness of each event on a scale from 0 (means no stress at all) to 10 (maximum stress). Additionally, the study collected data on the frequency of event occurrence over the past month and past year. To analyze the data, statistical methods were employed, including the chi-square test and analysis of variance (ANOVA), to describe and compare the demographic and lifestyle characteristics of the study participants by gender. This approach allowed the exploration of potential disparities in stress perceptions and experiences among police officers based on gender.

The top five police stressors (from the 27-item survey) were identified using two approaches. In the first approach, the stressors were ranked using the mean frequency of occurrence in the past month. This approach yielded the top five most frequently occurring events in the past month. In the second approach, the stressors were ranked using a mean stress rating (0–10), and the top five most stressful events were selected. The two approaches were also used to select the top five stressors for each of the three subscales of the Police Stress Scale – administrative and organizational pressure; physical and psychological threat; and lack of support. To describe whether the top five stressors differed by gender, separate rankings of the events were conducted for men and women officers. The Poisson regression model was used to estimate the prevalence ratio (PR) of significant variables,

comparing the prevalence in women to that in men. The unadjusted prevalence ratios were calculated along with their 95% confidence intervals. The study used the IBM SPSS Statistics system, version 20, and statistical significance was assessed at the 5% level. Additionally, the top five stressors for each of the three subscales of the Police Stress Scale were identified and compared by gender.

3. FINDINGS AND DISCUSSION

The socio-demographic characteristics of study respondents play a crucial role in shaping the overall findings and conclusions of a study. These characteristics provide valuable insights into the composition of the study population and can help researchers understand how various factors may influence their research outcomes.

In this work, the study sample consisted of a total of 55 police officers. Among the individuals, there are more males (65.5%) than females (34.5%). Most of them have higher education qualifications, with a quote of 47.3 nearly half having a master's degree and a slice of 32.7 are completing their honors degree. Only a small proportion (3.6%) have education below secondary school certificate. The largest age groups are 31-35 and 36-40, with a piece of 32.7 and 30.9 individuals respectively. Almost all individuals (98.2%) are married. The majority of individuals with the lion's share of 78.2 follow Islam, while 20 percent belong to the Hindu religion, and the rest follow other religions. When it comes to sleep, the division of 45.5 reported getting 5-6 hours per day, while getting 27.3 points, individuals reported getting 3-4 hours and the final slice of 27.3 reported getting 7-8 hours. Among the individuals, 45.5% are Constables, while 20% each are Inspectors and ASIs, and only 14.5% hold the rank of SI. The majority of individuals (81.8%) have served for more than ten years, while only a few (7.3%) have served for one to five years, and 10.9% have served for five to ten years.

3.1. Comparison of the Socio-demographic Characteristics of the Respondents by Gender

Table 1 provides the results of the chi-square test conducted to describe and compare the demographic and lifestyle characteristics of the study participants by gender. The test compares the observed frequency of characteristics for males and females with the expected frequency assuming no difference between them. The p-value indicates the level of statistical significance. A p-value of less than 0.05 is generally considered statistically significant, meaning that the observed differences between groups are unlikely to have occurred by chance. Based on the results, there are several statistically significant differences between males and females in terms of education level, family type, and rank. These findings suggest that the proportion of males and females with different levels of education, family types, and ranks are not equal, and there are some inherent differences between the groups that influence these characteristics. On the other hand, the results indicate no significant differences between males and females in terms of age, marital status, religion, and years of service. This implies that these characteristics are relatively similar among males and females, and gender may not be a significant factor influencing these variables.

Table 1. The chi-square test of the socio-demographic characteristics of the respondents

Variable	Value	df	P-value
Education	10.454	4	0.033
Family Type	4.850	1	0.028
Rank	8.620	3	0.035

Source: Own research

3.2. Finding the Top Five Most Frequent Stressors

Table 2 presents the mean frequency and standard deviation of the top five most frequently occurring stressors by gender, categorized into three types: type one stressor (administrative/professional), type two stressor (lack of support), and type three stressor (psychological/physical). The p-value indicates the level of statistical significance of the mean difference between men and women for each stressor. For type one stressors, the top five most frequent stressors were excessive paperwork, public criticism of the police, frequent changes from boring to demanding activities, distorted or negative press accounts of police, and court appearances on the day off or following night shift. The stressors with the most significant mean difference between men and women were court appearances on day off or following night shift (3.06 ± 1.09 vs 1.84 ± 0.9, p=0.009), with men reporting a higher frequency than women. The second one is inadequate or poor-quality equipment (2.89 ± 1.45 vs 1.84 ± 0.9, p=0.013), where men again reported a higher frequency than women.

Table 2. The mean frequency of occurrence for the top five most frequently occurring stressor

Stressor description	All (n=55)	SD	Men (n=36)	SD	Women (n=19)	SD	P-value
Type One Stressor: Administrative/Professional (10 stressors)							
Excessive paperwork	4.62	2.57	4.42	2.38	5	2.93	0.522
Public criticism of police	3.91	1.65	4.00	1.81	3.74	1.33	0.284
Frequent changes from boring to demanding activities	2.95	1.51	2.94	1.43	2.95	1.68	0.348
Distorted or negative press accounts of police	2.73	1.39	2.69	1.45	2.79	1.32	0.914
Court appearances on the day off or following the night shift	2.64	1.18	3.06	1.09	1.84	0.9	**0.009**
Fellow officers not doing their job	2.56	1.64	2.78	1.85	2.16	1.07	0.586
Inadequate or poor-quality equipment	2.36	1.45	2.89	1.45	1.37	0.76	**0.013**
Inadequate support by the department	2.13	1.22	2.22	1.33	1.95	0.97	0.682
Ineffectiveness of the judicial system	1.65	1.4	2.03	1.48	0.95	0.91	0.115
Unfavorable Work Condition	1.58	0.99	1.67	1.01	1.42	0.96	0.925
Type Two Stressor: Lack of support (08 stressors)							
Low Pay	3.47	2.28	3.19	2.07	4.00	2.6	0.225
Political pressure from within the department	3.31	2.8	4.03	3.01	1.95	1.68	0.359
Insufficient manpower to adequately handle a job	3.22	2	3.17	2.22	3.32	1.53	0.750
Court leniency with criminals	2.58	2.12	3.31	2.14	1.21	1.27	0.080
Inadequate support by the supervisor	2.13	1.36	1.94	1.39	2.47	1.26	0.586
Promotion Delayed or Being Stuck	1.67	1.48	1.97	1.58	1.11	1.1	0.563
Lack of Precise Recognition	1.65	1.47	1.72	1.49	1.53	1.47	0.410
Assignment of incompatible partner	1.67	1.19	1.58	0.99	1.84	1.50	0.250
Type Three Stressor: Psychological/Physical (09 stressors)							
Experiencing negative attitudes toward police officers	3.93	3.05	4.67	3.36	2.53	1.68	0.154
Responding to a felony in progress	3.85	2.74	4.83	2.83	2	1.16	**0.036**
Situations requiring the use of force	3.13	3.05	4.01	3.43	1.47	0.77	0.349
Making critical on-the-spot decisions	3	2.05	3.36	2.31	2.32	1.2	0.629
Dealing with family disputes and crisis situations	2.64	1.21	2.17	0.92	3.53	1.12	**0.006**
Fellow officer killed in the line of duty	2.13	2.62	2.81	2.99	0.84	0.67	0.47
Physical attack on one's person	2.07	1.96	2.67	2.17	0.95	0.62	**0.026**
Bullied by co-worker	1.55	0.77	1.31	0.67	2	0.75	**0.012**

Source: Own research

For type two stressors, the top five most frequent stressors were low pay, political pressure from within the department, insufficient manpower to adequately handle a job, court leniency with criminals, and inadequate support by supervisors. None of the stressors showed a statistically significant mean difference between men and women. Lastly, for type three stressors, the top five most frequent stressors were experiencing negative attitudes toward police officers, responding to a felony in progress, situations requiring the use of force, making critical on-the-spot decisions, and dealing with family disputes and crisis situations. The mean frequency of occurrence in the past month differed significantly by gender for the following stressors: Responding to a felony in progress (4.83 ± 2.83 vs 2 ± 1.16, p=0.036), women reported a higher recurrence than men Dealing with family disputes and crisis situations (2.17 ± 0.92 vs 3.53 ± 1.12, p=0.006), Physical attack on one's person is more frequent for men than women (2.67 ± 2.17 vs 0.95 ± 0.62, p=0.026). On the other hand, bullied by co-workers is significantly higher for female officers as the mean frequency of this occurrence is shown in Table 2 (1.31 ± 0.67 vs 2 ± 0.75, p=0.012). It is important to note that these results are based on self-reported data from a specific sample of police officers (n=55), and the findings may not be representative of all police officers. Additionally, the data only provides information on the frequency of occurrence in the past month and does not account for the duration or severity of the stressor events.

3.3. Finding the Top Five Highly Rated Stressors

Table 3 presents the mean stress rating for the top five most stressful events by gender, categorized into three types of stressors from a total of 27 stressors. Type one stressors are related to administrative/professional factors including 10 stressors. The most stressful event for all participants was "Court appearances on day off or following night shift" (mean = 7.04), with men reporting higher stress ratings than women (mean = 7.53 vs. 6.11, p = 0.007). "Distorted or negative press accounts of police" was rated significantly higher by women than men (mean = 7.26 vs. 5.31, p = 0.003). Type two stressors (08 stressors) are related to a lack of support factors. "Assignment of incompatible partner" was the most stressful event for all participants (mean = 6.00), with men reporting similar stress ratings as women. However, the p-value for this event was significant (p = 0.010), indicating that the stress ratings for men and women were significantly different. Type three stressors (09 stressors) are related to psychological/physical factors. "Dealing with family disputes and crisis situations" was rated as the most stressful event for all participants (mean = 6.47), but the difference in stress ratings between men and women was not statistically significant (p = 0.070). "Bullied by a co-worker" was rated significantly higher by women than men (mean = 7.00 vs. 5.00, p = 0.010). Overall, the data suggest that certain stressors may affect men and women differently, with some stressors rated significantly higher by one gender than the other. The significant p-values indicate that the differences in stress ratings between men and women for certain stressors are not likely due to chance.

From Table 3 which represents the frequency of the occurrences and Table 5 where the rating of stressfulness was reported for both man and women police officers, among the total 27 stressors divided into three categories, 11 cases show statistical significance of the mean difference between men and women, where the p-value is less than 0.05. As for Table 4, which shows the mean frequency of occurrence for the top five most frequently occurring stressors, there are 6 cases where the significance occurred between gender and 2 of those represent the type one stressor (Administrative/Professional), and the rest 4 occurred in type three (Psychological/Physical). Table 3 (The mean stress rating for the top five most stressful events) also shows 5 cases of statistical significance where gender differences among those stressors were evident. To determine how those stressors actually and to which extent vary between gender a passion regression analysis is needed.

Table 3. The mean stress rating for the top five most stressful events

Stressor description	All (n=55)	SD	Men (n=36)	SD	Women (n=19)	SD	P-value
Type One Stressor: Administrative/Professional (10 stressors)							
Court appearances on the day off or following the night shift	7.04	1.74	7.53	1.36	6.11	2.025	**0.007**
Frequent changes from boring to demanding activities	6.55	2.36	6.78	2.32	6.12	2.42	0.453
Public criticism of police	6.29	2.34	6.86	2.045	5.21	2.53	0.191
Fellow officers not doing their job	6.11	2.28	6.61	2.33	5.16	1.89	0.111
Distorted or negative press accounts of police	5.98	1.85	5.31	1.74	7.26	1.33	**0.003**
Inadequate or poor-quality equipment	5.67	2.33	6.47	2.16	4.16	1.86	**0.006**
Inadequate support by the department	5.62	2.38	5.56	2.36	5.74	2.47	0.506
Excessive paperwork	5.49	2.35	6	2.28	4.53	2.22	0.316
Unfavorable Work Condition	5.2	2.09	5.75	2.1	4.16	1.64	0.199
Ineffectiveness of the judicial system	4.25	3.1	5.25	3.05	2.37	2.24	0.075
Type Two Stressor: Lack of support (08 stressors)							
Low Pay	6.73	2.75	6.83	2.72	6.53	2.79	0.323
Insufficient manpower to adequately handle a job	6.29	2.86	5.89	3.08	7.05	2.27	0.925
Assignment of incompatible partner	5.93	2.97	5.89	2.55	6.00	3.72	0.077
Inadequate support by the supervisor	5.42	2.81	5.17	2.8	5.89	2.85	0.179
Promotion Delayed or Being Stuck	5.02	3.53	5.44	3.38	4.21	3.75	0.717
Political pressure from within the department	4.58	3.07	5	2.99	3.79	3.12	0.163
Court leniency with criminals	4.42	2.84	5.31	2.46	2.74	2.81	**0.017**
Lack of Precise Recognition	4.35	2.99	4.69	2.85	3.68	3.23	0.745
Type Three Stressor: Psychological/Physical (09 stressors)							
Dealing with family disputes and crisis situations	6.47	1.88	5.83	1.89	7.68	1.16	0.070
Situations requiring the use of force	6.42	2.92	6.72	2.88	5.84	3.01	0.465
Fellow officer killed in the line of duty	5.98	3.51	6.17	3.36	5.63	3.83	0.799
Bullied By Co-worker	5.69	1.98	5	1.91	7	1.37	**0.010**
Experiencing negative attitudes toward police officers	5.65	2.45	5.58	2.42	5.79	2.57	0.933
Responding to a felony in progress	5.58	2.81	5.69	2.69	5.37	3.08	0.832
Physical attack on one's person	5.44	2.53	6	2.35	4.37	2.57	0.217
Making critical on-the-spot decisions	5.38	2.54	5.58	2.55	5	2.54	0.167

Source: Own research

3.4. Calculating the Prevalence Ratio (PR) for statistically significant variables.

Table 4 displays the outcomes of a Poisson regression analysis for the significant stressor variables identified in Table 3, which presented the mean stress ratings of different stressors. The table shows the prevalence ratios and confidence intervals for each variable, comparing the prevalence of the event in women to that in men. The findings indicate that women experience certain stressors at different rates than men in the police force, with the prevalence ratios varying depending on the nature of the stressor. Specifically, women experienced court appearances on day off or following night shift has a prevalence ratio of 0.81 (0.65-1.01), indicating that women experienced this stressor at a slightly lower rate than men. and inadequate or poor-quality equipment with a prevalence ratio of 0.64 (0.50-0.83) indicate that women police officers experience this stressor at 36% lower rate than men while experiencing distorted or negative press accounts of police (PR=1.37, 1.10-1.70) and bullying by co-workers (PR=1.40, 1.12-1.75) at higher rates than

men respectively 37% and 40% higher prevalence ratios. Additionally, women experience court leniency with criminals (PR=0.52, 0.38-0.70) at a lower rate than men, with a 48% higher prevalence ratio for men.

Table 4. Poisson regression analysis for the significant variables (from Table 5: mean stress rating)

Stressor description	All (n=55)	SD	Men (n=36)	SD	Women (n=19)	SD	P-value	Prevalence ratio (PR) and 95 % CI
Court appearances on the day off or following the night shift	7.04	1.74	7.53	1.36	6.11	2.025	0.007	0.81 (0.65-1.01)
Distorted or negative press accounts of police	5.98	1.85	5.31	1.74	7.26	1.33	0.003	1.37 (1.10-1.70)
Bullied By Co-worker	5.69	1.98	5	1.91	7	1.37	0.01	1.40 (1.12-1.75)
Inadequate or poor-quality equipment	5.67	2.33	6.47	2.16	4.16	1.86	0.006	0.64 (0.50-0.83)
Court leniency with criminals	4.42	2.84	5.31	2.46	2.74	2.81	0.017	0.52 (0.38-0.70)

Note: Prevalence ratios compare the prevalence of the event in women relative to men.

Source: Own research

Table 5 presents the results of a Poisson regression analysis for the significant variables from Table 4, which reported the mean frequency of stressors experienced by police officers. The table shows the prevalence ratios (PR) and 95% confidence intervals (CI) for each variable, comparing the prevalence of the event in women to that in men.

The findings suggest that women and men experience some stressors at different rates in the police force. Specifically, women reported responding to a felony in progress (PR=0.41, 0.29-0.59) and inadequate or poor-quality equipment (PR=0.47, 0.31-0.73) at a lower rate than men, indicating a 59% and 53% lower prevalence of these stressors for women, respectively. In contrast, women reported dealing with family disputes and crisis situations (PR=1.63, 1.17-2.26) and being bullied by co-workers (PR=1.53, 0.99-2.35) at a higher rate than men, indicating a 63% and 53% higher prevalence of these stressors for women police officers. Additionally, physical attack on one's person was reported less frequently by women (PR=0.36, 0.22-0.88), and court appearances on day off or following night shift (PR=0.60, 0.41-0.88) were also less frequent for women with 64% and 40% less frequency compared to man.

Table 5. Poisson regression analysis for the significant variables (from Table 4: mean frequency of stressors).

Stressor description	All (n=55)	SD	Men (n=36)	SD	Women (n=19)	SD	P-value	Prevalence ratio (PR) and 95 % CI
Responding to a felony in progress	3.85	2.74	4.83	2.83	2	1.16	0.036	0.41 (0.29-0.59)
Dealing with family disputes and crisis situations	2.64	1.21	2.17	0.92	3.53	1.12	0.006	1.63 (1.17-2.26)
Court appearances on the day off or following the night shift	2.64	1.18	3.06	1.09	1.84	0.9	0.009	0.60 (0.41-0.88)
Inadequate or poor-quality equipment	2.36	1.45	2.89	1.45	1.37	0.76	0.013	0.47 (0.31-0.73)
Physical attack on one's person	2.07	1.96	2.67	2.17	0.95	0.62	0.026	0.36 (0.22-0.88)
Bullied By Co-worker	1.55	0.77	1.31	0.67	2	0.75	0.012	1.53 (0.99-2.35)

Note: Prevalence ratios compare the prevalence of the event in women relative to men.

Source: Own research

Table 6 shows the results for the top five highly rated stressors (selected from the 27 items taken to analysis by their mean), analyzed separately for males and females. For the top stressor, which is court appearances on a day off or following a night shift, the between-groups sum of squares was 13.822 for males and 11.344 for females. The within-group sum of squares was 54.464 for males and 84.298 for females. The F-value was 2.633 for males and 3.450 for females, and the p-value was .119 for males and .071 for females. These results suggest that this stressor is not significantly different between genders.

For the second highly-rated stressor (low pay), the between-groups sum of squares was .529 for males and .643 for females. The within-group sum of squares was 216.920 for males and 188.817 for females. The F-value was .021 for males and .034 for females, and the p-value was .886 for males and .854 for females. These results suggest that low pay is not significantly different between genders.

Frequent changes from boring to demanding activities are the 3rd highly rated stressor where the between-groups sum of squares was 2.929 for males and 2.696 for females. The within-group sum of squares was 134.104 for males and 159.907 for females. The F-value was .022 for males and .017 for females, and the p-value was .883 for males and .897 for females. These results suggest that this stressor is not significantly different between genders.

For the next stressor (dealing with family disputes and crisis situations) showed in Table 6, the between-groups sum of squares was 23.220 for males and 19.384 for females. The within-group sum of squares was 83.155 for males and 65.794 for females. The F-value was 3.524 for males and 4.238 for females, and the p-value was .066 for males and .047 for females. These results suggest that this stressor may be significantly different between genders, with females reporting higher stress levels.

Table 6. Analysis of Variance (ANOVA) for the top five highly rated stressors by gender.

The Top 5 Highly Rated Stressors		Sum of Squares	df	Mean Square	F	Sig.
Court appearances on day off or following night shift: Stress Rating	Between Groups	25.166	1	25.166 2.618	9.612	.003
	Within Groups	138.762	53			
	Total	163.927	54			
Dealing with family disputes and crisis situations: Stress Rating	Between Groups	42.604	1	42.604 2.813	15.144	.000
	Within Groups	149.105	53			
	Total	191.709	54			

Source: Own research

For the final one (situations requiring the use of force), the between-groups sum of squares was 3.115 for males and 6.518 for females. The within-group sum of squares was 228.938 for males and 223.811 for females. The F-value was .060 for males and .169 for females, and the p-value was .808 for males and .684 for females. These results suggest that this stressor is not significantly different between genders. The results suggest that there may be some gender differences in the stress levels related to dealing with family disputes and crisis situations. However, for the other stressors, there were no significant differences between genders.

Table 7 presents the results of an Analysis of Variance (ANOVA) for the top five most frequent stressors (selected from the 27 items taken for interpretation by their mean) experienced by police officers, separated by gender. For each stressor, the table shows the Sum of Squares, degrees of freedom (df), Mean Square, F-statistic, and p-value. The "Between Groups" column shows the variation between the groups (male and female officers) and the "Within Groups" column shows the variation within each group. The "Total" row shows the total variation for each stressor.

Table 7. Analysis of Variance (ANOVA) for the top five most frequent stressors by gender

Top 5 Most Frequent Stressors		Sum of Squares	df	Mean Square	F	Sig.
Experiencing negative attitudes toward police officers	Between Groups	56.972	1	56.972	6.759	.012
	Within Groups	446.737	53	8.429		
	Total	503.709	54			
Responding to a felony in progress	Between Groups	99.836	1	99.836	17.349	.000
	Within Groups	305.000	53	5.755		
	Total	404.836	54			

Source: Own research

The results suggest that experiencing negative attitudes towards police officers and responding to a felony in progress were both significant stressors for police officers, with p-values of .012 and .000, respectively. These stressors had the highest F-values (6.759 and 17.349, respectively) and the largest between-group variation (56.972 and 99.836, respectively) compared to the other stressors.

Excessive paperwork and low pay did not show significant differences between male and female officers, as evidenced by their non-significant p-values of .429 and .215, respectively. Public criticism of the police was also not a significant stressor, with a p-value of .578. Overall, these results suggest that experiencing negative attitudes towards police officers and responding to a felony in progress are particularly significant sources of stress for police officers, regardless of gender, while excessive paperwork, low pay, and public criticism of police do not have a significant gender-related effect on stress levels.

3.5. Gender Differences in Highly rated and most Frequent Stressors

As shown in Figure 1, the most frequent stressor for all participants was “excessive paperwork” with a mean score of 4.62, followed by “experiencing negative attitude towards police” with a mean score of 3.93 and “public criticism of police” with a mean score of 3.91. However, when comparing the sexes, men rated “responding to a felony in progress” as the third most frequent stressor with a mean score of 4.83, whereas, for women, this stressor was rated much lower with a mean score of 2. In contrast, women rated “excessive paperwork” as the most frequent stressor with a mean score of 5, compared to a mean score of 4.42 for men. Similarly, women rated “low pay” as a more frequent stressor with a mean score of 4, compared to a mean score of 3.19 for men. Basically, the data suggests that while “excessive paperwork” and “experiencing a negative attitude towards police” are frequent stressors for both men and women, there are differences in the most frequent stressors between the sexes. Specifically, men are more affected by responding to felonies, while women are more affected by excessive paperwork and low pay.

In conclusion, the data clearly shows gender differences in the types of stressors experienced by male and female police officers. The top 5 highly rated and most frequent stressors are not the same for male and female officers. While excessive paperwork is a common stressor for both sexes, men are more affected by responding to felonies, whereas women are more affected by excessive paperwork and low pay. Overall, the findings suggest that gender differences in stressors need to be taken into account when designing interventions to support the mental health and well-being of police officers.

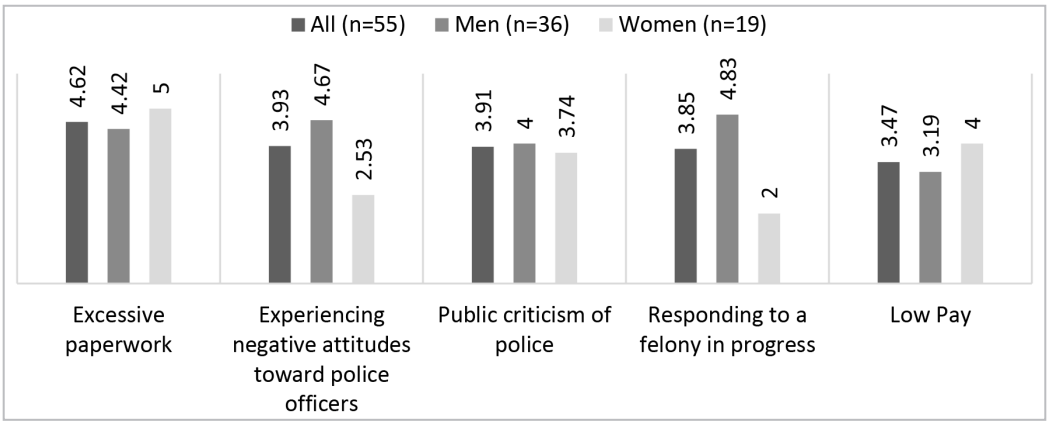

Figure 1. Top five most frequent stressors
Source: Own research

The data presented in Figure 2 shows that the top five highly rated stressors (based on mean frequency) for all participants were not necessarily the same for men and women. For all participants, the highest-rated stressor was "Court appearances on day off or following night shift" with a mean frequency of 7.04, followed by "Low Pay" with a mean frequency of 6.73 and "Frequent changes from boring to demanding activities" with a mean frequency of 6.55. However, when comparing the sexes, men reported a higher mean frequency for "Court appearances on day off or following night shift" (7.53) compared to women (6.11), while women reported a higher mean frequency for "Dealing with family disputes and crisis situations" (7.68) compared to men (5.83). Furthermore, while "Situations requiring use of force" was ranked fifth in the overall list, it was not in the top five stressors for women, with a mean frequency of 5.84. In contrast, men rated this stressor higher with a mean frequency of 6.72, making it the fourth most highly rated stressor for them.

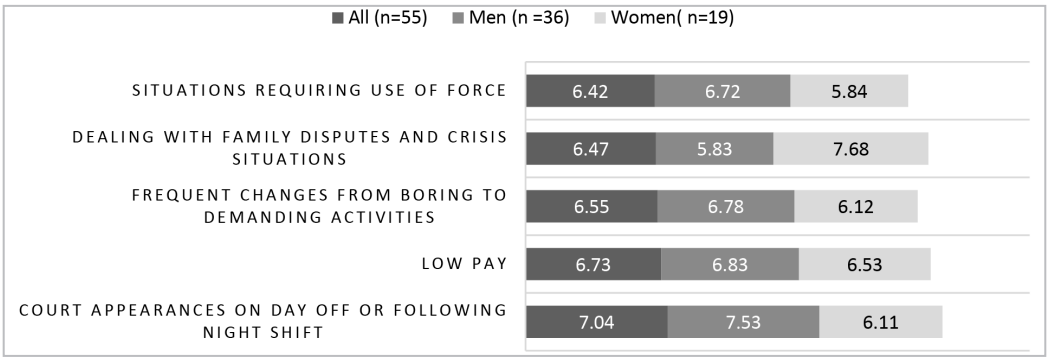

Figure 2. Top five most frequent stressors
Source: Own research

Therefore, the data suggests that although some stressors are highly rated by all participants, there are differences between men and women in their perceptions of stress and the specific stressors that are most highly rated by each group.

4. CONCLUSION

Studies conducted over the last 40 years have identified various factors that contribute to police job stress, including demographic characteristics, the inherent risks associated with police work, the work environment and support from colleagues, work-family conflicts, and administrative practices within organizations. However, some studies indicate that the work environment and individual behavior traits may have a greater impact on police job stress compared to personal characteristics. Law enforcement work takes a toll on the physical and mental well-being of police officers, as they are constantly exposed to various stressors in their daily job duties, which include ensuring the safety and protection of the community, building positive relationships with the community, and upholding law and order. Police officers are required to work for extended periods under stressful conditions (Harger, 2020).

In conclusion, police stress is a significant issue for both male and female officers in Bangladesh. However, by examining police stress from a gender perspective, it becomes clear that female officers face unique challenges that contribute to higher levels of stress and job dissatisfaction. Research has shown that male and female police officers encounter various stressful situations in their line of duty. However, in this study, the most frequent and highly rated stressors differed between male and female officers. While male officers reported more stress related to operational and administrative duties, female officers rated interpersonal and organizational stressors, such as dealing with family disputes and balancing work-family responsibilities, as the most challenging. Furthermore, the study revealed that the frequency of a particular stressor was not necessarily responsible for generating the highest level of stress. For instance, although female officers did not encounter family-related stressors as frequently as male officers faced operational and administrative stressors, family-related stressors generated higher levels of stress for female officers than any other stressor.

Given these findings, the study suggests the need for gender-sensitive programs to address the unique stressors faced by male and female officers in law enforcement. This could include training on coping strategies, mental health resources, and organizational policies and practices that support work-family balance (Brown & Campbell, 1994). By implementing programs and creating a culture that prioritizes the well-being of police officers, law enforcement agencies in Bangladesh can help reduce the negative effects of stress on officers and improve the effectiveness of law enforcement.

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Original Scientific Paper

DEVELOPING A MICRO CLUSTER MODEL FOR SUBURBAN TOURISM: THE CASE OF WEKERLE ESTATE, BUDAPEST

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Abstract: *This research shifts the focus to suburban tourism within the context of urban tourism thus making metropolitan areas less congested and showcasing urban authenticity for tourists. It proposes a micro cluster model for suburban tourism and illustrates its applicability in a suburb of Budapest called Wekerle Estate. The suburb was developed at the beginning of the 20th century by adopting the garden city concept and still boasts a lively community. However, it needs a framework to embrace tourism in a sustainable way. The qualitative research uses the ethnographic method to explore what Wekerle Estate offers for tourists and where its weaknesses are in terms of hospitality. Based on the findings a micro cluster model is prepared in this study and it gives recommendations for Wekerle Estate to evolve as an authentic tourist destination. This paper contributes to the research of suburbs from the urban tourism angle that has so far been neglected in the field of tourism.*

Keywords: *Suburban tourism, Micro cluster model, Urban tourism.*

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1. INTRODUCTION

Urban spaces are the biggest drawcards in global tourism, and generate substantial revenue for stakeholders, therefore, drastic measures of decreasing tourists could hurt many parties involved as indicated in the City Performance Research, in which the tourism performance of 15 global cities was analyzed (UNWTO 2022). The post-pandemic period is the ideal time to rethink modern travel patterns, moving towards more localized and small-scale offerings. In metropolitan areas overtourism and undertourism are experienced simultaneously, causing the same problems and repercussions: deteriorating quality of life, frustrated residents, and outmigration of locals. In contrast, unique suburbs were overlooked as tourist destinations, although they offer green zones, authenticity, and local culture. As Maitland (2019) puts it discussing London: the Real London (suburb) versus the Brand London (centre).

The reason for the little analytical attention paid to suburban tourism according to Vaughan et al. (2009) and Phelps (2012) is that social scholars do not consider the topic worth exploring. For instance, Florida (2005) contrasts the bohemian population of the inner districts with the non-creative suburban people. However, Wekerle Estate offers an authentic experience, with diverse types of housing (detached houses, blocks of units of different sizes), efficient local amenities, and good access to the city center. It has been around for over a century, evidence of the viability of the garden city concept worked out by Howard. With the analysis of the literature and fieldwork, the study prepares a micro cluster model for garden cities/suburbs, taking the example of Wekerle Estate.

2. CLUSTERS AND MICRO CLUSTERS IN TOURISM

According to Porter (2000, p.16), "cluster is a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities". Porter himself acknowledges the possibility of different geographical scales: "Clusters are a striking feature of virtually every national, regional, state, and every metropolitan economy" (Porter, 1998. p. 78), admitting that "Clusters occur in many types of industries, in smaller fields, and even in some local industries such as restaurants, car dealers, and antique shops". Motoyama (2008) criticizes regional competitiveness and specialization in the cluster theory, claiming that regions do not have their own will as companies do, and finding niche markets can also be an oxymoron associated with regional development. The area of Manhattan is also a perfect example of local clusters, boasting at least two of them: media and financial clusters. So, clustering can take place even within five miles (Currid & Connolly, 2008; Funderburg & Boarnet, 2008; Rosenthal & Strange, 2003).

It does not mean that regional clusters do not apply to tourism products. Globally, some examples such as IDM Südtirol cluster, Tuscany wine region cluster, or Andalucia tourism cluster successfully emerged in the 2010s, linking a wide range of stakeholders regionwide. However, they are at the early stage to assess their performance. In Hungary, out of the 28 accredited clusters only one, the Thermal–Health Industry Cluster deals with tourism (Klaszterfejlesztés, 2022). As health tourism is a key mass product, and spa resorts are scattered all around the country, the good practices of this particular cluster would not be easily adaptable to the development of different tourism products. Not to mention the fact, that Hungarian regions did not evolve in an organic way, but three counties were put together during the transition to the market economy.

Unlike other products offered by manufacturing or service companies, tourism products are heterogeneous, thus they are complex and consist of different complementary components provided

by suppliers from various public and private sectors (Kachniewska, 2013; Lade, 2010). It is deeply rooted in locality, consequently, no plan can be realized disregarding the natural environment, the built heritage, and the will of the local communities.

When it comes to the theory of micro clusters in tourism, it was first conceptualized with regard to rural areas to help develop niche tourism (Grimstad & Burgess, 2013; Michael, 2007; Sigurðardóttir & Steinthorsson, 2018). The purpose of tourism clusters is to highlight the activities at a destination or region and to get SMEs to cooperate and develop tourism offerings in the locality (Novelli et al., 2006). Michael (2007, p. 33) defines micro clusters "as a development mechanism that fosters the ability to build a local level of specialization and competitive advantages for a small tourism destination". Ferreira and Estevao (2009) state that a tourism cluster is a geographic concentration of companies and institutions interconnected in tourism activities.

This approach takes an important principle of the regional cluster theory on board, namely the multiplicator effect. Michael (2007) notes that the novelty comes from the fact that local developments are not realized according to the often-used patterns, but they are executed in a more holistic way under the radar of the local community. Grimstad and Burgess (2013) highlights that micro clusters can operate efficiently in towns where most business ventures are family-owned, and the norms of the local community protect them from "commercialism" and from the negative impacts of political decisions. These close-knit communities thrive on cooperation and trust, where it is important to negotiate between priorities such as workplace protection, infrastructural developments, and financial viability (Salvador et al., 2010). Niche tourism services, such as equestrian tourism are examples of tourism products developed within the frame of micro-clusters and marketed for selected target groups (Salvador et al., 2010; Sigurðardóttir & Steinthorsson, 2018).

3. GARDEN CITIES, GARDEN SUBURBS, GARDEN VILLAGES

As Lineberry (1975) argued despite the extensive literature on suburbia, we are no closer than ever to a unified concept. Taking London as an example, Phelps (2012) points out that its suburbs are disparate and varied in their character: they can be residential or industrial, while others boast a mix of small businesses and housing. The latter category includes suburbs with good infrastructure and small villages as well attached to the metropolitan, where small businesses operating in the creative industry can thrive and there is a short commute to city offices. These communities attract small business owners who provide quality products and services and who are not willing to pay high rent in city areas. These enterprises increase the service density and quality in outer areas, while the retail sector becomes more homogeneous in the city because global chain retailers fill the void of independent retailers. Maitland (2019) argues that many creative businesses leave the city due to countless factors and not solely on economic considerations.

The garden city movement started at the end of the 1900s has many similarities with the modern citta slow movement initiated and developed by Petrini in the 1980s. Although Howard was not looking for answers for the suburbs, most garden cities have become part of the greater metropolitan areas over the decades, therefore many suburbs today used to be independent small towns in the past. The principles of the brit movement are summarised in Garden Cities of Tomorrow originally published in 1902 (Howard, 2009):

- antidote to dormitory cities, self-contained communities including residential, industrial, and agricultural areas surrounded by parks;
- ideal population: around 30 000;
- the rural environment with services of city qualities;

- provides opportunities for the local economy;
- built with private capital.

When looking for historic examples, Letchworth has to be mentioned as the first garden city situated 34 miles from London and Hampstead as the first garden suburb, both planned and built in the United Kingdom at the turn of the 20th century. Many more followed suit, such as Brentham and Welwyn. Later on, garden villages were also created, therefore, the Garden City and Town Planning Association clarified the concept in 1919 and defined garden village/garden suburb as follows: "Garden village is a small scale garden city that depends on a nearby city for its supply of water, power etc., while in the garden suburb the healthy conditions are provided for the natural growth of the city in the spirit of garden city planning" (Nagy & Szelényi 2008, p. 80).

In Hungary several cities (Győr, Ózd, Miskolc) and Budapest have neighborhoods like garden cities, however, the only functioning, coherent statement, remaining popular for residents nowadays is Wekerle Estate. Some suffered from the disappearance of local industries, or modern blocks of flats destroyed the landscape, in other cases the homes were too small to satisfy the needs of modern dwellers.

4. METHODOLOGY OF THE STUDY

The research used a qualitative "tool kit": fieldwork with observation mixed with autoethnographic vignettes. Fieldwork was realized on three different occasions in 2022 and 2023, focusing on the following issues:

- Visitor management: access to information (maps, promotional materials) at different times and locations;
- Quality and density of services: the presence of local gastronomy;
- Culture: the presence of local artists, artisans, and local art.

No quantitative research was carried out at that stage due to the novelty of the topic and the lack of conceptualization of suburban tourism. This research aimed to propose an enhanced theory of the cluster model in order to contribute to the conceptualization of suburban tourism. The research site is tucked in Budapest's 19th district known as Kispest, formerly a separate town that was administratively attached to Budapest in 1950 along with several other settlements located on the outskirts of Budapest. Wekerle Estate was named after Sándor Wekerle, the Hungarian prime minister in 1908, who initiated and supported the garden city project financially. The financial backing coming from the state was the only main difference from Howard's original idea. The residents came from the countryside and the pint-sized town provided them with the simple side of city life, achieving a symbiosis between architecture and the natural environment (Figure 1).

Constructions were underway between 1908 and 1925, loyal to the poetic understanding of the Transylvanian heritage. The one-story homes contained 2, 3, or 4 units, while the two-story buildings had 6, 8, or 12 apartments, and the villas with larger apartments used to house the headmaster's or doctor's family. Fifty thousand trees were planted, mainly along the spacious avenues. In 1917 redcurrant harvest was so rich that renters could earn almost four times the yearly rent by selling their fruits. Main characteristics of Wekerle Estate in the 1920s:

- garden city habitat;
- covers 1.7km2;
- population: 22 000;
- one or two-story houses, ranging from duplexes to 12-flat apartment houses;
- 40 different types of residential buildings were designed;

- 1007 buildings with 4412 units;
- all designs followed the “Transylvanian style” established by Károly Kós;
- spacious gardens and street layout with tree-lined avenues;
- residents were the employees of MÁV factory;
- until 1950 an independent town.

Figure 1. Arial view of Wekerle Estate

Source: https://hu.wikipedia.org/wiki/Wekerle Estate#/media/F%C3%A1jl: Wekerle Estate,Budapest_-_l%C3%A9gi_fot%C3%B3.jpg

Figure 2. Examples of residential buildings

Source: Own photos, 2022

As seen in Figure 2, the architecture of Wekerle Estate is a Hungarian folk interpretation of the Art Deco style adding to the appeal of the neighborhood. The heritage buildings are all functional, residential buildings, civic buildings, or commercial shops. So, visitors can have a multitude of experiences, apart from experiencing a liveable district, they also see an example of a heritage district surviving through political and economic changes and preserving its authenticity and popularity. The area is a tribute to the architect, Károly Kós. Besides the original buildings, a great number of detached houses are also available in the outer circle for those who prefer more country-style living arrangements. Civic buildings and shops are also accessible and scattered around the neighborhood.

5. RESULTS

The field research included the participation of several organized walks, visiting restaurants and cafés, and looking into some individual homes. A series of shortcomings were detected, which are illustrated in Figure 3. The key issue is the lack of visitor management. For instance, no information was available on weekends for individual visitors since both the office of the local civic association (Wekerle Társaskör Egyesület) and the library were closed, so visitors were left to their own devices. With a little more attention leaflets and brochures could have been stocked in the book exchange booth.

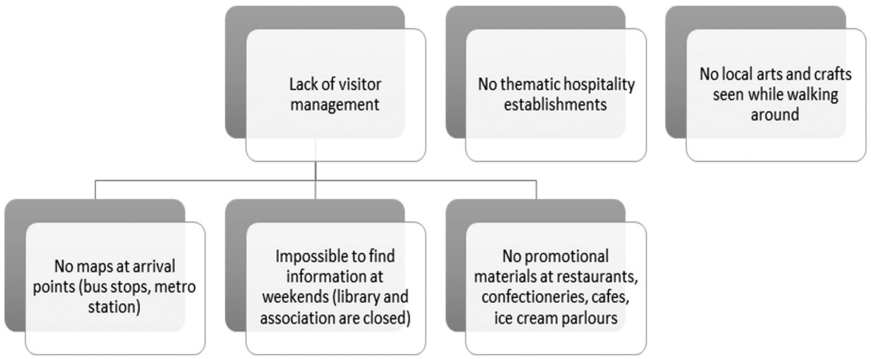

Figure 3. Results of fieldwork
Source: Own research, 2022

In the case of eateries, the emblematic Wekerle restaurant is only open on Fridays, Saturdays, and Sundays. Local gastronomic creations such as signature dishes and drinks were missing from the menus. The interiors do not reflect locality, no local arts and crafts were on display, nor was any information available about the neighborhood inside. The empty neighborhood revealed a non-existent tourism industry, and the closed hospitality businesses and restricted working hours can signal job losses in the future.

However, organized walks are available and can be divided into regular walks and seasonal walks. In 2022 the following walking tours were offered (Wekerle Társaskör Egyesület, 2022):

General walks:
- Dolce Vita among the redcurrant bush – snapshots from the last century;
- Walk at twilight (wells, fountains, fire hydrants, and artesian wells);
- Idea and reality: Wekerle Estate;
- Garden city stories;
- Károly Kós and the Youngst;
- On horse-drawn carriage around Wekerle Estate;
- Past, present, future – journey through time around the 110-year-old Wekerle Estate;
- Private, group walk in Wekerle Estate;
- Wekerle, from cellars to attic.

Seasonal walks:
- Walk on garage sale day;
- Walk on St. Patrick's Day;
- Walk to bury winter;
- Walk on Valentine's Day.

5.1. The Micro Cluster Model for Suburban Tourism

Based on the field research the micro cluster concept of Costa (2005) was extended (Figure 4) and arranged into a flowing model in Figure 4:

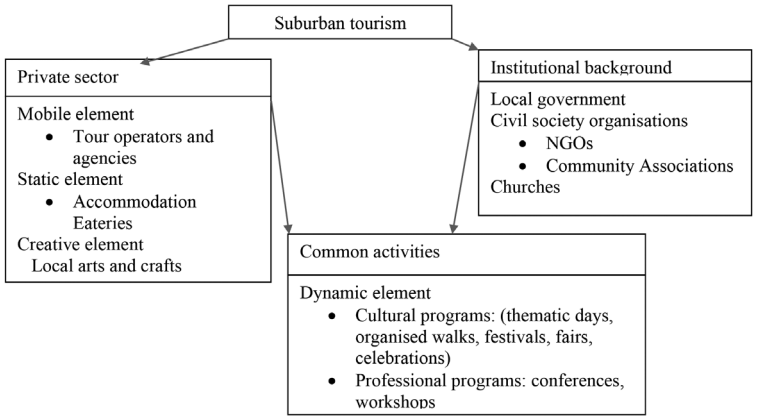

Figure 4. The micro cluster model for tourism
Source: Own research

Private sector

Mobile element: It can be based either locally or outside, including tour operators and agents who organize, promote, and sell tourism services. To offer a carefully designed palette of services, it is important to work together with civil society and cooperate in terms of themes and pricing to avoid the duplication of services. Programs offered for free by civil society should not harm the bottom line and should consider the carrying capacity of the area.

Static element: As for the accommodation choice, the outside and the inside of the buildings should be injected with a sense of local vernacular. Family-run hotels and guesthouses should be favored because they can better meet the criteria of sustainability than chain hotels. The gastronomic offerings can be a decisive factor and result in a higher satisfaction rate (Pécsek, 2014). Eateries can be physically attached to accommodation, so a more complex package would await visitors, generating a steadier flow of income for small businesses.

Creative element: cultural and creative products are deeply rooted in the localities where they have been created –inspired by local symbols, traditions, knowledge, materials, and practices – they become a vital, powerful site-specific resource for territorial development (Daubeuf et al., 2019). Involving local artists in the creation of tourism services means that visitors encounter local culture at every step of their visit, inside the accommodations, restaurants, and confectionaries filled with the artful display of locally sourced arts, crafts, and homeware. By designing creative programs, a more sophisticated and demanding returning clientele can be built up and satisfied.

Institutional background

In order to design attractive events a diverse institutional background is paramount, where the local government ensures the legal background, and the financial backing and pursues a lobbying activity along with a wide range of civil organizations. The involvement of the latter in the

development and promotion is necessary to keep the size of the events at bay and ensure a direct community voice. Churches do not just offer spiritual guidance but social and voluntary work, education, healthcare, and social care as well as they are architectural attractions.

Common activities

Dynamic element: The two main components: the private sector and the institutions have to cooperate in the creation of programs to satisfy both locals' and visitors' needs and raise the attention of potential tourists. The dynamic element covers a non-exhaustive list of activities that can vary based on the resources and objectives of the given settlement. The consensus in the decision-making as well as in the whole creative process is pivotal since the everyday of locals are exposed to strangers who only have a limited timeframe to explore and experience. Therefore, locals have to be careful and aware of how they want to show off their lives. Apart from leisure tourists, a niche type of business tourism should be developed including organizing small conferences and workshops thematically keeping in line with the neighborhood.

6. FUTURE RESEARCH DIRECTIONS

This is a conceptual paper building a model to illustrate a relationship between the cluster theory and suburban tourism. The study has a creative scope; however, it also has data limitations due to the novelty of the topic. In the future, research can take the path of focusing on modern suburb development considering all its challenges related to city tourism. Researchers can also investigate ways of incorporating special interest tourism such as architectural tourism and/or green tourism products into their suburban tourism analysis.

Regarding this actual research, it will be important to carry out a survey in the local community to find out their attitude towards sustainable tourism developments. The result of the questionnaire would clearly show whether residents would be willing to embrace tourism or have different ideas when it comes to sustainable development.

7. CONCLUSION

Based on the analysis of the fieldwork and the elements of the micro cluster model the following points are suggested to be incorporated into the development strategy:

Focus: Crafting and promoting slow and experience-based activities (eating, drinking, walking) based on the synergies of heritage architecture, artisanal culture, and nature.

Accommodation: Creating non-replicable offerings such as lifestyle guesthouses and mini-hotels by salvaging old edifices and revamping them. New developments from scratch should be discouraged to leave the extensive green environment intact and keep the space intimate.

Gastronomy: Opening hours should be addressed. A complete overhaul of the menus is needed in most establishments. With the help of local chefs and pastry cooks a flagship dish, cake, and drink (the wine or beer of the estate) should be created.

Art: The sense of the place can be enjoyed and shared in a more intensive way by the direct involvement of local artists who could welcome art lovers at their artists' colonies where they could make products together by hand. Photo tours have been a long part of the niche offerings in

tourism, while the painting experience has been a recent phenomenon as a healing and recreational artistic activity. The major advantage of a painting course would be the outdoor setting with a remarkable architectural backdrop. Open competitions like „The Four Seasons in Wekerle" would ensure repeat visitation throughout the year. Interiors of tourism establishments should make a connection with the locality through arts and crafts (ceramics, photos, textiles, paintings).

Cultural programs: it is not advisable to boost the number of cultural programs catering to visitors as they would attract fast, mass tourists to the neighborhood. However, an e-guide application downloadable from the Internet would allow flexible consumption of place. Furthermore, multilingual walks would open a new horizon to the life of Wekerle Estate since foreign professionals such as architects, historians, art historians, urbanists and photographers would find tailored programs appealing.

Convention tourism: workshops and mini-conferences related to the „sense of place" would enrich the palette of offerings with a profitable product.

As a result, the downtown and the suburbs in Budapest can mutually benefit because tourists can experience everyday exoticism without leaving the city. Simultaneously, the inner districts have to cope with fewer tourists, making crowd management easier. In the long run, even a more sophisticated tourist segment might take an interest in the city.

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Original Scientific Paper

INFLUENCE OF PERCEIVED QUALITY ON THE OVERALL SATISFACTION EXPERIENCE OF HOTEL GUESTS

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Abstract: *The hotel industry has seen many changes in the last few years, some of which can be attributed to the quickening pace of technological advancement, shifting traveler preferences due to health concerns, and turbulent political and economic events that forced hotel management to place a premium on product and service quality. To thrive in a progressively cutthroat market, lodging establishments need to be prepared to adjust and tweak their operational procedures. Aware of the fact that users very quickly leave hotel accommodations whose services do not meet their expectations, needs, and desires and go to the competition. Therefore, prominent hotel chains, on the one hand, take into account the needs and wishes of their guests, and on the other hand, the quality of service in the hotel, but also the final destination, i.e. the very appearance and impression of the destination. In the hotel industry, achieving acceptable quality is a difficult process that calls for specific knowledge and abilities in every department as well as essential communication with hotel employees. Only consistently trained staff members who are committed to guest satisfaction can effectively manage quality in a hotel, which eventually boosts earnings, reduces expenses, and adds value to the establishment. This study looked into how a guest's overall perception of the hotel and its services was affected by the expected caliber of that service. Hypothesis One: Perceived quality of service in a hotel is positively influenced by the hotel's physical environment, attractiveness and construction of the destination, interaction with employees, and accompanying services and amenities in the hotel. Hypothesis Two: The pronounced heterogeneity of hotel service users, their motives for choosing a hotel, and the necessity of interactions with hotel staff are positively correlated with the perception of the level of service quality in the hotel. The paper will test hypotheses regarding the relationship between the physical hotel environment, its attractiveness, the destination's construction, interactions with staff, and the hotel's amenities and ancillary services and perceived quality of service. Simultaneously, an attempt will be made to ascertain the relationship between the reason for selecting the hotel and the perceived quality of services offered, as well as the importance of interacting and fostering a good rapport with service providers.*

Keywords: *Quality management, Overall experience, Consumer satisfaction in tourism.*

JEL Classification M20 · M30 · C10

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1. INTRODUCTION

The businesses that make up the hotel sector today play a significant role in both, the national and global economies. The hotel industry's progress can be measured by the positive business outcomes of its companies and their sustainability in the marketplace. Numerous service providers are vying for the same or comparable market share. Hotel organizations can attain long-term viability and continuity by outperforming their competitors not only through superior products and services but also through effective business management. Achieving quality in products and services, ongoing training and education for staff, and end-user orientation are the objectives of any service organization. As hotel companies strive to not only draw in new business but also hold on to their current clientele, customer expectations have grown over time. Nowadays, customers are happy with the full catering menu of goods and services in addition to their lodging in a hotel.

Thus, it is imperative that managers and other staff members concentrate on customers and achieving a superior standard of quality worth for them, based on their demands, needs, and even desires in the current particular scenario, but also based on their requirements and future needs, considering what the competitors are doing (Skoko, 2000, p. 91). Kulis and Grubisic (2010) listed the following companies that are concerned with the quality of their goods and services, the market, and customers: market research needs, product and service development in accordance with market demands, quality optimization to the extent that meets market demands, ongoing quality monitoring, and continuous improvement based on feedback.

In addition to enhancing the hotel's aesthetic appeal, a well-designed physical space makes it easier to provide services and communicate with guests, particularly when it comes to high-touch service activities. Service providers offset the intangibility of their offerings with the physical environment. Service companies use the physical environment to influence user and employee behavior and try to convert as much of the intangible into the tangible as possible. The macro-environment of the hotel industry is comprised of various elements such as destination values, socio-cultural shifts, environment, economic conditions, and political climate. These elements collectively impact the supply, demand, and preferences of tourists. The paper's objective is to ascertain the degree to which the physical surroundings, ancillary services and content, and interactions with staff members influence the quality of the service received.

2. QUALITY INDICATORS

The Latin word *qualitas*, which means quality, property, excellence, feature, and ability, is the root of the English word quality (Klaric, 1985). Many have discussed the idea of quality. One prominent marketing theorist, Philip Kotler can be highlighted as one who views quality as the extent to which a particular brand is able to fulfill its functions. Kulis and Grubisic (2010, p. 11) argue that the term quality is not universally understood by writers and instead can be characterized by an author's capacity to use, apply, satisfy, and comply with requirements. There are various definitions of service quality because it is interpreted differently by different people. For the user, anything that meets one's standards of quality is considered to be so (Kelly, 1997, p. 164). According to Schroeder (1999, p. 90), the term "quality" is used in a variety of contexts and is difficult to define. Kulis and Grubisic (2010, p. 10) define quality as the ability to meet specific needs and encompasses technical, market, and management approaches.

According to Juran (1996, p. 6), service users gauge quality based on the functionality of the product and its lack of flaws. Kulis and Grubisic (2010, p. 14) define quality indicators as quantities

that indicate the caliber of goods or services, procedures, or businesses. All parties with an interest, including suppliers, manufacturers, and buyers, must be aware of the size ranges. Quality indicators include product quality, service quality, process quality, and organizational quality (Kulis & Grubisic, 2010, p. 14).

Product quality is defined by Kulis and Grubisic (2010, p. 15–17) as metrics that, depending on the product type, can be assessed using either variable or attributive measures. The product's characteristic is expressed as a statement (kind-unkind), rather than being measurable. Positive or negative evaluations are another way that attribute qualities are expressed. A variable measure, such as toughness, mass, temperature, or hardness, is a property of a product that can be measured on a scale and is based on a numerical value and makes each person feel something unique. Establishing a sense of value among customers is crucial to achieving service quality, but there may also be a discrepancy between expectations and perceptions of the services received. According to Avelini Holjevac (2002), "quality is the degree to which customers' needs and demands are satisfied, i.e., compliance with their growing demands and expectations." Markovic (2005, p. 55) asserts that the management, staff, and customers of a company all have expectations and perceptions that influence the quality of the services provided. Customer dissatisfaction arises when users' expectations or perceptions of goods or services differ. Kerum and Vukovic (2022, p. 6) assert that hotel industry managers can achieve quality if they possess the knowledge and abilities to inspire employees and persuade them of the value of delivering high-quality service. They must establish precise standards and safe models that match the caliber of service provided to visitors. The goal of modern times is to maximize customer satisfaction, which eventually leads to the happiness of those who use the goods or services. Given that it can be challenging to define an organization's quality, Skoko (2000, p. 9) contends that an organization's processes should be examined in order to determine its overall quality. Several characteristics can be used to describe a company's quality (Gasparovic, 1996, p. 91): the caliber of the product; the level of service the user receives during the consumption process; and the accuracy with which one fulfills their duties to suppliers, customers, partners, and creditors. Equity with regard to workers, observance of their rights, care for career growth, education, etc. a sincere attitude toward the government in general and the economic policy implementation in particular, adherence to the law, morals, and customs; incorporation of moral principles into corporate policy, protection of the environment and overall guest and employee safety.

An important role in the application of orientation to the internal market is played by company managers who must be involved in the process and encourage employees to provide quality service (Mishra & Sinha, 2014). Furthermore, the quality of reliability, that is, the ability to provide promised services reliably and accurately (Anwar & Shukur, 2015), is due to the employees who deliver and provide services to guests. Sultan et al. (2020) emphasize the importance of providing hotel service because it affects the return of guests. Appaw-Agbola and Afenyo Dehlor (2011, p.112) in their research emphasize the validity of providing assistance and ensuring fast quality. Prabhu et al. (2020) emphasize the role and importance of the knowledge and friendliness of staff and their ability to inspire trust and create reliability. Empathy/friendliness towards hotel guests was highlighted in the research by Anwar and Qadir (2017). The quality of service takes into account the guest's judgment of the overall superiority and excellence of the overall product (Abdullah, 2019), which indicates the importance of the physical arrangement, equipment and elements of originality of the hotel.

3. SPECIFICITY OF TOURIST PRODUCT QUALITY AND DESTINATION VALUE AS ONE OF THE DETERMINANTS OF QUALITY

Because the tourism offer is dispersed throughout various settings and social and economic systems, it is an incredibly complex model that is impossible to describe. A tourist destination is characterized as a hub for the provision of tourism services that are dictated by the unique and varied demands of travelers. Despite their geographical dispersion, tourist destinations serve as the foundation for research on tourism, draw travelers, encourage them to come, and initiate the travel industry as a whole. Tourists' perceptions and experiences of a destination are influenced by its values. Every destination needs to have "its own face" which means it needs to be genuine, appealing, recognizable, unique, and visually appealing. The trend of individualization and complexity of destination values characterizes the modern tourism offer. This aesthetic requirement is particularly relevant for tourist destinations with eye-catching settings that need to focus heavily on visual interaction with customers, including accessibility, speedy identification, and an examination of the intricacy of the entire offer. The concept of "enjoyment" in the previously mentioned hedonistic value system becomes more and more dependent on the quality of the tourism offering. The relationship that a hotel has with its surroundings, or its connection to the essence of the local climate and culture, influences how tourists perceive a particular location and the activities that take place there. As a result, the hotel requires uniqueness that captures the essence of the location (lat. *genius loci*) in order to draw in and keep tourists, as the hotel offers more than just services—it also sells the feelings and experiences that make a destination.

4. THE RELATIONSHIP BETWEEN PERCEIVED QUALITY AND GUEST SATISFACTION

There is no one category for quality. A variety of dimensions, or quality features, are taken into consideration when assessing the quality of products or services by consumers. Three fundamental categories can be used to categorize quality features (Skoko, 2000, p. 30): features that establish the product's functionality; features that establish the product's durability and dependability; and features that contribute to the product's and services' hedonic value.

Because they are better informed than ever, consumers nowadays regularly check offers and contrast them with those that are similar. They determine which offer will yield the highest perceived value, and they take action in accordance with the results. If customers' expectations are not fulfilled, it is simple for them to find a substitute. Whether or not the offer fulfilled the customer's expectations will determine the likelihood that one will select the same business to receive services from. Kotler and Keller (2008, p. 141) define perceived value for the buyer as the discrepancy between the buyer's evaluation of all costs and benefits associated with a specific offer and their perception of potential alternatives. Customers view the perceived monetary value of a set of functional, psychological, and economic benefits that they expect from a particular market offer as the total value.

According to their theory, the consumer's total costs include all expenses - financial, time, energy, and psychological - that they may incur while assessing, obtaining, using, and discarding the obtained market offer. The difference between what the customer receives and what he gives for various options is the basis for perceived customer value. The client expects certain expenses and receives certain benefits. According to Kerum et al. (2021, p. 5), it is crucial for service providers to offer products and services with a focus on hotel guests. Service providers give client satisfaction a lot of thought. Companies that operate hotels with a guest-centered business model seek to meet customer demands. Service providers give client satisfaction a lot of thought. Companies that operate hotels with a guest-centered business model seek to meet customer demands.

The degree to which hotel guests are satisfied, dissatisfied, or enthusiastic depends on how they perceive the quality of the service they receive. A satisfied guest is one who believes that the quality of the hotel service matches what they received. When a guest receives hotel service that surpasses their expectations and leaves them feeling pleasantly surprised, they become delighted. Similarly, the guests are not happy if their expectations of the hotel service are not fulfilled. This leads to the conclusion that "the best advertisement is a satisfied guest" (Markovic, 2005, p. 53). Nevertheless, a disgruntled visitor vent to others more than a contented hotel visitor does. In this sense, it damages the hotel that falls short of expectations, and generates bad publicity. Juran and Gryna (1999, p. 96) state that there will be monetary losses if complaints from guests are handled with partial guest satisfaction and decline in company revenue. One important consideration in lost sales may be the caliber of goods and services offered. Three fundamental tasks are referred to by the principle of focus on the customer (Kulis & Grubisic, 2010, p. 82): enhancing customer relations, retaining current customers, and gaining as many new customers as possible.

Numerous techniques are available for measuring hotel guests' perceived quality and satisfaction. Researchers most frequently use focus groups, surveys, interviews, complaints, and a few other techniques. The best measures of business are complaints. If there are numerous of them, the business must make a quick turnaround by altering its operations, auditing the entire hotel chain, and reviewing all of its management personnel. Regarding user complaints, it should be noted that a large number of users tend to share negative experiences with others rather than reporting issues directly, which can negatively affect the business by discouraging potential customers from making reservations and making purchases. The most significant aspect of complaints is that they offer detailed information about the good or service, making it feasible to identify the true source of the issue and take appropriate action to resolve it (Lazibat, 2009, p. 105).

Target consumers must be identified in order for hotel product and service providers to satisfy customers, keep returning guests, strengthen their bonds with them, and eventually draw in new ones. Customers come from a wide range of perspectives and abilities. While some hotel companies focus on a specific target group, others aim to serve a broader spectrum of customers. Determining business criteria with the goal of drawing in and keeping guests with a variety of needs requires careful planning. Service providers choose the quality level they wish to provide to their clients. Consequently, it is critical to ascertain whether the target clientele is made up of people who compare prices, offers, and service quality with competitors, those who prioritize getting the best deal available in the relevant market, or those for whom price is the primary consideration when selecting a place to stay. Juran and Gryna (1999, p. 4-5) suggest that guest satisfaction is achieved by considering two factors: product properties and freedom from incompleteness. The impact of product properties on sales revenue is significant, especially in industries like hospitality where consumers can be categorized based on desired quality. This categorization helps identify the target consumers, whether they prefer luxury hotels or budget options. The range of products and services offered also indicates the level of quality. However, increasing quality often leads to higher costs. On the other hand, freedom from incompleteness reduces complaints and ensures error-free business processes, thus impacting costs. Incompleteness is measured through errors, defects, omissions, and similar units. Freedom from incompleteness refers to the degree of quality compliance. Improving compliance typically leads to lower costs and fewer complaints, ultimately resulting in higher consumer satisfaction. Therefore, product properties and freedom from incompleteness are key influencers of consumer satisfaction.

Hotel quality and guest satisfaction can only be attained by concentrating on the final user, the hotel visitor. Hotel companies want to bring in new business, but they also want to keep their

existing clientele for life. The entire hotel organization must be focused on establishing a high standard of quality, meeting the most discerning customer needs and preferences, and keeping an eye on competitors' actions in order to meet the goals that have been set.

5. PRODUCT AND SERVICE QUALITY TO INCREASE VALUE FOR CONSUMERS IN TOURISM

According to Juran and Gryna (1999, p. 10), regular quality control can detect and eradicate the root cause of a particular error, which will ultimately lower expenses and facilitate work that is committed to the final user. On the other hand, poorly managed quality can lead to expenses and problems with business plans, error correction, and setting up thorough controls. The business outcome will not live up to expectations if the organization doesn't devote enough time and resources to achieving the necessary caliber.

Hotel organizations need to understand how consumers define value. The value of products or services is equal to the consumer's perception of the following factors (Lazibat, 2009, p. 104):

- Quality of products or services,
- Services provided by the organization,
- Employees of the organization,
- Image of the organization,
- Selling price of the product or service,
- Total expenditure for the product or service.

The consumer's perception of the aforementioned factors determines their level of satisfaction and value. Maintaining strong and enduring relationships with guests is crucial for hotel staff, as tourists place varying priorities on different factors. To achieve business excellence, hotel companies must implement processes like planning, control, and continuous quality improvement. Meeting customer needs should come first when planning the quality of goods and services, not just maximizing profits for the company. Inconsistencies in the hotel organization are the cause of occasional and ongoing quality issues, which call for a quick investigation by the department to find flaws and fix any possible harm. According to Kotler and Keller (2008, p. 148), some businesses raised the bar on quality by integrating a total quality management model into their operations in response to the need for greater customer satisfaction. The objective of total quality management, a model that operates at the organizational level, is continuous quality improvement across all departments and through enhanced policies, practices, and services.

The quality of the good or service, the customer's opinion and level of satisfaction with the service, and the hotel company's financial performance are all closely related. A high standard of quality pleases customers and makes it possible for the business to charge more while cutting expenses. "The value proposition for the consumer is a complete promise that a company makes to its consumers in a given market segment. It is the embodiment of a precise point of contact between the consumer's needs and desires, with the distinctive capabilities of the company. The value proposition focuses on the energy of each person within the company based on the purpose of each of its activities. It contains the meaning of what it means to be customer-oriented in a competitive business environment" (Collins & Devanna, 2002, p. 142-143).

Perceived value, according to Vranesevic et al. (2018, p. 109), is the customers' perception of how and to what extent the expected purpose will be achieved - that is, how and to what extent the product or service will fulfill their wishes and needs. Every guest wants to get the most out of

what they invest compared to what they receive. Collins and Devanna (2002, p. 144) assert that one of the most crucial managerial skills nowadays is the ability to persuade business partners - such as suppliers, service providers, and technology providers - to maintain customer-centricity and add value for product or service users. A devoted customer is far more valuable than a new one, according to research. Not only can related new products and services be sold with a portion of the sales costs required to draw in new customers, but regular customers also facilitate the resale of the same goods and services. Generally speaking, it is far simpler to keep your current clientele satisfied than to find new ones, particularly if you are attempting to do so by cutting prices or utilizing other sales promotion strategies.

6. RESEARCH METHODOLOGY

The research methods were defined with respect to the research's purpose and subject, as well as to the research hypotheses. In keeping with the foregoing, a number of scientific techniques will be applied in the work, enabling us to attempt to obtain pertinent data and a scientific conclusion. Using a questionnaire, a survey method will be employed to gather and analyze pertinent data, information, attitudes, and opinions from tourists regarding the research topic. In the pre-season of 2022 and during the 2021 season, 299 respondents provided information for the research. The respondents were asked about their level of satisfaction with the hotel service using a descriptive analysis.

In order to explain the elements of service quality in the hotel industry and the elements of the physical environment of the hotel, i.e. the destination, and other factors that determine guest satisfaction, a survey method was applied. A structured survey questionnaire was used as a research instrument. Based on the study of relevant literature in the subject area, a survey questionnaire was created. In the creation of the survey questionnaire, closed questions with an offered answer, open questions, and closed questions with offered modalities were used, measured by a five-point Likert scale. The questionnaire consisted of four parts. The first part consists of questions about the demographic characteristics of the respondents. The second part consists of questions, i.e. statements related to expectations and satisfaction with the stay, i.e. services when staying in the hotel, the third part of the survey related to the elements of the physical environment that affect the stay in the hotel, and the fourth part of the survey to the physical environment, i.e. the elements of the construction of the destination.

The research was conducted on a purposive sample but with a random selection of 299 respondents. In the structure of respondents, 62.75% of respondents are foreign guests. The structure of foreign guests consists of tourists from Germany (21.45%), Slovenia (9.1%), Austria (9.0%), Poland (7.7%), the Czech Republic (6.7%), Italy (4.7%) and the United Kingdom (4.1%).

Using the SPSS software, the analysis was completed. The fundamental traits of the sample's respondents are listed below. Multiple linear regression and correlation analysis were used to test the hypotheses. The respondents scored how much they agreed with each statement on a Likert scale ranging from 1 to 5, which represented the relevant variables in the model.

The goal of the work is to ascertain the following: the degree of service quality in the hotel, which is a crucial component of consumer satisfaction in the tourism industry; the influence of the hotel's physical environment, the allure, and development of the destination, on the perception of the overall experience of the tourist product; the effect of hotel guests' interactions with staff and the impact of ancillary services on overall satisfaction with the hotel product. Guest preferences and decision-making when selecting a specific hotel room, as well as their overall experience, are

heavily influenced by their perception of the quality of the expected product and service. This paper tests the following hypotheses:

Hypothesis one*:* Perceived quality of service in a hotel is positively influenced by the hotel's physical environment, attractiveness and construction of the destination, interaction with employees, and accompanying services and amenities in the hotel.

Hypothesis two*:* The pronounced heterogeneity of hotel service users, their motives for choosing a hotel, and the necessity of interaction with hotel staff are positively correlated with the perception of the level of service quality in the hotel.

Out of a total of 299 respondents, 294 of them declared by gender. Among those who declared (n=294), 55.44% were women, while 44.56% were men. 296 of the total respondents provided a response when asked about age. Ages 26 to 45 account for the largest cumulative share of respondents (46.62 percent). 45 years of age or younger make up more than half of the sample (57.09 percent) of responders. It is clear from the foregoing that the sample's comparatively younger demographic is in the majority. Nonetheless, the age groups 16–25 and 56–65 account for the smallest and equal share (10.37 percent).

According to the respondents' educational backgrounds, those with the highest level of education (i.e., those with a college degree) make up the largest share of respondents (36.91 percent) while education at the elementary level makes the lowest share of respondents (3.02 percent). The majority of respondents in the sample are highly educated, as evidenced by the comparatively high percentage of respondents (23.15 percent) who hold a master's degree. This question was left unanswered by one respondent.

7. RESEARCH RESULTS AND DISCUSSION

The physical environment, ancillary services and benefits, and the requirement for employee interaction were the independent variables in the model, and perceived usefulness was used as the dependent variable. The first hypothesis was tested using the multiple linear regression method. Since each variable is expressed using a set of statements, the first step involves averaging these statements for each variable to produce a single variable that will represent specific attitudes. Regression analysis was performed using averaged variables. Predictors are removed from the model at any point during the development process if their p-value is higher than a predetermined threshold. Similarly, predictors are kept in the model if their p-value is below a predetermined threshold. The regression analysis's results are displayed in Table 1. The physical surroundings do not substantially impact the perceived quality of hotel service (p=0.290), but complementary services and amenities (p=0.021) and the requirement for staff interaction (p=0.029) do have a positive impact on perceived quality. The estimated model's equation is as follows:

$$Y_i = 2.375 + 0.078FO + 0.170PU + 0.169INT$$

By looking at the standardized coefficients, it is possible to determine which ancillary services and benefits have the biggest relative impact on how well hotel services are perceived. Positive expectations and a better perception of the quality of hotel service are most strongly influenced by a higher level of staff friendliness, faster service, secured parking, a wider variety of the facility's offerings and contents, and the safety and protection of guests. This is evident when this result is correlated with the survey questions. In the same way, stronger staff professionalism,

communication, and the manner in which potential complaints are resolved are found to have a positive influence on guests' perceptions of higher-quality hotel services. Given that all values of the variance inflation factor (VIF) and tolerance indicator (TOL) are satisfactory, there is no issue with multicollinearity among the independent variables in the model. To be more exact, every VIF value is less than 5, and every TOL value is greater than 0.20.

Based on the estimated model, it can be concluded that hypothesis H1: Perceived service quality in the hotel is positively influenced by the hotel's physical environment, attractiveness and construction of the destination, interaction with employees and accompanying services and amenities in the hotel - partially accepted, given that the physical environment did not show significant influence.

The model is clearly statistically significant overall, as shown by the ANOVA table (Table 1). The arithmetic means of the hotel's physical environment, related services and amenities, and interactions with staff were compared using the ANOVA method to see if there was a statistically significant difference. The results show that hotel visitors distinguish between the physical environment and destination quality and the hotel product quality for the objective of evaluating hypothesis H2.

Table 1. ANOVA table of the estimated regression model

	Sum of squares	df	Square middle	F-ratio	p-value
Regresion (interpreted part)	8.738	3.000	2.913	8.659	≤ 0.001
Residuals (uninterpreted part)	85.101	253.000	0.336		
Total	93.839	256.000			

Dependent variable: PK, Independent variables: FO, PU, INT

Source: Own research

Correlation analysis revealed a positive correlation between the perceived level of service quality in the hotel and the significant heterogeneity of hotel service users, their reasons for selecting a hotel, and the necessity of interactions with hotel staff. In other words, this analysis establishes the relationship between a few variables and its strength. Additionally, the correlation coefficients' significance was examined. First, the averaged variables of perceived hotel service quality, hotel selection reasons, and need for staff interaction were used to calculate Pearson's linear correlation coefficients (Table 2).

Table 2. Matrix of Pearson's linear correlation coefficients

		PK	MOT	INT
PK	r	1		
	p			
	N	260		
MOT	r	0.171**	1	
	p	0.006		
	N	259	289	
INT	r	0.262**	0.251**	1
	p	≤0.001	≤0.001	
	N	259	287	289

***p<0.01*

Source: Own research

Table 2's data leads one to the conclusion that there is a weak but positive correlation between the perceived quality of hotel service and the factors that influence hotel choice and the need to interact with staff. There is statistical significance for both coefficients. This finding suggests that when selecting a hotel, respondents who place a higher value on a hotel's location, content variety, and planned events also have a more favorable opinion of the hotel's service, as do respondents who appreciate the opportunity to interact with staff members for communication and problem-solving. The correlation was also looked at using the Spearman rank correlation coefficient because this result only provides the results of the general averaged variable correlation, which was found to be weak. Specifically, the variables of interest are of the ordinal type, and this coefficient accounts for the ranks of the variables. They are presented as claims that range from 1 to 5. Table 3 displays the analysis's findings.

Table 3. Matrix of Spearman rank correlation coefficients

		PK1	PK2	PK3	PK4	PK5	PK6	PK7	PK8	PK9	PK10	MOT1	MOT2	MOT3	INT1	INT2
PK1	r_s	1														
	p															
	N	244														
PK2	r_s	0.647**	1													
	p	≤0.001														
	N	242	248													
PK3	r_s	0.561**	0.571**	1												
	p	≤0.001	≤0.001													
	N	239	243	245												
PK4	r_s	0.522**	0.601**	0.540**	1											
	p	≤0.001	≤0.001	≤0.001												
	N	239	244	241	250											
PK5	r_s	0.616**	0.550**	0.511**	0.605**	1										
	p	≤0.001	≤0.001	≤0.001	≤0.001											
	N	238	242	240	247	249										
PK6	r_s	0.521**	0.566**	0.472**	0.648**	0.660**	1									
	p	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001										
	N	240	245	242	248	247	252									
PK7	r_s	0.593**	0.550**	0.528**	0.584**	0.611**	0.688**	1								
	p	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001									
	N	240	245	242	248	247	251	253								
PK8	r_s	0.598**	0.600**	0.486**	0.577**	0.591**	0.608**	0.677**	1							
	p	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001								
	N	241	246	243	249	248	252	252	254							
PK9	r_s	0.475**	0.465**	0.424**	0.581**	0.573**	0.545**	0.626**	0.613**	1						
	p	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001							
	N	241	245	242	248	247	251	252	253	255						
PK10	r_s	0.535**	0.490**	0.450**	0.522**	0.514**	0.542**	0.561**	0.598**	0.635**	1					
	p	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001	≤0.001						
	N	240	243	240	246	245	248	249	250	252	255					
MOT1	r_s	0.004	0.112	-0.016	0.054	0.064	0.097	0.099	0.037	0.131*	0.141*	1				
	p	0.945	0.080	0.800	0.397	0.320	0.127	0.117	0.559	0.037	0.025					
	N	241	245	242	247	246	249	250	251	252	252	287				
MOT2	r_s	0.043	0.045	0.110	0.064	-0.003	0.067	0.088	0.055	-0.025	0.087	0.275**	1			
	p	0.510	0.486	0.088	0.317	0.958	0.297	0.168	0.388	0.692	0.172	≤0.001				
	N	240	244	241	246	245	248	248	250	250	250	279	281			
MOT3	r_s	0.072	0.066	0.156*	0.099	0.042	0.056	0.083	0.137*	0.082	0.156*	0.020	.583**	1		
	p	0.271	0.306	0.015	0.124	0.517	0.381	0.195	0.031	0.197	0.014	0.740	.000			
	N	238	242	240	244	243	246	246	248	248	248	278	279	280		
INT1	r_s	0.175**	0.262**	0.258**	0.202**	0.138*	0.145*	0.204**	0.197**	0.211**	0.248**	0.180**	0.222**	0.136*	1	
	p	0.006	≤0.001	≤0.001	0.001	0.029	0.021	0.001	0.002	0.001	≤0.001	0.002	0.000	0.023		
	N	242	246	243	249	248	251	251	253	253	253	282	280	278	286	
INT2	r_s	0.112	0.204**	0.126	0.221**	0.115	0.218**	0.224**	0.204**	0.270**	0.283**	0.201**	0.063	-0.038	0.323**	1
	p	0.083	0.001	0.051	≤0.001	0.072	0.001	≤0.001	0.001	≤0.001	≤0.001	0.001	0.296	0.532	≤0.001	
	N	240	244	241	246	245	248	248	249	249	249	277	273	271	278	281

***p<0.01, ***p<0.05*

Source: Own research

After a thorough examination of every survey question, it was determined that there was a strong correlation between the hotel's location as a deciding factor, guests' perceptions and expectations of its ease of accessibility, and the overall significance of quality when assessing the hotel complex. As a result, respondents who cite location as their primary factor in hotel selection have higher standards for the hotel's overall quality and accessibility. There is no discernible relationship between the perceived quality of hotel service and respondents whose primary consideration is the variety of contents when selecting a hotel. Regarding the participants whose primary reason for selecting a hotel is events planning, there is a noteworthy positive correlation between their expectations regarding sports and leisure amenities, the hotel's guest suitability, and the overall significance of quality as measures of the perceived quality of the hotel service.

The relationship is more important when interacting with hotel staff. Specifically, there is a positive significant correlation with all indicators of perceived quality of hotel service for respondents who value staff professionalism. Therefore, those who give greater weight to staff professionalism have higher expectations and a better perception of the overall quality of hotel service in all areas, including overall experience, sports and recreational facilities, location, orderliness, variety of offerings, and attractiveness of the facility and environment. Most indicators also show a significant positive correlation between respondents' perceptions of the quality of hotel service and their emphasis on communication and methods for resolving potential objections or complaints in the hotel. The hotel complex's overall experience, its sports and recreation facilities, and its cleanliness and tidiness as a sign of dependability and professionalism are the exceptions.

Based on the aforementioned analysis, it can be concluded that the requirement to interact with staff is more closely related to the perceived quality of hotel service than it is to the differences in the reasons for choosing a hotel. To sum up, hypothesis H2. It is acceptable that there is a positive correlation between the perceived level of service quality in the hotel and the significant heterogeneity of hotel service users, their reasons for selecting a hotel, and the necessity of interactions with hotel staff.

In empirical research, there are several methodological limitations that could affect the obtained results, and thus the possibility of drawing conclusions based on them. In the research, a survey questionnaire was used as a data collection form and was distributed to hotel guests in Rogoznica and Split. The volume of the survey questionnaire was a complicating factor in obtaining data. Quality filling of the survey objectively required a longer time. As a disadvantage, it can be stated that part of the respondents who filled out the surveys did not fill in all the questions, especially those that required more time to write the answers. One of the disadvantages of the empirical research method is the tendency of respondents to answer not what they think, but what they consider acceptable. Another limitation of the conducted research is the non-representativeness of the sample of respondents for the research topic. Apart from a small number of respondents (299), most of them are between the ages of 24 and 46 (46.62% of respondents), so it can be assumed that these are younger people at the age when they show the greatest interest in the entertainment aspects of the offer and do not show a high interest in sports activities or the cultural aspect of travel or vacation. As a limitation, the time of the research can be cited, that is, the months of June, July, and August when the reasons for visiting are the sun, the sea, and the beach. Attitudes about choosing a hotel and about choosing a tourist destination are influenced by the lifestyle, knowledge, and education of respondents, and even age, and according to the results of the research, it can be concluded that the majority of respondents share the same values. Given the time limit and other conditions, the survey was translated into English. This made it difficult to survey all visitors, as not everyone speaks English equally well. During the empirical investigation, that is, the

distribution of questionnaires to be filled in, quite a few visitors could not, did not want to, were interested, or did not have time to fill out the questionnaire because they were on vacation.

Recommendations for future research include the analysis of a bigger sample size across different hotel categories, as well as the correlation between the views of hotel employees, management, and guests. Recommendations are also to do the research on visitors' satisfaction with hotel service, elements of the physical environment of the hotel where they stay and tourist destinations build on the limitations that emerged during the research. To create a quality questionnaire, it is necessary to have knowledge, information, and experience. With an appropriate research problem, a well-constructed and verified questionnaire, a representative sample of respondents, and with proper data collection and appropriate data analysis, a survey questionnaire can provide useful information. It is necessary to include as many respondents as possible who differ in their demographic and social characteristics and to examine more different age groups and groups of different origins, so that the collected data is more relevant and credible, and the research should also be conducted in other destinations on the Adriatic coast.

8. CONCLUSION

The satisfaction of the final customer, the hotel guest, is where quality in the hotel business starts and finishes. A hotel company's profitability, business efficiency, and customer satisfaction are all related. Attaining superior service quality raises guest satisfaction levels in the hotel, which in turn boosts revenue, raises sales prices, and reduces operating expenses. A crucial aspect of the hotel as a whole is quality, which encompasses all aspects of the establishment, including the management and staff as well as the position, destination values, and hotel interior. If the hotel company prioritizes end users and their satisfaction, it can reach a certain level of product and service quality. The goal of any serious hotel business is to acquire and retain the same customer base. As demonstrated in this paper, a wide range of factors that reflect the supplementary services and advantages of the hotel have an impact on the perceived quality of the service provided by the hotel. The study's findings show that the degree of friendliness displayed by the employees, the speed at which services are rendered, the wider range of hotel amenities, and security and protection all play a significant role. The location, variety of offerings, planned events, the allure of the building and surroundings, staff professionalism, ability to communicate and handle concerns and objections, etc., are the most often cited factors when selecting a hotel.

A better perception and higher expectations of the quality of hotel service in all aspects are held by respondents to this research, including the attractiveness of the facility and environment, sports and recreational facilities, location, tidiness, the variety of offerings, the overall experience, and the importance of service quality. Variables of the quality of the hotel service, such as the professionalism of the staff, communication, and ways of solving possible objections or complaints, are also mentioned.

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