



Scientific Center of Innovative Research OÜ

# **ECONOMICS, FINANCE AND MANAGEMENT REVIEW (EFMR)**

**Issue 4 (16)**

**2023**

***International databases and directories indexing publications:***

- CrossRef (DOI: 10.36690);
- ISSN International Centre;
- Google Scholar;
- National Library of Estonia;
- The ESTER e-catalog;
- PKP-Index;
- Eurasian Scientific Journal Index;
- Academic Recourse Index (ResearchBib);
- Advanced Science Index (Germany);
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*Economics, Finance and Management Review*. DOI: 10.36690/2674-5208-2023-4

The fourth issue contains articles by scientists from different countries, prepared on the basis of their scientific work. It is designed for university teachers, graduate students, undergraduates, practitioners in economics, finance, accounting and auditing, as well as other branches of economics.

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# CHAPTER 1

## CURRENT TRENDS IN ECONOMIC DEVELOPMENT

### DECENTRALIZATION'S IMPACT ON ECONOMIC GROWTH: A COMPARATIVE ANALYSIS

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**Citation:**

Meliza Sari, P., Handra, H., & Yonnedi, E. (2023). DECENTRALIZATION'S IMPACT ON ECONOMIC GROWTH: A COMPARATIVE ANALYSIS. *Economics, Finance and Management Review*, (4), 4–19. <https://doi.org/10.36690/2674-5208-2023-4-4-19>

**Received: October 20, 2023**

**Approved: December 21, 2023**

**Published: December 30, 2023**



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**Abstract.** This research aims to examine the effect of decentralization, tax revenues as a percentage of GDP, and foreign investment on economic growth using multiple linear regression analysis. The introduction provides a contextual understanding of the importance of understanding the factors that influence economic growth amidst policy changes from pre-decentralization to post-decentralization. Time series data for 49 years (1977-2021) was used for analysis. The independent variables decentralization, tax revenue as a percentage of GDP, and foreign investment were subjected to multiple linear regression on the dependent variable, namely economic growth. Statistical analysis includes evaluation of coefficients, *p* values, *F* statistics, and *R*-squared. The findings show that decentralization and foreign investment have a significant impact on economic growth. However, tax revenues as a percentage of GDP do not show a significant effect on economic growth. This study underscores the important role of decentralization policies and foreign investment in shaping economic growth. This emphasizes the need to formulate economic policy strategies that take these factors into account. However, further research is needed on tax revenues as a percentage of GDP within the scope of this analysis.

**Keywords:** economic growth; decentralization; foreign investment; tax revenue.

**JEL Classification:** O43; H77; O11

**Formulas:** 1; fig.: 3; tabl.: 6; bibl.: 21

**Introduction.** The implementation of decentralization in Indonesia aims to foster regional development, fortify state capacity, and enhance public service quality (Sholikin, 2018; Talitha et al., 2020; Trisakti & Djajasinga, 2021). It has endowed subnational governments with amplified authority, political clout, and financial resources, empowering them to assume diverse responsibilities across sectors such as healthcare, education, infrastructure, environment, and agriculture. While decentralization has notably enhanced local-level public service delivery and administration, disparities persist in local state capacity. Complexities arise in policy coordination between central and subnational governments due to political interventions at both tiers. The decentralization initiative also seeks to optimize public services, governance, and societal well-being. However, challenges persist, hindering the acceleration of local government programs and the maximization of public services.

Several studies have evaluated the implementation of decentralization in Indonesia, particularly by comparing economic growth, tax revenues, and foreign investment pre- and post-regional autonomy. These assessments have elucidated varied effects on poverty, human development, inequality, and fiscal decentralization concerning economic growth and expansion in Indonesia's post-regional autonomy (Hutajulu et al., 2020). Analysis of foreign direct investment (FDI) determinants before and during regional autonomy revealed that resources and competitiveness significantly influenced FDI inflows across provinces (Sodik et al., 2019). Moreover, while fiscal decentralization policies positively impacted economic growth, they did not mitigate regional imbalances in eastern Indonesia (Lamba et al., 2019). Overall, these studies shed light on the impact of regional autonomy on economic indicators in Indonesia.

In a macroeconomic context, government expenditure constitutes a pivotal component of gross domestic product (GDP), reflecting total income and national expenditure on goods and services. Economists and policymakers are concerned not only with the overall output but also with the allocation of expenditure among different categories. The national income postulates GDP into four expenditure groups: consumption, investment, government expenditure, and net exports (Todaro & Smith, 2011). Government spending, part of fiscal policy, intervenes in the economy to execute various functions (Azwar, 2016). These functions, encompassing allocation, distribution, and stabilization, are managed by the government through fiscal policy (Musgrave, 1989). Fiscal decentralization in Indonesia aligns with the government's distribution function, intending to allocate budgets from higher to lower levels of government, supporting delegated government tasks and public services (Indonesia Fiskal, 2021).

Decentralization has gained traction globally as a bureaucratic reform process with the potential to enhance government quality. The transfer of authority, responsibility, and resources through deconcentration, delegation, or devolution from the center to lower administrative levels defines decentralization (Rondinelli, 1981; Rondinelli et al., 1983). In the context of Indonesia, decentralization entails transferring government control to autonomous regions for self-regulation and

management (Indonesia Fiskal, 2021). This decentralized system also distributes financial responsibilities, ensuring that regions can finance their development as they assume delegated duties from the central government (money follows functions).

Despite the benefits, decentralization encounters challenges. Research Rock (2018) highlights concerns over Indonesia's decentralization starting in 1999, questioning whether growth and investment truly materialized post-implementation. Similarly, (Pepinsky & Wihardja, 2011) associated Indonesia's economic growth slowdown with decentralization. To understand this, a comparison of growth rates pre-regional autonomy (1973-1999) and during decentralization (2000-2022) is necessary.

**Literature review.** The inception of fiscal decentralization in Indonesia can be traced back to the enactment of Law Number 22 of 1999 concerning Regional Government and Law Number 25 of 1999 concerning Financial Balance between the Central and Regional Governments. This marked the genesis of fiscal decentralization, empowering regions with authority over income and expenditure management. Nonetheless, most revenue sources remain under central government control. Regional governments are granted autonomy in budget management, enabling access to original regional revenue sources as per legal provisions. The effective initiation of fiscal decentralization commenced in 2001, manifesting in a noteworthy surge of transfer funds in the State Revenue and Expenditure Budget (APBN), escalating by 145.06% from 2000 to 2001, totaling IDR 81.05 trillion. This implementation signifies the advent of a new era of regional autonomy in Indonesia (Fiskal, 2021).

Furthermore, (Musgrave, 1989) delineates that the handling of tax revenues or public expenditure exerts multifaceted influences on the economy, necessitating designs to serve diverse objectives. These policy objectives include (1) The allocation function, wherein resources are allocated between private goods and social goods, which does not encompass regulatory policies; (2) The distribution function, aligning income and wealth distribution with societal perceptions of fairness; and (3) The use of budget policy for maintaining high employment, price stability, and economic growth while considering trade impacts and balance of payments for the stabilization function.

Decentralized decision-making processes tend to be more efficient owing to enhanced information accessibility, given that local governments possess better regional knowledge than the central government in managing public finances. Decentralized governance can restore public policy confidence and foster broader policy consensus. It addresses demands for democratic ideals through decentralization, curbing social and political tensions inherent in local autonomy. Administrative decentralization (Kis-Katos & Sjahrir, 2017) induces shifts in government officials' attitudes and behaviors, facilitating planning and boosting community participation in development activities. As local governments take the lead in public goods provision, comprehending the impact of fiscal decentralization on economic growth becomes increasingly crucial (Martinez et al., 2017; Rondinelli, 1981; Rondinelli, 1983; Rondinelli, 2007).

Decentralization's ongoing development across nations involves systematically transferring power from central to regional governments, aiming for enhanced effectiveness and responsiveness in regional service delivery. By delegating authority to regions, opportunities for investment and international trade increase, enabling more efficient market participation. Beyond bolstering local institutions, decentralization empowers communities to manage resources effectively, employing a bottom-up approach to development agendas (Indonesia Fiskal, 2021).

Decentralization profoundly impacts economic growth. Fiscal decentralization demonstrates a positive influence on economic growth, particularly in regions with low public infrastructure per efficient worker and high human capital per worker (Hassan, 2022). Panel data analysis across 18 countries corroborates the significant relationship between fiscal decentralization and economic growth. Additionally, state revenues from taxes and foreign investments notably impact economic growth. Studies illustrate the substantial contributions of foreign direct investment (FDI) and oil revenues to economic growth in countries like Nigeria (Andrašić et al., 2018). Research underscores the positive effect of increased tax revenue growth on Gross Domestic Product (GDP) (Andrašić et al., 2018). FDI plays a crucial role in economic development by catalyzing foreign trade and technology transfer (Mohs et al., 2018). Therefore, both tax revenues and FDI play pivotal roles in economic growth, where their integration with decentralization can profoundly shape a country's economic performance. The hypothesis posits that decentralization, tax revenues, and foreign investment collectively and individually influence a country's economic growth.

**Aims.** This research aims to examine the effect of decentralization, tax revenues as a percentage of GDP, and foreign investment on economic growth using multiple linear regression analysis.

**Methodology. Data and Model Specifications.** The research design employed in this study utilizes a quantitative approach, utilizing time series data specific to Indonesia for two distinct periods: pre-implementation of regional decentralization (1977-1999) and post-implementation of decentralization (2000-2022). The data utilized is sourced from the World Bank indicator data. The variables observed encompass economic growth (GDP), a Decentralization dummy variable denoting the post-decentralization period (coded as 1) and pre-decentralization (coded as 0), the percentage of tax revenues based on GDP (Taxrev), and foreign direct investment (FDI). The empirical model used for analysis is articulated as follows:

$$Gdp = a + b1decentralization + b2taxrev + b3fdi + \varepsilon t \quad (1)$$

The data analysis method employed involves multiple linear regression analysis, enabling the extraction of general conclusions from compiled and processed data. Additionally, the study incorporates a parametric test, specifically the paired sample t-test. Before conducting these tests, the study conducts classical assumption tests to verify normality, heteroscedasticity, and multicollinearity within the data. Once these

classical assumption tests confirm no issues, the paired sample t-test and difference test analysis can proceed.

This approach allows for a systematic examination of the impact of decentralization, tax revenue based on GDP, and foreign direct investment on Indonesia's economic growth across distinct periods, thereby contributing to a comprehensive understanding of the effects of decentralization on the country's economic landscape

**Table 1. Research Variables**

| Variables  | Definition   | Data source            |
|--|--|------------------------|
| GDP growth (annual %)                                      | change in the total value of goods and services produced by a country during one year            | WDI World Bank         |
| Decentralization   | Dummy Variables:<br>0 = predcentralization (1977-2000)<br>1 = post decentralization (2001-2021)  | Year of implementation |
| Tax revenue (% of GDP)                                     | The proportion of taxes in a country's economy   | WDI World Bank         |
| Foreign direct investment, net inflows (BoP, current US\$) | amount of investment invested directly from abroad into a country's economy in a certain period. | WDI World Bank         |

*Descriptive statistics.* Descriptive statistical analysis serves to offer a comprehensive overview of the studied variables, including economic growth, decentralization, tax revenues as a percentage of GDP, and the volume of foreign investment, denoted in US Dollars (US\$). This analytical approach furnishes detailed insights into the variability, central tendencies (such as averages or means), and distributional characteristics of each variable. It allows for a deeper understanding of the data's spread, central values, and how the data is distributed across various levels, thereby establishing a foundational understanding essential for subsequent analytical procedures and interpretations.

**Table 2. Descriptive Statistics**

| Variables                         | Obs | Mean      | Std. Dev. | Min       | Max      |
|-----------------------------------|-----|-----------|-----------|-----------|----------|
| Economic growth                   | 49  | 5.27      | 3.35      | -13.13    | 10.00    |
| Decentralization (Dummy Variable) | 49  | 0.4285714 | 0.5       | 0         | 1        |
| Tax Revenue (%GDP)                | 49  | 14.45857  | 3.457047  | 8.31      | 21.95    |
| Foreign Investment                | 49  | 5.95E+09  | 8.62E+09  | -4.55E+09 | 2.51E+10 |

Source: Processed data, 2023

The analysis of variables provides significant insights into the studied parameters. Economic growth exhibits an average of 5.27%, with a standard deviation of approximately 3.35. The data showcases considerable variability, ranging from a minimum of -13.13% to a maximum of 10%. This wide range signifies substantial fluctuations in economic performance over the observed period. Regarding the Decentralization Variable (Dummy Variable), it presents an average of 0.43, accompanied by a standard deviation of around 0.5. The relatively low mean suggests that, on average, fewer regions or areas were categorized as decentralized

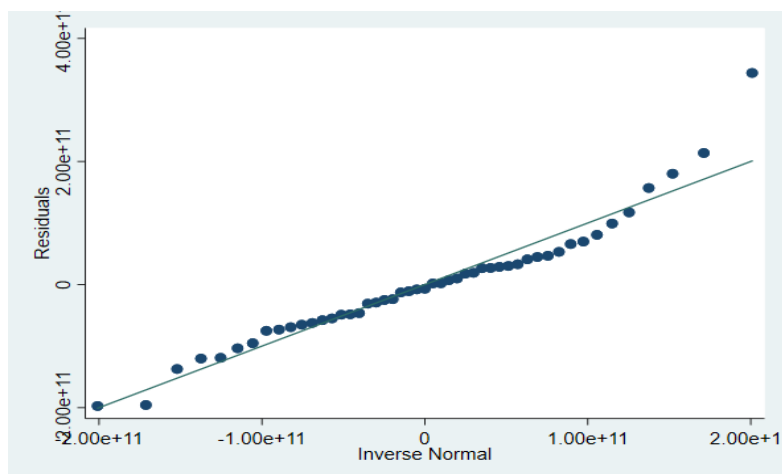


during the observation period. Tax revenue, averaging around 14.46% as a percentage of GDP, demonstrates a standard deviation of 3.46. The data displays a notable range, spanning from a minimum of 8.31% to a maximum of 21.95%, indicating significant variations in tax collection relative to GDP throughout the observed timeframe. Concerning Foreign Investment, the average stands at approximately \$5.95 billion, with a standard deviation of around \$8.62 billion. Substantial variations are evident, ranging from a minimum of -\$4.55 billion (indicating investment outflows or withdrawals) to a maximum of \$25.1 billion. These fluctuations suggest significant variations in incoming or outgoing foreign investment during the observation period. Overall, the data depicts considerable variations, as indicated by significant means and standard deviations, across economic growth, decentralization levels, tax revenues as a percentage of GDP, and foreign investment amounts in dollar terms throughout the observed period.

*Classic assumption test.* Classical assumption tests serve as fundamental statistical assessments necessary before applying certain analytical techniques. These tests validate critical assumptions such as data normality, variance homogeneity, and data independence. Failure to meet these assumptions can render statistical techniques invalid or introduce bias into the results. In this study, we conducted tests to assess classical assumptions for both data collection periods: pre-implementation of decentralization and post-implementation of decentralization. The aim was to ensure that the data conformed to these key assumptions before proceeding with the chosen statistical analyses, thereby upholding the validity and reliability of the subsequent analytical procedures.

*Normality test.* The Normal Quantile Plot is a graphical tool employed to assess the adherence of a data sample to a normal distribution. This plot arranges data points along the horizontal axis according to their order, and on the vertical axis, these points are positioned in a manner that, if the data conforms to a normal distribution, they tend to form a linear or nearly linear pattern. This graphical representation allows for a visual examination of whether the observed data points align with the expected pattern indicative of a normal distribution. Deviations from a straight-line pattern in the plot may suggest departures from normality in the dataset under examination.

The observation that the points on the Normal Quantile Plot graph closely approximate a straight line indicates a pattern that aligns with a normal distribution. This observation supports the assumption that the dataset tends to follow a normal distribution. When data points conform closely to a straight-line pattern on the plot, it suggests that the distribution of the data is in line with the characteristics expected in a normal distribution, affirming the validity of assuming normality within the dataset.



**Figure 4. Normal Quantile Plot**

*Heteroscedasticity of the test.* Heteroscedasticity analysis is a crucial statistical procedure that evaluates the variability of errors within a regression model. In this study, the Breusch-Pagan / Cook-Weisberg test serves to ascertain if the variance of residuals (i.e., estimation errors) in a linear regression model is contingent upon the predicted values. Specifically, the estimated values derived from the Economic Growth variable are utilized in this analysis. The primary objective is to assess whether the variance in the regression model remains consistent or exhibits heteroscedasticity, a condition where the variance of errors differs across the range of predicted values. Interpreting the results of this test aids in drawing appropriate conclusions regarding the validity of variance assumptions within the regression model, influencing the accuracy and reliability of the statistical inferences drawn from the analysis.

**Table 3. Results of the Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity**

| Test                  | Results                          |
|-----------------------|----------------------------------|
| Ho: Constant variance |                                  |
| Variable              | Fitted Values of Economic Growth |
| chi2(1)               | 1.84                             |
| Prob > chi2           | 0.1755                           |

Source: processed data, 2023

Based on the results obtained from the Breusch-Pagan/Cook-Weisberg test for heteroscedasticity, where the null hypothesis suggests constant variance, the calculated chi-square value is 1.84, associated with a probability value (Prob > chi2) of 0.1755. With the probability value of 0.1755 exceeding the significance level of 0.05, it indicates insufficient statistical evidence to reject the null hypothesis. Thus, based on this heteroscedasticity test, there is not enough evidence to support the claim that there exists a violation of the assumption of constant variance within the model utilized for fitted values of Economic Growth. Therefore, the analysis suggests that the variance across predicted values remains relatively consistent, adhering to the assumption of constant variance in the model.

**Multicollinearity Test.** In regression analysis, Multicollinearity arises when two or more independent variables within the regression model exhibit a strong relationship, complicating the distinction of each variable's impact on the dependent variable. In this study, Multicollinearity was assessed using the Variance Inflation Factor (VIF). VIF quantifies the extent to which the variance of the regression coefficient for a particular variable can be clarified or predicted by other variables in the model. Generally, VIF values surpassing 10 may indicate substantial multicollinearity, although in some cases, values above 5 are also considered indicative of multicollinearity.

**Table 4. Multicollinearity Test**

| Variables          | VIF  | 1/VIF    |
|--------------------|------|----------|
| Decentralization   | 3.34 | 0.299489 |
| Tax Revenue (%GDP) | 3.27 | 0.30544  |
| Foreign Investment | 1.04 | 0.958811 |
| Mean VIF           | 2.55 |          |

*Source: processed data, 2023*

The Variance Inflation Factor (VIF) values for the variables in the model are as follows: the Decentralization variable has a VIF of 3.34, signifying that its variability is 3.34 times greater than expected if it were uncorrelated with other variables in the model. Tax Revenue (%GDP) similarly exhibits a VIF of 3.27. In contrast, Foreign Investment shows a notably lower VIF of 1.04. The average VIF across all variables stands at 2.55, which falls below the commonly used threshold indicating multicollinearity. Although both the Decentralization and Tax Revenue (%GDP) variables possess VIF values above 2 (a marker often viewed as a potential indication of multicollinearity), they haven't surpassed the more critical threshold of 10. Conversely, the Foreign Investment variable presents a low VIF, suggesting a lack of significant correlation with other independent variables in the model. Consequently, while there are indications of moderate correlation among some variables, the overall VIF values suggest that severe multicollinearity is not a prevailing concern within the model.

**Paired *t* Test (Paired *t* Test).** Table 5 which represents the paired t-tests conducted to assess differences in specific variables before and after the implementation of Decentralization. Paired t-tests are employed to determine the significance of differences between two related observations within a single group. In this particular context, four variables have been under scrutiny: Economic Growth, Foreign Investment, Tax Revenue as a percentage of GDP, and GDP.

The comparative analysis between the periods before and after decentralization involved various tests on key economic variables such as economic growth, foreign investment, tax revenues as a percentage of GDP, and GDP itself. The primary objective was to comprehend the impact of these events on crucial aspects of the economy. Emphasis was placed on identifying significant changes between the observed periods for each variable and interpreting the results of the different tests conducted. Regarding economic growth, the average difference between pre and

post-decentralization was approximately 0.724, with a standard error of around 0.972. These statistics indicate that there isn't enough statistical evidence to support a significant difference in economic growth before and after decentralization.

**Table 5. Paired tests**

| Variables           | Diff      | Std. Errr. | t-value | p-value<br>(Ho: diff = 0) | Conclusion         |
|---------------------|-----------|------------|---------|---------------------------|--------------------|
| Economic growth     | 0.7241666 | 0.9727866  | 0.7444  | Pr( T > t) = 0.4603       | Not significant    |
| Foreign Investment  | -1.19E+10 | 1.82E+09   | -6.5174 | Pr( T < t) = 0.0000       | Highly significant |
| Tax Revenue (% GDP) | 5.76      | 0.5578664  | 10.3251 | Pr( T < t) = 1.0000       | Highly significant |
| GDP                 | -5.93E+11 | 6.62E+10   | -8,956  | Pr( T < t) = 0.0000       | Highly significant |

Source: Processed data, 2023

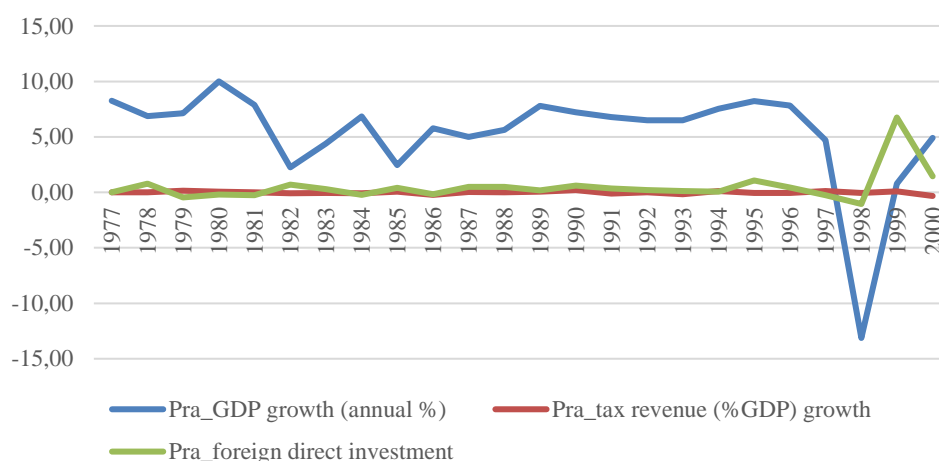
In the case of foreign investment, the average difference between pre and post-periods showed a value of around -\$11.9 billion (negative value), with a standard error of approximately \$1.82 billion. This indicates a highly statistically significant difference in investment between the periods before and after decentralization, suggesting a substantial decline in foreign investment post-decentralization. For tax revenue as a percentage of GDP, the average difference between pre and post-periods was about 5.76, with a standard error of around 0.557. This implies a highly statistically significant difference in tax revenue between the periods before and after decentralization. There was a notable increase in tax revenues after the decentralization period.

In the case of GDP, the average difference between pre and post-decentralization was around -\$593 billion (negative value), with a standard error of about \$66.2 billion. This demonstrates a highly statistically significant difference in GDP between the periods before and after decentralization. There was a substantial decrease in GDP following decentralization. So, foreign Investment and Tax Revenue as a percentage of GDP exhibited statistically significant differences. Foreign investment decreased substantially, while tax revenue saw a significant increase after decentralization. Economic Growth and GDP did not show statistically significant changes. However, there was a significant decline in GDP after decentralization. Notably, statistically significant values do not imply causation but indicate meaningful differences observed between the two time periods. These findings underscore significant shifts in economic variables post-decentralization but do not establish direct cause-and-effect relationships.

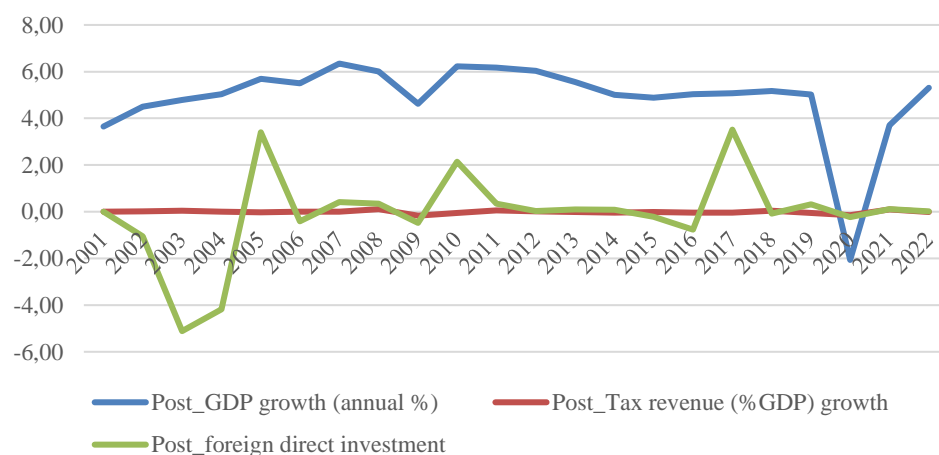
**Results.** *The comparison of data regarding economic growth, tax revenues, and foreign investment is conducted between the pre-decentralization and post-decentralization periods in Indonesia.*

Figure 2 illustrates the annual data on economic growth rates, tax revenue growth, and foreign investment growth for the pre-decentralization period spanning from 1977 to 2000. This period signifies the era before the implementation of decentralization policies. On the other hand, Figure 3 showcases the corresponding

annual data for the post-decentralization period, encompassing the years 2001 to 2022. This period represents the phase after the enactment and execution of decentralization policies in the country. These figures enable a comparative analysis of the trends and variations in economic growth rates, tax revenue expansion, and foreign investment progression between the pre-decentralization and post-decentralization phases, offering insights into the effects of decentralization policies on these key economic indicators in Indonesia.



**Figure 2. GDP growth, FDI growth, and tax revenue in 1977-2000 (Pre-decentralization)**



**Figure 3. GDP growth, FDI growth, and tax revenue in 2001-2022 (Postdecentralization)**

Figures 2 and 3 depict the dynamics of economic growth, tax revenue growth, and foreign investment growth spanning from 1977 to 2022, categorized into two distinct time frames: 1977-2000 (pre-decentralization) and 2001-2022 (post-decentralization).

During the pre-decentralization period, the average economic growth rates exhibited a range between 2% to 10%, showcasing notable fluctuations from year to year. Conversely, in the post-decentralization phase, there is discernible stability in economic growth levels, albeit with occasional minor fluctuations, which are not as

pronounced as observed in the pre-decentralization period. The Gross Domestic Product (GDP) growth in the pre-decentralization era showcased varied patterns, ranging from positive increases to significant declines, notably the notable recession in 1998, marked by a negative figure of -13.13%. In the post-decentralization period, there was a higher level of stability with more controlled fluctuations, despite some years exhibiting considerable changes.

In the pre-decentralization phase, the growth in tax revenues fluctuated significantly, alternating between increases and decreases annually. Conversely, during the post-decentralization period, there is a tendency towards smaller and more consistent fluctuations compared to the earlier period. Similarly, foreign investment growth during the pre-decentralization period depicted substantial annual fluctuations, notably experiencing a considerable downturn in 1998. In contrast, during the post-decentralization period, foreign investment exhibited fluctuations but with a relatively higher level of stability compared to the pre-decentralization phase. This analysis highlights the greater stability observed in these economic variables during the post-decentralization period, indicating the importance of consistent economic policies in fostering sustainable economic growth, although fluctuations persist.

*Multiple Linear Regression Analysis.* The application of multiple regression techniques is employed to evaluate the combined influence of decentralization, tax revenues, and foreign investment on economic growth variables. Additionally, this analysis aims to measure the extent to which these variables elucidate variations in economic growth, as outlined in the subsequent table:

**Table 6. Regression Analysis**

| Parameter          | Coefficient | Std. Error | t-statistic | P-value (P>t) |
|--------------------|-------------|------------|-------------|---------------|
| Intercept (_cons)  | 25.95775    | 0.694922   | 37.35       | 0             |
| Decentralization   | 0.95479     | 0.279244   | 3.42        | 0.001         |
| Tax Revenue (%GDP) | -0.0501124  | 0.0404658  | -1.24       | 0.222         |
| Foreign Investment | 5.86E-11    | 1.24E-11   | 4.73        | 0             |
| Number of obs      |             |            |             | 49            |
| F( 3, 45)          |             |            |             | 67.12         |
| Prob > F           |             |            |             | 0             |
| R-squared          |             |            |             | 0.8173        |
| Adj R-squared      |             |            |             | 0.8052        |
| MSE Root           |             |            |             | 5.13E-01      |

Source: Processed data, 2023

This Regression Analysis highlights the correlation between the dependent variable (Economic Growth) and three independent variables: Decentralization, Tax Revenue as a percentage of GDP, and Foreign Investment. The coefficient for the Decentralization dummy variable is 0.95479. This indicates that transitioning from "pre-decentralization" to "post-decentralization" conditions tends to increase the dependent variable by 0.95479 units. The low p-value (0.001) signifies a significant impact of this transition on economic growth within the regression model. The coefficient for Tax Revenue as a percentage of GDP is -0.0501124, suggesting a

negative relationship with the dependent variable. However, the high P-value (0.222) suggests that this variable might not significantly affect the model. Regarding Foreign Investment, the coefficient is 5.86E-11, indicating that a unit increase in Foreign Investment leads to a minute increase in the dependent variable. The low P-value (0) highlights the significant influence of this variable on the regression model. The F-statistic value is 67.12 with Prob > F of 0, indicating the overall significance of the regression model. With R-squared at 0.8173 and Adj R-squared at 0.8052, around 81.73% of the variation in the dependent variable is explained by the independent variables. Overall, this regression model effectively explains variations in the dependent variable with a high R-squared. Notably, Decentralization and Foreign Investment significantly influence Economic Growth, while Tax Revenue (%GDP) may not significantly impact this model.

**Discussion.** *Predecentralization and Postdecentralization Economic Growth.* Economic growth serves as an important indicator that reflects the cumulative value of goods and services produced in a country over a certain period. A comparative study of economic growth before and after the start of decentralization policies in Indonesia provides valuable insights into transformative changes in the economy. Before decentralization, Indonesia experienced economic growth ranging from 2% to 10%, although it was characterized by large fluctuations from year to year. Such varying growth rates indicate macroeconomic instability, which signals uncertainty and rapid fluctuations in economic performance. However, after the decentralization era, an important transformation occurred which was marked by increased consistency and stability of economic growth. Although fluctuations still occur, they are more regulated compared to the pre-decentralization phase. Post-decentralization economic policy changes have had a positive impact in encouraging stable economic growth. Differential analysis between these two periods shows that the post-decentralization phase shows a higher level of economic growth stability. Controlled fluctuations illustrate increased policy effectiveness, indicating a more consistent policy direction. Continuous and sustainable economic policies contribute to strengthening the balance and stability of post-decentralization economic growth. Therefore, comparing economic growth patterns before and after decentralization will show an increase in economic stability after the implementation of decentralization policies. This underscores the importance of maintaining coherent policies to ensure sustainable and resilient economic growth.

*Tax Revenue as Percentage of GDP: Predecentralization vs. Postdecentralization.* The evolution of tax revenues as a percentage of GDP in both the pre-decentralization and post-decentralization periods can be delineated as follows: During the pre-decentralization phase, tax revenues exhibited considerable fluctuations annually. This erratic pattern could be attributed to unsettled tax policies, shifts in economic strategies, and fluctuations in global economic conditions impacting revenue collection. The tax revenue systems before decentralization might have been less diversified and less efficient in tax collection due to limited resources and inadequate administrative infrastructure for effective monitoring and management. Contrastingly, in the post-decentralization era, tax revenues showcased

a trend toward increased stability. This shift can be attributed to enhancements in the tax structure, fortified fiscal policies, and advancements in tax administration. The post-decentralization period witnessed endeavors to refine tax collection methodologies and augment efficiency in tax monitoring and collection. Consequently, this led to an upsurge in tax revenues as a percentage of GDP.

Statistical analyses substantiate significant disparities in tax revenues between the pre-decentralization and post-decentralization periods, with a noteworthy increase in tax revenues following decentralization. In the regression model conducted, the Tax Revenue variable as a percentage of GDP exhibited a negative coefficient. However, the high P-value indicates that this variable might not exert a substantial influence on the regression model. This suggests that while there was an escalation in tax revenue post-decentralization, its impact on economic growth within the model might not be significant. These findings align with Kharisma's research in 2013, indicating that tax revenue's role, especially about regional taxes during the onset of decentralization, might not have stimulated economic growth. The decentralization era saw logical consequences, prompting the need to mobilize tax revenues from regions themselves through regional tax collection to fund regional government administration. In summary, the comparative analysis underscores a notable shift in tax revenue dynamics post-decentralization, implying the importance of improving tax structures and administration to fortify revenue generation, albeit with potential limitations regarding their direct impact on overall economic growth within the utilized model.

*Foreign Direct Investment: Predecentralization vs. Postdecentralization in Indonesia.* The divergence in foreign investment between the predecentralization era (1977-2000) and the postdecentralization phase (2001-2022) within Indonesia yielded striking disparities. Predecentralization witnessed significant fluctuations in foreign investment, marked by erratic variations annually. These fluctuations showcased periods of substantial upswings and drastic declines, indicating considerable volatility in foreign investment inflows. Investment trends were substantially swayed by prevailing global and local economic conditions. The economic crisis of 1997-1998 notably triggered a substantial decline in investment, significantly impacting Indonesia's foreign investment landscape. In the subsequent postdecentralization period, foreign investment exhibited a comparatively more stable trajectory in contrast to the volatile nature of the predecentralization era. Though fluctuations persisted, they were less pronounced than in the preceding period. Enhanced and sustained economic policies, particularly those enacted following the decentralization phase, seemingly fostered greater stability in attracting foreign investment. While global economic conditions continued to exert influence, relative stability characterized foreign investment during this phase.

The nexus between foreign investment and economic growth, especially through direct investment channels such as establishing factories or infrastructure projects, holds the potential to elevate production, employment, and overall economic output. Moreover, foreign investment often introduces new technology and innovation, enhancing production efficiency and domestic industrial competitiveness. Substantial



foreign investment can augment purchasing power, stimulating consumption and production growth. Additionally, it aids in diversifying the economy by bolstering sectors lacking adequate resources or capital for development. Regression analyses underscore a significant influence of Foreign Investment coefficients on economic growth within the utilized model. This highlights that alterations in foreign investment can indeed impact changes in economic growth. These findings align with Dunning's research in 2001, suggesting that decentralization empowered regional governments to craft policies attracting investments to their respective regions. Regional regulations were instrumental in luring investors to areas possessing economic potential, location advantages, natural resources, labor, and favorable socio-political conditions. The proactive role of regional governments in fostering an investment-friendly climate not only enhances local revenue but also stimulates overall economic growth at both regional and national levels. In summary, the comparative analysis delineates the substantial shift in foreign investment patterns post-decentralization, emphasizing the critical role of sustained economic policies and the proactive engagement of regional governments in bolstering investment climates, thereby propelling economic growth at multiple levels within Indonesia.

**Conclusion.** Analysis carried out on various indicators such as economic growth, tax revenues as a percentage of GDP, and foreign investment shows different trends before and after the decentralization period. Economic Growth shows significant variations and fluctuations throughout the observation period. After decentralization, a more consistent and stable growth trend emerged, reflecting the implementation of more assertive economic policies. However, statistical evidence that conclusively supports significant changes in economic growth after decentralization is still insufficient. Tax Revenue as a percentage of GDP shows considerable variation over the observed period. Notably, there was a substantial increase in tax revenues after decentralization, indicating a positive change in fiscal policy. However, the direct impact of this increase on economic growth requires further study, as the impact may not be statistically significant in the models used. Foreign Investment data shows significant fluctuations before decentralization. Despite the volatility, the post-decentralization period shows a relatively more stable foreign investment scenario. This suggests that post-decentralization policies contributed to the stabilization of foreign investment, although there was a substantial decline in foreign investment post-decentralization. Difference tests conducted between the pre-decentralization and post-decentralization periods corroborate significant differences, especially visible in the substantial decline in foreign investment and a significant increase in tax revenues after decentralization. However, regarding economic growth, these tests do not provide sufficient evidence to support statistically significant changes after decentralization. Multiple linear regression analysis highlights the significant influence of the variables Decentralization and Foreign Investment on Economic Growth. In contrast, Tax Revenue (% GDP) does not have a significant influence in this model. These results underscore the impact of decentralization and foreign investment on economic growth, warranting further investigation into the precise mechanisms behind this relationship. In summary, a

comparison between the pre-decentralization and post-decentralization periods highlights the increase in economic stability after decentralization. However, the direct and conclusive impact of these changes on economic growth remains uncertain. The increase in post-decentralization tax revenues indicates a positive change in fiscal policy, but its direct impact on economic growth needs to be studied in more depth. Moreover, the post-decentralization stabilization of foreign investment shows the effectiveness of policies in this area, despite a large decline in investment levels. More detailed analysis is needed to better understand the complex relationship between decentralization, fiscal policy, foreign investment, and their implications for sustainable economic growth.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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# METHODOLOGICAL APPROACHES TO ASSESSING THE LEVEL OF ECONOMIC SECURITY OF THE ENTERPRISE

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## Citation:

Milka, A., Artyukh-Pasiuta, O., & Kononenko, Z. (2023). METHODOLOGICAL APPROACHES TO ASSESSING THE LEVEL OF ECONOMIC SECURITY OF THE ENTERPRISE. *Economics, Finance and Management Review*, (4), 20–30. <https://doi.org/10.36690/2674-5208-2023-4-20-30>

**Received: November 11, 2023**

**Approved: December 21, 2023**

**Published: December 30, 2023**



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**Abstract.** The article is devoted to the problem of assessing the level of economic security of enterprises in modern conditions. The authors define economic security as an important aspect of the functioning and development of enterprises in a dynamic economic environment. The authors point out the urgency of the problem of finding criteria and tools for assessing this indicator, given the variety of approaches to determining the economic security of an enterprise in the literature. The methodology uses general scientific and special methods, such as analysis, synthesis, logical, terminological, financial, systemic and structural analysis, systematization and generalization, to confirm the reliability of the results obtained. The approaches and methods for assessing the level of economic security of an enterprise depend on the diversity of interpretations of the very concept of «economic security of an enterprise», which leads to the absence of a single indicator for a full assessment of this phenomenon. Different approaches to assessing the economic security of an enterprise are presented through resource-functional, indicator, profit and investment, three-dimensional, program-target, bankruptcy forecasting, economic and mathematical, systemic and economic risk theory. Each of these approaches uses different methods and criteria to determine the level of economic security of an enterprise. It is noted that economic security assessment can be carried out using various methods, such as expert assessments, regression and variance analysis, exponential smoothing, fuzzy systems theory and multivariate statistical analysis. The author emphasizes the importance of a systematic approach that takes into account internal and external relations, interdependence and subordination of the functional components of an enterprise when assessing the level of its economic security. For a comparative analysis of the levels of functional components of the economic security of enterprise, the authors use the calculation of the rates of change of indicators. The general methodology for calculating indicators of the levels of functional components includes analysis and evaluation of the dynamics of indicators, which indicates trends and changes in various areas of economic security of enterprise.

**Keywords:** economic security of an enterprise; methodological approaches; assessment; systematic approach; level of economic security; enterprise.

**JEL Classification:** A 19, B 41, M 21

**Formulas:** 6; **fig.:** 1; **tabl.:** 4; **bibl.:** 23

**Introduction.** In today's environment, a significant problem in organizing the normal functioning and development of domestic enterprises is the development and implementation of a system to maintain an appropriate level of economic security. The economic security of an enterprise, like any system, requires constant evaluation. One of the most popular areas of research into economic security of an enterprise is the development of approaches to assessing the level of economic security of an enterprise. Modern scholars have repeatedly attempted to determine the most optimal methodology for assessing the economic security of an enterprise, and today the scientific literature has developed many methodological approaches to determining the level of economic security of an enterprise.

Therefore, the problem of finding criteria and tools for assessing the level of economic security of an enterprise operating in a dynamic economic environment is a significant theoretical, scientific, practical and applied problem. This explains the relevance of the research topic.

**Literature review.** Assessing the economic security of enterprises is a crucial aspect of strategic management. The literature from 2020-2023 provides insights into various methodological approaches employed in evaluating and enhancing the economic security of enterprises.

Recent studies propose integrated risk-based assessment models to evaluate economic security comprehensively. Authors (Kumar et al., 2020) argue for the incorporation of financial, operational, and geopolitical risks into a unified framework.

Advances in data analytics play a pivotal role in assessing economic security. Researchers (Li & Wang, 2021) explore the application of big data analytics to identify vulnerabilities and enhance proactive decision-making for economic security.

Scenario planning emerges as a valuable methodology for assessing economic security resilience. In their study, Smith and Jones (2022) propose scenario-based assessments to enhance the adaptability of enterprises to unforeseen economic challenges.

Recognizing the interconnectedness of global supply chains, researchers (Chen et al., 2022) emphasize the importance of assessing economic security through a supply chain risk lens, considering vulnerabilities in the supply network.

Metrics for measuring resilience become a focal point in economic security assessments. Authors (Garcia & Rodriguez, 2023) propose a set of resilience indicators to evaluate an enterprise's capacity to withstand economic shocks.

The problems of developing the theoretical and methodological foundations for assessing the level of economic security of enterprises are reflected in many works of researchers such as: O. Anatonian (2013), V. Voropai (2013), L. V. Gnylytska (2011), S. B. Dovbnya (2008), K. S. Dyachenko (2015), I. Y. Ippolitova (2017), L. V. Frolova (2016). However, their studies contain a number of contradictions and controversies. The multidimensional nature of economic security requires a comprehensive evaluation to enhance the resilience and preparedness of enterprises.

**Aims.** The purpose of the article is to develop a methodological approach to assessing the level of economic security of an enterprise and to test it in practice

**Methodology.** The methodological basis of the article is the use of general scientific and special methods that serve to confirm the reliability of the results and conclusions obtained, in particular, such as: analysis, synthesis, logical, terminological, financial, systemic and structural analysis, systematization and generalization, etc.

**Results.** Methodological approaches and methods for assessing the level of economic security of an enterprise depend on the specific content that is included in the concept of «economic security of an enterprise», so due to the large number of approaches to defining the essence of the concept of «economic security of an enterprise», there is no single indicator that would fully adequately assess this phenomenon.

Having studied the existing definitions of the concept of «economic security of enterprise», it can be seen that there are a significant number of approaches to its understanding (Table 1).

**Table 1. Scientific approaches to the definition of «economic security of an enterprise»**

| Author   | Definition of «economic security of the enterprise»   |
|--|---|
| <i>1. Economic security as a state of protection against threats to the internal and external environment of business (activity)</i> |   |
| Pletnikova I.  | The state of protection of the company's activities from external and internal threats, as well as the ability to adapt to existing conditions that do not adversely affect its operations  |
| <i>2. Economic security as a state of preservation of property and trade secrets</i>   |   |
| Dykyi A.   | The state of preservation of its property and information in accordance with the chosen strategy and the principle of going concern   |
| <i>3. Economic security as a state of use of corporate resources</i>   |   |
| Ivanyuta T.  | A state in which, with the most efficient use of corporate resources, an enterprise seeks to prevent, mitigate or protect against existing dangers and threats and ensures the achievement of business goals in the face of competition and business risk |
| <i>4. Economic security as an identification with the enterprise management system</i>   |   |
| Datskiv R.   | Availability of competitive advantages due to compliance of material, financial, personnel, technical and technological potentials and organizational structure of the enterprise with its strategic goals and objectives                                 |
| Tambovtsev V.  | The set of properties of the state of the production subsystem of the economic system, which ensures the possibility of achieving the goals of the entire system  |

Source: developed by the authors based on [5, 6, 9, 15]

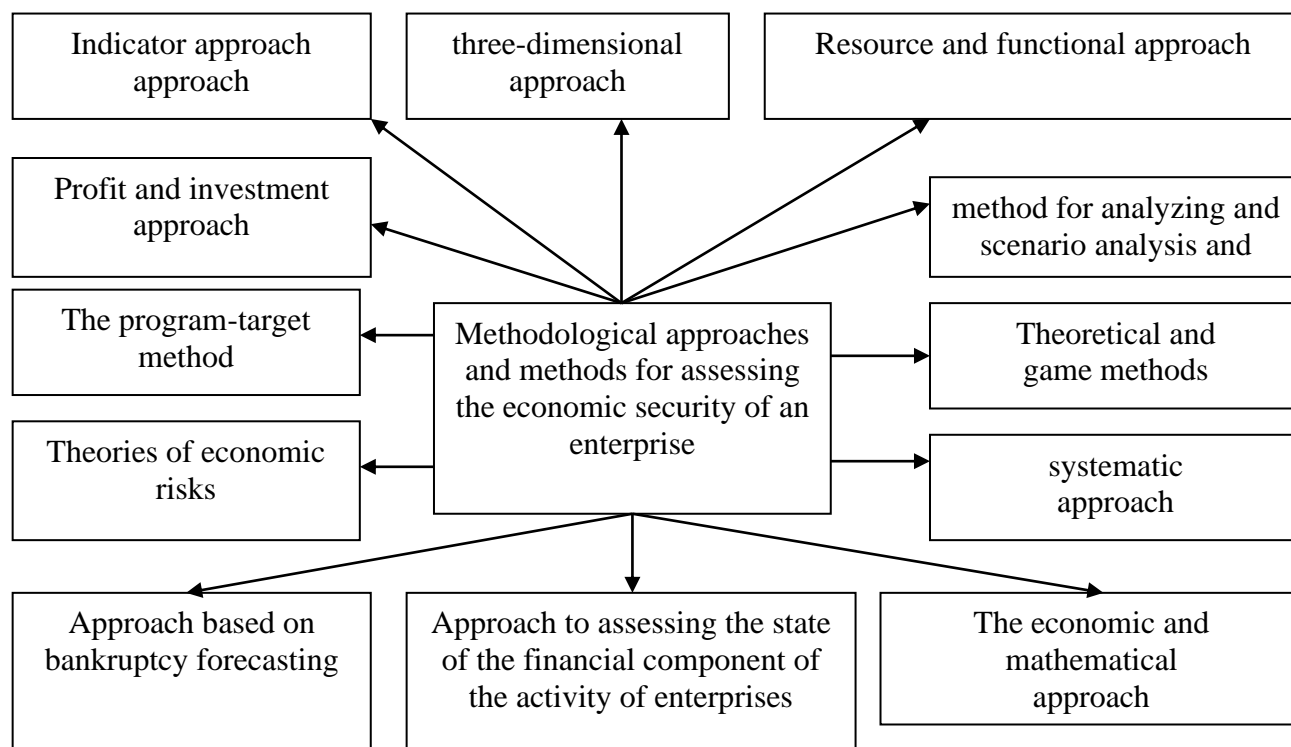
The results of the analysis of interpretations of the phenomenon of economic security of enterprise allow us to state that there is no comprehensive, theoretically and methodologically perfect definition, which allowed the author to consider economic security of enterprise as a comprehensive characteristic of the results of enterprise's activity obtained through the efficient use of its resources aimed at achieving strategic goals and protecting its activities from threats of external and internal environments.

The variety of approaches to defining the essence of the concept of «economic security of an enterprise» determines a significant number of methodological approaches to assessing its level (Fig. 1).

Thus, the resource-functional approach is reduced to the calculation of the aggregate criterion of economic security, which is the weighted average of the partial functional criterion of economic security by the share of the importance of the impact of this functional component on the state of economic security of the enterprise as a whole [1, p. 33].

The indicator approach assumes that the level of economic security is established by comparing the actual performance of the enterprise with the values of indicators that serve as thresholds for these indicators and correspond to a certain level of security [3, p. 192].

The profit-investment approach involves comparing the volume of gross investments of the enterprise, made mainly at the expense of reinvested profits, with the amount of invested funds required to carry out measures to ensure its economic security [4, p. 55].



**Figure 1. Methodological approaches and methods for assessing the level of economic security of an enterprise**

*Source: developed by the authors based on [1; 3-4; 5-11; 14-15]*

The three-dimensional approach is based on the calculation of the weighted average value of the level of current, tactical and strategic security, which characterizes the overall level of economic security of the enterprise [7, p. 90].

The program-targeted approach is based on the integration of a set of indicators that determine the level of economic security of an enterprise. It uses several levels of

integration of indicators and such methods of their analysis as cluster and multivariate analysis [9, p. 35].

Bankruptcy forecasting methods are mainly reduced to identifying the symptoms of an enterprise's financial crisis. Assessment of the level of economic security of the enterprise is carried out taking into account the level of current solvency [11, p. 97].

The approach to assessing the state of the financial component of the enterprise's activity involves determining the level of economic security based on an assessment of the economic condition of the enterprise and the efficiency of its resources [11, p. 97].

The assessment of the level of economic security of an enterprise by the economic and mathematical approach is carried out on the basis of the functional dependence of the level of economic security of an enterprise on the relevant indicators of its activity. Among the main economic and mathematical methods are: the method of expert estimates, methods of regression and variance analysis, methods of exponential smoothing, methods of fuzzy systems theory, methods of multivariate statistical analysis [13, p. 40].

The systemic approach involves the use of static and dynamic analysis of the enterprise's state in combination. Assessment of the level of economic security of the enterprise is carried out taking into account all internal and external relations, interdependencies and subordination of the functional components of the enterprise.

An approach based on the theory of economic risks, which is based on building a mechanism of economic security of the enterprise based on modeling possible threats and their analysis. Risk, uncertainty or probability is calculated for different threats [16, p. 202].

To assess the level of economic security of an enterprise, the author uses the method of analysis and processing of scenarios, which is intended for forecasting various options for the development of the situation; the optimization method – for selecting the option which achieves the most desirable result; game theoretic methods – for determining the options for the development of an enterprise in an unpredictable external environment; the theory of artificial neural networks – for modeling nonlinear dependencies in solving the problem of ensuring economic security of an enterprise.

After analyzing the most well-known approaches to assessing the level of economic security of an enterprise, it can be concluded that in the modern economic literature there is no single methodology for a comprehensive assessment of economic security of an enterprise with due regard for all the necessary criteria.

However, there are methodological approaches to assessing the level of economic security developed by modern scholars, which are based on the generalization of several approaches. One of the most successful among these methodological approaches, in our opinion, is the approach developed by Khalina V.Y. [17]. The researcher's scientific proposal is to «calculate the rate of change of indicators for assessing the components of economic security with their subsequent «allocation in terms of the nature and direction of influence on the level of economic



security of the enterprise. At the same time, the indicators that tend to increase are in the numerator of the formula for determining the level of a certain functional component of economic security, and those that tend to decrease are in the denominator» [17, p. 179]. Accordingly, «partial indicators of the functional components of the economic security of an enterprise are calculated as the ratio of the product of the rate of change of those indicators that show growth and the product of indicators that show a decrease. The level of economic security of an enterprise is proposed to be calculated as the product of partial indicators of the functional components of the economic security of an enterprise» [17, p. 180].

Having analyzed the most commonly used methods for assessing the level of economic security of enterprise, the authors have determined that it is advisable to use the proposed three-stage assessment process for domestic enterprises. At the first stage, the information base for the study is determined. The sources of information are financial statements, key financial and economic indicators, labor and environmental indicators of the enterprise for the three reporting years, at the second stage – the functional components of economic security of the enterprise are established and a system of evaluation indicators is formed. At the third stage, a generalized indicator of the level of economic security of an enterprise is calculated. To confirm the feasibility of using this methodological approach to assessing the level of economic security of an enterprise, it was tested at an enterprise engaged in the cultivation of cereals (except rice), legumes and oilseeds.

To calculate the generalized indicator of the level of economic security of an enterprise, the authors define its functional components, namely: financial, technical and technological, intellectual and human resources, political, legal and environmental.

When studying the economic security of an enterprise as a complex system, which includes, among other things, a political and legal indicator, problems arise that go beyond formal mathematical problem formulations. To assess the level of the political and legal component of economic security, the method of expert assessments is used. The essence of the expert assessment method is that the forecast is based on the opinion of a specialist or a team of specialists based on professional, scientific and practical experience. Thus, «expert methods in assessing the level of economic security of an enterprise should be used to take into account the indicators by which it is possible to draw qualitative conclusions to a greater extent» [17, p. 179].

The assessment of the political and legal component of the economic security of enterprise is carried out by the following indicators: the formation of the State's attitude to property; political stability in the State; the nature of the State's attitude to the industry; the level of regulation and control by the State; the State's policy in training personnel for the industry; the State's tax policy; laws and regulations; the effectiveness of the legal system; and the practical implementation of legislation.

In order to reduce the proposed indicators to a comparative form when calculating indicators of the levels of functional components of economic security of an enterprise, it is necessary to calculate their rates of change (Table 2).

**Table 2. Indicators of the levels of functional components for a comprehensive assessment of the level of economic security of an enterprise**

| Indicator   | Calculation algorithm  | Economic essence of the indicator   |
|---|--|---|
| <i>Assessment of financial component</i>                            |  |   |
| The coefficient of of autonomy                                      | Ratio of equity to total financing (summary of the Balance Sheet (statement of financial position))  | Characterizes the ability of an enterprise to fulfill its external obligations by using its own assets  |
| Funding ratio   | Ratio of borrowed capital to equity capital  | Displays how many units of borrowed capital are for each unit of equity capital   |
| The coefficient of coverage ratio                                   | The ratio of current assets to current liabilities of the enterprise   | Characterizes the ability of the company to quickly pay off its debt obligations  |
| Receivables turnover ratio  | Ratio of net income from sales of products (goods, works, services) to the average annual amount of accounts receivable                    | Reflects the turnover rate of the company's accounts receivable   |
| Accounts payable turnover ratio                                     | Ratio of net income from sales of products (goods, works, services) to the average annual amount of accounts payable                       | Reflects the turnover rate of the company's accounts payable for the period under analysis  |
| Profitability of operations   | The ratio of gross profit to the cost price of the realized of products sold   | Reflects the company's profit from each hryvnia spent on sales  |
| <i>Assessment of the technical and technological component</i>      |  |   |
| Production capacity factor  | Ratio of annual labor hours to labor intensity of production   | Reflects the maximum possible output for a certain period of time in the established nomenclature and assortment at full equipment utilization  |
| The coefficient of depreciation                                     | Ratio of depreciation of fixed assets to the original cost of fixed assets   | Characterizes the share of the cost of fixed assets that was written off to production costs in previous periods  |
| Return on assets  | Ratio of production volume in value terms to the average annual cost of fixed assets   | Reflects the number of units of manufactured products in UAH per unit of fixed assets cost  |
| Equipment intensive utilization rate                                | The ratio of the volume of manufactured products for a certain period to the production capacity of the equipment                          | Reflects the level of production capacity utilization of the enterprise   |
| <i>Assessment of the intellectual and human resources component</i> |  |   |
| Staff turnover rate   | Ratio of the number of people dismissed for voluntary resignation and for violation of labor discipline to the average number of employees | Reflects the movement of personnel in the company, which is caused by employee dissatisfaction with elements of the production situation or the dissatisfaction of the company's head with the employee's production behavior |
| Labor productivity  | The ratio of output to the amount of labor spent on its production   | Characterizes the ability of employees to produce a certain amount of output per unit of working time   |
| Labor capitalization rate   | The ratio of the average annual value of fixed assets to the average number of employees   | Characterizes the level of equipment of employees with fixed assets   |
| Ratio of rationalization activity                                   | The ratio of the number of inventions (rational proposals, know-how, etc.) to the number of employees                                      | Reflects the share of supply that contributes to the increase in labor productivity per employee  |
| Ratio of highly skilled to skilled                                  | Ratio of highly qualified employees to the total number of employees   | Characterizes the level of provision of the enterprise with highly  |

| Indicator   | Calculation algorithm  | Economic essence of the indicator  |
|---|--|--|
| employees   |  | qualified personnel  |
| <i>Assessment of the environmental component</i>  |  |  |
| Exceedance of the normative volume of emissions of harmful substances into the atmosphere | The ratio of the total pollution indicator by a mixture of substances to the total maximum permissible emission of harmful substances allowed for the enterprise   | Characterizes the degree of excess of actual emissions of harmful substances into the atmosphere over the regulatory levels                                    |
| The coefficient of population of the area of harmful impact                               | Ratio of the sum of the standard population density and the average population density within the area of harmful impact of the enterprise to the average population density within the area of harmful impact of the enterprise | Characterizes the degree of population in the area of harmful impact of the enterprise, and therefore the potential danger of the enterprise to the population |

Source: developed by the authors based on [17, c. 178-179]

Based on the fact that the above indicators (Table 2) comprehensively characterize the impact of factors on the level of economic security of an enterprise, it is necessary to distinguish them in terms of the nature and direction of influence on the level of economic security.

Thus, the level of the financial component of economic security is determined by formula 1:

$$K_{fin} = (t_{pok} \times t_{odz} \times t_p \times t_{avt} \times t_{okz}) / t_{fin}, \quad (1)$$

where  $t_{pok}$  – rate of change in the coverage ratio;  $t_{odz}$  – rate of change in accounts receivable turnover ratio;  $t_p$  – rate of change in the profitability ratio;  $t_{avt}$  – rate of change of the autonomy ratio;  $t_{okz}$  – rate of change in accounts payable turnover ratio;  $t_{fin}$  – rate of change in the funding ratio.

The level of technical and technological component is determined by the formula 2:

$$K_{tt} = (t_{vp} \times t_{fv} \times t_{int}) / t_{zn}, \quad (2)$$

where  $t_{vp}$  – rate of change in the production capacity factor;  $t_{fv}$  – rate of change in the return on equity ratio;  $t_{int}$  – rate of change in the coefficient of intensive use of equipment;  $t_{zn}$  – rate of change of the wear coefficient.

The level of the intellectual and human resources component is determined by the formula 3:

$$K_{ik} = (t_{nn} \times t_{foz} \times t_{pa} \times t_{kval}) / t_{pl}, \quad (3)$$

where  $t_{nn}$  – rate of change in labor productivity;  $t_{foz}$  – rate of change in labor capitalization;  $t_{pa}$  – rate of change in the coefficient of innovation activity;  $t_{kval}$  – rate of change in the ratio of highly skilled and skilled employees;  $t_{pl}$  – rate of change in the staff turnover rate.

The level of the political and legal component is determined by the formula 4:

$$K_{nn} = \prod_{i=1}^n x_i, \quad (4)$$

where  $n$  – number of factors analyzed;  $x_i$  – value of the indicator of the  $i$ -th factor.

The level of the environmental component is determined by the formula 5:

$$K_e = 1 / t_{vik} \times t_l, \quad (5)$$

where  $t_{vik}$  – rate of change of the coefficient of exceeding the standard volume of harmful substances emissions into the atmosphere;  $t_l$  – rate of change in the coefficient of population of the area of harmful impact.

The normative value of all the above indicators of the level of components of economic security of an enterprise is  $\geq 1$ , that is, only under this condition the level of the component of economic security of an enterprise is considered acceptable. The

unambiguity and adequacy of the assessment of economic security of an enterprise according to the proposed approach is ensured at the final stage by calculating the generalized indicator of the level of economic security of an enterprise (R) (formula 6):

$$R = K_{fin} \times K_{tt} \times K_{ik} \times K_{nn} \times K_e, \quad (6)$$

**Discussion.** Thus, if the value of the generalizing indicator (1.6) is greater than 1, the level of economic security of the enterprise can be considered satisfactory, and if it is less, the level of economic security is considered low, in which case it is necessary to return to the assessment of each component of economic security and determine which of them does not meet the normative value and look for the reasons for this state of affairs.

The system of partial indicators of economic security by functional components for 20XX-2, 20XX-1, 20XX is presented in Table 3.

**Table 3. Indicators for assessing the level of economic security of the enterprise for 20XX-2, 20XX-1, 20XX.**

| Indicator   | 20X-2  | 20X-1  | 20XX   | Pace of change<br>20X-1 to<br>20X-2 | Pace of change<br>20XX to<br>20X-1 |
|---|--------|--------|--------|-------------------------------------|------------------------------------|
| <i>Financial component</i>  |        |        |        |                                     |                                    |
| Autonomy ratio  | 0,423  | 0,439  | 0,360  | 1,04                                | 0,82                               |
| Funding ratio   | 0,733  | 0,78   | 0,56   | 1,07                                | 0,72                               |
| Coverage ratio  | 1,396  | 1,401  | 1,324  | 1,01                                | 0,94                               |
| Receivables turnover ratio  | 1,25   | 3,47   | 2,53   | 2,78                                | 0,73                               |
| Accounts receivable turnover ratio  | 2,30   | 2,76   | 2,97   | 1,20                                | 1,08                               |
| Profitability of operations   | 0,392  | 0,123  | 0,155  | 0,31                                | 1,26                               |
| <i>Technical and technological component</i>  |        |        |        |                                     |                                    |
| Production capacity factor  | 433,18 | 311,28 | 271,42 | 0,72                                | 0,87                               |
| Depreciation rate   | 0,52   | 0,51   | 0,51   | 0,98                                | 0,98                               |
| Return on assets  | 6,83   | 7,85   | 8,07   | 1,15                                | 1,03                               |
| Equipment intensive utilization rate  | 0,23   | 0,32   | 0,36   | 1,39                                | 1,16                               |
| <i>Intellectual and human resource component</i>  |        |        |        |                                     |                                    |
| Staff turnover rate   | 0,07   | 0,1    | 0,08   | 1,43                                | 0,80                               |
| Labor productivity  | 199,31 | 530,15 | 393,31 | 2,66                                | 0,74                               |
| Labor capitalization rate   | 171,63 | 170,75 | 168,25 | 0,99                                | 0,98                               |
| Ratio of highly skilled to skilled employees  | 0,31   | 0,33   | 0,35   | 1,08                                | 1,06                               |
| <i>Ecological component</i>   |        |        |        |                                     |                                    |
| Exceedance of the normative volume of emissions of harmful substances into the atmosphere | 0,85   | 0,78   | 0,79   | 0,92                                | 1,01                               |
| The coefficient of population of the area of harmful impact                               | 0,77   | 0,7    | 0,75   | 0,91                                | 1,07                               |

Source: Primary Data

The overall level of economic security of the enterprise for 2020X-1 and 20XX is calculated as the product of partial indicators of the functional components of the economic security of the studied enterprise (Table 4).

**Table 4. Assessment of the level of economic security of the enterprise in 20X-1 and 20XX**

| Indicator  | 20X-1 | 20XX | Pace of change, % |
|--|-------|------|-------------------|
| The level of the financial component               | 1,02  | 1,06 | 104               |
| The level of technical and technological component | 1,12  | 1,06 | 95                |
| The level of intellectual and human resources      | 1,99  | 0,96 | 48                |
| The level of the environmental component           | 1,19  | 0,92 | 77                |
| The level of political component                   | 1,25  | 1,23 | 98                |
| The level of economic security of the enterprise   | 3,38  | 1,22 | 36                |

Source: Primary Data

The calculations of Table 4 show that, despite the increase in the level of the financial component of the economic security of the enterprise by 4 %, the overall level of its economic security during the study period decreased by 64 %, as the level of the technical and technological component decreased by 5 %, the intellectual and human resources component – by 52 %, and the political component – by 2 %. It should be taken into account that in the 20s, the economic security of an enterprise underwent significant negative changes due to a decrease in almost all levels of the economic security components of the studied enterprise, except for the financial one.

**Conclusions.** The article analyzes the main approaches to the interpretation of the concept of «economic security of enterprise» and systematizes the conceptual approaches to defining the essence of this definition. The proposed methodological approach to assessing the level of economic security of enterprise allows to take into account the specifics of its activities, to identify threats and causes of their emergence in a timely manner, as well as to respond quickly to their manifestations and develop measures to eliminate them. Prospect for further research in this area is the development of specific management measures aimed at both improving the state of economic security of an enterprise and increasing its level.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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# FORMATION OF ECONOMIC SECURITY OF SMALL AND MEDIUM-SIZED ENTERPRISES IN THE STATE ECONOMIC SECURITY SYSTEM

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## Citation:

Denysenko, M., Konieczny, G., Kolisnichenko, P., & Homon, N. (2023). FORMATION OF ECONOMIC SECURITY OF SMALL AND MEDIUM-SIZED ENTERPRISES IN THE STATE ECONOMIC SECURITY SYSTEM. *Economics, Finance and Management Review*, (4), 31–39.

<https://doi.org/10.36690/2674-5208-2023-4-31-39>

**Received: November 15, 2023**

**Approved: December 21, 2023**

**Published: December 30, 2023**



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**Abstract.** The economic security of small and medium-sized enterprises is an important component of the economic security of the state and reflects the causal relationship between the military and economic potential and national security and economic power of the country. The goal of the article is to identify the problems in forming the economic security of small and medium-sized businesses within the framework of the country's economic security. It aims to develop guidelines for overcoming the complex socio-economic situation, shaping the economic security of Ukraine, and promoting the interests of small and medium enterprises (SMEs). Ukraine needs a well-thought-out policy to ensure the security of economic activity both at the state level and at the level of small and medium-sized businesses. The number of small businesses in Ukraine has been steadily declining over 2015-2022, which is a dangerous trend. At the same time, this situation did not affect sales volumes, as the growth rate of sales by small and medium-sized enterprises in 2022 continues to grow. This is due to the following factors: increased domestic demand for goods and services produced by SMEs, financial support, tax breaks in 2022, and other measures, a decrease in the share of large industry, and an increase in the share of small and medium-sized businesses. The problems of forming the economic security of the state and the economic security of small and medium-sized businesses have been identified. Guidelines for overcoming the difficult socio-economic situation and shaping the economic security of Ukraine and small and medium-sized enterprises have been developed. In order to protect the economic interests of the state, a certain set of measures and mechanisms for representatives of small and medium-sized enterprises is needed, especially in the case of developing solutions. To strengthen economic security, it is necessary to apply a strategy of adaptation to constantly emerging threats, which is largely complicated by the lack of a comprehensive policy in this area and the weakness of public administration. The main priority of the authorities in ensuring the economic security of the state and small and medium-sized enterprises in the future should be to reform the system of state regulation of socio-economic processes, to create an effective environment for the development of small and medium-sized enterprises in Ukraine.

**Keywords:** state, small and medium-sized enterprises, regulation, financing, investment, security, socio-economic processes.

**JEL Classification:** H 55, P 42

**Formulas:** 0; **fig.:** 1; **tabl.:** 2; **bibl.:** 10

**Introduction.** The economic security of small and medium-sized enterprises (SMEs) is a crucial component of a country's economic security, reflecting the cause-and-effect relationship between military-economic potential and national security, as well as the economic strength of the country. Small and medium enterprises play a significant role in creating jobs, stimulating innovation, generating new ideas, developments, and contributing to the competitiveness of the economy. Ukraine's economy has experienced a challenging period of economic insecurity, with most indicators of economic security falling below threshold values. In the conditions of war, there is a noticeable stagnation in the effective operation of SMEs. The war has led to the destruction of infrastructure, rising inflation, and other problems that negatively impact the activities of SMEs. In a state of economic insecurity, SMEs have fewer opportunities for development and growth, negatively affecting the overall economy of the country.

In such circumstances, ensuring the security of economic activities at both the state and business entity levels, particularly for small and medium-sized businesses, becomes an urgent issue. Identifying problems in the formation of economic security for SMEs and developing strategies to address complex systemic issues is crucial.

Grants and financial assistance from international partners serve as a substantial foundation for investing in the recovery of Ukraine's economy. However, creating the necessary number of jobs in the country will be impossible without qualified workers. Small and medium-sized businesses must become a driving force for shaping Ukraine's economic security in the future.

**Literature review.** Many authors, both in Ukraine and beyond its borders, have addressed the issues of forming the economic security of small and medium-sized entrepreneurship. Among Ukrainian scholars contributing to this scientific field are Dlihach A. [5], Zhyvko Z. [6], Baida B. [7], Breus S. [1], and others who have examined theoretical and methodological aspects of economic security, particularly focusing on that of small and medium-sized entrepreneurship, and have proposed practical recommendations for ensuring it.

The effective development of small and medium-sized businesses remains at the forefront of researchers' attention, with scholars such as Tsekhanovskii Z. [8], Virenbeck H. [8], Kharaishvili E. [9], Natsvlishvili I. [9], Lobzhanidze N. [9], and others investigating factors influencing the economic security of small and medium-sized entrepreneurship, methods for assessing economic security, and the role of the state in ensuring the economic security of SMEs. However, there is still a need for further research on the issues related to the formation of economic security for small and medium-sized entrepreneurship.

**Aims.** The goal of the article is to identify the problems in forming the economic security of small and medium-sized businesses within the framework of the country's economic security. It aims to develop guidelines for overcoming the complex socio-economic situation, shaping the economic security of Ukraine, and promoting the interests of small and medium enterprises (SMEs).

**Methodology.** The methodological basis of the article was the use of general scientific and special methods, namely: analysis, synthesis, logical, terminological,



financial, system and structural analysis, systematization. and generalizations, etc., which serve to confirm the reliability of the obtained results and conclusions.

**Results.** Small and medium-sized businesses in Ukraine do not show improvements in the business environment and prospects for significant economic recovery. The strategic expectations of SMEs from the results of their activities in 2023 remain at a low or negative level.

In the current economic development context, several problems in forming the economic security of the state and their impact on the economic security of SMEs should be highlighted [1; 2; 5]:

- Unpredictable actions and opacity of economic policies, where government measures may become obstacles for the development of small and medium-sized businesses, worsening their conditions;
- Inability to forecast the development of the domestic market, the situation in Ukraine, and government actions;
- Gradual increase in pressure from regulatory and fiscal authorities, law enforcement agencies, obstacles from state bodies, and the blocking of tax invoices;
- Limited access to financial resources needed for the implementation of strategic development projects and working capital replenishment for small and medium-sized businesses;
- Increase in taxes and fees, the need for transformations in the state's tax system.
- Reduction in staff and wages;
- The development of the domestic government bonds market has washed away potential investment resources, hindering the reduction of lending interest rates and acting as an obstacle to strategic investment;
- The policy of maintaining a high exchange rate of the national currency has created a significant barrier to the effective competition of products from Ukrainian small and medium-sized businesses with imported goods, artificially inflating the prices of national entrepreneurs' products;
- Strategic actions of previous years aimed at reducing the money supply have led to the accumulation of surrogate money and non-payments in the economy.

All of these factors currently pose a significant threat to the economic security of small and medium-sized enterprises and the overall economic security of the country.

The development of security for small and medium-sized enterprises in Ukraine is characterized by statistics such as the number of SMEs, employment, and the volume of realized products. The activities of small and medium-sized businesses in Ukraine for the years 2015-2022 are presented in Table 1.

The data provided in Table 1 and the conducted calculations indicate that in 2022 (the period of full-scale war), the number of medium-sized enterprises decreased by 3% compared to 2015, and the number of small enterprises decreased by a significant 12%. The highest number of medium-sized businesses was recorded in 2019. However, the number of small businesses continues to decrease steadily from 2015 to 2022, which is a dangerous trend.

**Table 1 Activities of small and medium-sized enterprises in Ukraine for the years 2015-2022**

| Years  | 2015    | 2016    | 2017    | 2018    | 2019    | 2020    | 2021    | 2022    |
|--|---------|---------|---------|---------|---------|---------|---------|---------|
| Number of subjects of medium-sized enterprises, units                    | 15510   | 15113   | 15254   | 16476   | 18129   | 17946   | 17811   | 15037   |
| Growth rate  | -       | -0,03   | -0,02   | 0,06    | 0,17    | 0,16    | 0,15    | -0,03   |
| In % to the total indicator  | 0,8     | 0,8     | 0,9     | 0,9     | 0,9     | 0,9     | 0,9     | 0,9     |
| Number of small business entities, units                                 | 1958385 | 1850034 | 1789406 | 1822671 | 1922978 | 1955119 | 1937827 | 1716977 |
| Growth rate  | -       | -0,06   | -0,09   | -0,07   | -0,02   | 0,00    | -0,01   | -0,12   |
| In % to the total indicator  | 99,2    | 99,2    | 99,1    | 99,1    | 99,1    | 99,1    | 99,1    | 99,1    |
| The number of employed workers in medium-sized businesses, persons       | 2632690 | 2649985 | 2623807 | 2784464 | 3089709 | 3123215 | 2999712 | 2610134 |
| Growth rate  | -       | 0,01    | 0,00    | 0,06    | 0,17    | 0,19    | 0,14    | -0,01   |
| In % to the total indicator  | 32,2    | 32,7    | 32,2    | 32,6    | 34,3    | 35,0    | 33,6    | 34,8    |
| The number of employed workers in small businesses, persons              | 3838749 | 3871758 | 3956331 | 4173665 | 4319757 | 4233999 | 4287724 | 3522254 |
| Growth rate  | -       | 0,01    | 0,03    | 0,09    | 0,13    | 0,10    | 0,12    | -0,08   |
| In % to the total indicator  | 46,9    | 47,7    | 48,6    | 48,9    | 47,9    | 47,4    | 48,0    | 46,9    |
| The volume of products sold by medium-sized businesses, million hryvnias | 2168765 | 2668695 | 3296418 | 3924060 | 4168439 | 4359362 | 5900055 | 4906839 |
| In % to the total indicator  | 42,0    | 42,8    | 42,8    | 42,6    | 43,2    | 43,4    | 43,3    | 43,5    |
| Growth rate  | -       | 0,02    | 0,02    | 0,01    | 0,03    | 0,03    | 0,03    | 0,04    |
| The volume of products sold by small businesses, million hryvnias        | 937113  | 1177385 | 1482001 | 1766150 | 1839876 | 2064121 | 2576371 | 2101912 |
| In % to the total indicator  | 18,2    | 18,9    | 19,2    | 19,2    | 19,1    | 20,5    | 18,9    | 19,0    |
| Growth rate  | -       | 0,04    | 0,05    | 0,05    | 0,05    | 0,13    | 0,04    | 0,04    |

Source: Calculated based on [4]

In 2022, there was a slight decrease in the number of employees in small and medium-sized enterprises compared to 2015, specifically in medium-sized businesses by 1% and in small businesses by 8%. However, this situation did not affect the volumes of product sales, as the growth rates of product sales by small and medium-sized businesses in 2022 relative to 2015 increased by 4%. This is primarily due to the increased domestic demand for goods and services produced by small and medium-sized enterprises, financial support, tax benefits in 2022, and other measures (although some measures were suspended by the government in 2023), a decrease in the share of large industry, and an increase in the share of small and medium-sized businesses.

The stagnation in conditions for effective business operations for small and medium-sized enterprises during wartime is evident in the following aspects:

- Decreased demand for goods and services. The war has led to a reduction in the income of the population, negatively affecting the demand for products and services produced by small and medium-sized enterprises;
- Increased costs. Current conditions encourage the rise in prices of raw materials, materials, and other resources, increasing the costs for SMEs;
- Reduced access to funding. The difficulty in SMEs accessing funding contributes to challenges in their recovery and further development;
- Increased risks. The war has led to increased risks for SMEs, such as the risk of property loss, equipment damage, and losses due to combat actions, among others.

One of the main reasons for the emergence of problems that persist in the economic sphere of Ukraine is the imperfection of state regulation of socio-economic processes.

Among the negative phenomena and trends that continue to be characteristic of our country's economy, special concern, from the perspective of the economic security of the state and its impact on the economic security of small and medium-sized enterprises, is caused by phenomena such as the increase in the internal debt of the state, the growth of Ukraine's external state debt, further deepening of the payment crisis and the level of "shadowing" of the economy, a decline in production, and worsening of the foreign trade balance along with maintaining its negative balance, accrued sums of penalty sanctions, a decrease in foreign investments, an increase in the level of indebtedness to the budget, a sharp drop in the standard of living, aggravation of employment problems, migration aspects, etc. [6; 7].

The reduction in the magnitude of the negative balance in the trade balance has led to some positive shifts, namely, a certain decrease in the inflation rate, gradual growth in the volumes of production in certain key sectors of the country's economy and certain small and medium-sized enterprises. However, these positive aspects in some cases are artificially improved, and the overall negative consequences are much greater. All of this intensifies the real threat to the economic security of the country and, as a result, contributes to the growth of social dissatisfaction with the government's policies, hinders the progress of reforms, and poses a threat to the economic security of small and medium-sized enterprises.

Among the reasons contributing to the complex socio-economic situation in the country, the absence of investments in economic development, the demand for domestic products due to their high prices and low quality, the complex financial situation of small and medium-sized enterprises, imperfections in tax legislation, and institutional transformations should be highlighted.

In our opinion, the mentioned factors are the result of ill-considered and imperfect managerial decisions of government authorities. Their activities are contradictory, aimed at achieving individual goals, characterized by insufficient consideration of the practical adaptability of measures to the real conditions in Ukraine. Therefore, it is necessary to address macroeconomic problems to influence the microeconomic level of the economy, coordinate the exacerbation of socio-

economic problems. The main reasons for the crisis of state power are presented in Table 2.

**Table 2. Main reasons for the crisis of state power and threats to the economic security of small and medium-sized enterprises**

| № | The reasons and their characteristics  |
|---|--|
| 1 | Different bodies of state power, at their discretion and vision, approach the achievement of goals in fulfilling their basic tasks, including the creation of conditions and support for small and medium-sized enterprises. This can lead to duplication of efforts, inefficient use of resources, and even conflicts between government bodies. It is extremely necessary to focus the attention of government authorities on improving the principles and procedures for forming the functional levers of state regulation of socio-economic processes, supporting small and medium-sized enterprises, and utilizing them by relevant executive authorities.  |
| 2 | The system for ensuring the economic security of the state and the economic security of small and medium-sized enterprises is characterized by the absence of a unified methodology and a system of procedures for identifying threats, leading to a constant struggle with consequences rather than addressing root causes. This oversight has its negative results, including the lack of control over the political-military and socio-economic situation in the country, the inability to objectively prioritize economic reforms, and mostly reacting post facto to events and threats. Therefore, it is expedient to focus on developing systematic criteria, threshold values for socio-economic indicators of the country, support for small and medium-sized enterprises, and a control system to ensure the maintenance of these indicators at an appropriate level concerning the economic security of the state and the economic security of small and medium-sized enterprises. |
| 3 | The lack of a clear sequence of actions in transitioning from sectoral to functional principles of state regulation of socio-economic processes and the radical restructuring of the executive branch to strengthen the material base of its functional bodies is notable. Sectoral principles of state regulation imply that government authorities are responsible for regulating specific sectors of the economy. This principle has several drawbacks, including duplication of efforts, inefficient use of resources, and insufficient coordination. It is important to gradually reduce government spending on maintaining sectoral agencies, and the activities of sectoral agencies with a small share of state-owned enterprises should be reformed by redirecting them to provide paid services directly to industry enterprises in the form of consultations, program development, etc.   |
| 4 | The lack of effective assessment of control mechanisms over the activities of the executive branch in fulfilling the functions assigned to each of its bodies at the central and local levels creates conditions for the development of corruption, abuse, and bribery among officials. These societal flaws arise from the disjointed actions of each executive branch body, the duplication of their functions, and the imperfections in decision-making processes. Overcoming these shortcomings requires technologies of state regulation and a system of bodies for its practical implementation.   |
| 5 | The absence of forecasting cumulative effects and the effectiveness of practical application regarding the formation of a system of levers for state regulation of socio-economic processes, support for small and medium-sized enterprises, ignoring regional specifics, and the failure to consider the possibilities of adjusting these levers at the local levels are notable issues. It is advisable to focus efforts on developing a unified system and stages of forming functional levers that would allow their use at the administrative level in regions. Additionally, transferring a certain portion of responsibilities for regulating socio-economic processes and supporting small and medium-sized enterprises directly to local executive authorities would be beneficial.   |
| 6 | The imperfect system of state regulation of social and labor relations in society leads to an inequitable distribution of funds among various social groups, delays in social payments and salaries, a decrease in the purchasing power of the population, and the provocation of a payment crisis, among other issues.  |

Source: compiled based on [3; 6; 7; 8; 9]

In today's economic conditions, in our opinion, there still seems to be a lack of decisive intentions to review and develop fundamental, systematic concepts for the activities of the state management apparatus. Authorities avoid responsibility for their

decisions, do not wish to cooperate to achieve a common socio-economic goal, societal well-being, and support small and medium-sized enterprises, which are the foundation of the national economy and the formation of an effective model of economic development for the country. They usually operate in their own mercenary interests. All civilized countries have long realized that overcoming economic problems and reaching the proper level of country development can only be achieved if the executive authority has a clear vision of the mechanisms for implementing and opportunities for enforcing adopted laws, forming an effective environment for the development of small and medium-sized enterprises.

In the future, the main priority direction of state power to ensure the economic security of the state and the economic security of small and medium-sized enterprises should be the reform of the system of state regulation of socio-economic processes and the formation of an optimal environment for the development of small and medium-sized enterprises. If these aspects are not taken into account, underestimating the situation and interests of economic security on SMEs in Ukraine may have irreversible consequences [1]. Migration processes, bankruptcies of enterprises occurring in our country lead to disruptions in the production process, a decrease in the production of goods and services, and a reduction in the financial position of enterprises. Thoughtful actions are needed to stop the outflow of the working-age population and develop a program of actions to address social issues in the future.

Small and medium-sized enterprises do not receive support from the state, which does not contribute to the economic security of the country, lacks protection of the interests of enterprises, and they are subject to the influence of both internal and external threats. Strategically thought-out development goals for small and medium-sized enterprises need to be developed, with a step-by-step entry into various global structures and organizations, taking into account all the interests of interested economic agents, institutions, the population, and so on. To protect the economic interests of the state, a certain complex of measures and mechanisms is needed for representatives of small and medium-sized enterprises, especially in the case of working out decisions.

The problem of forming economic security has deep roots and lies in the fact that representatives of small and medium-sized enterprises, being both members of parliament and professionals in their field, dissatisfied with the situation in decision-making, now lobby for the interests of their own business, understanding that the future of their industries, enterprises, or business depends on the decisions made, and also understanding that power provides opportunities to accumulate personal capital. In such conditions, it is extremely necessary for our state to increase investment activity since relying solely on external sources is not viable, and internal sources of investment are in a catastrophic state. To achieve this, it is worth attracting capital that is currently in a "frozen" state and forming an effective mechanism for allocating budget funds.

For Ukraine, it is crucial to finally determine the path of survival or development of small and medium-sized enterprises. The excessiveness of the tax burden no longer contributes to the inflow of funds and investments into all sectors of

the economy. The relaxation of the tax burden is extremely necessary, however, the return from such measures will not be quick. Technologies and resources are needed to accumulate funds to reduce the tax burden.

**Discussion.** Therefore, the main priority of the government's activities to ensure the economic security of the state and small and medium-sized enterprises (SMEs) in the perspective should be the reform of the system of state regulation of socio-economic processes and the creation of an effective environment for the development of SMEs in Ukraine. This includes measures such as:

- reforming the legislation regulating the activities of SMEs to bring it in line with modern needs;
- increasing state support for SMEs, including providing financial support, tax incentives, and other measures;
- combating corruption in government bodies.

To overcome the stagnation of conditions and effectively conduct business for SMEs in wartime, the following measures are advisable:

- ensuring the security of SMEs, protecting their property and equipment from damage or destruction.
- supporting SMEs by providing financial, tax, and other support to help them recover and grow.
- creating a favorable environment for SME development, including reforming the legislation regulating their activities.

To emerge from a complex socio-economic situation and ensure the economic security of Ukraine and SMEs, it is necessary to:

- develop an effective concept and strategy for ensuring the economic security of the state and SMEs, a clear program based on the state program of economic transformations.
- develop a model (taking into account the experience of Sweden) where unionized enterprises are partners with trade unions at the primary and industry levels, and at the national level, an association of SMEs. Such a model will work to protect the interests of SMEs and facilitate agreements with trade unions that advocate for the interests of labor collectives.
- implement a concept that defines the role and place of non-governmental security services in the national security system. In this direction, it is necessary to create legislative groundwork for ensuring economic security.
- an effectively functioning market infrastructure is necessary to protect the economic interests of the state and SMEs.
- develop a monitoring mechanism for indicators of economic security of the state and SMEs, taking into account the results of the analysis of decisions made at the macro level, their impact on the indicators of economic security of SMEs; periodic public disclosure of the information obtained.
- gradual reduction of state expenses for maintaining sectoral departments and reorientation of their activities to provide paid services directly to enterprises in the sector, which will increase the transparency and accountability of sectoral

departments, release resources that can be used for other purposes, such as supporting SMEs.

Implementation of these measures will allow SMEs to adapt to wartime conditions and continue their activities, contributing to the economic development and economic security of Ukraine.

**Conclusions.** Ukraine has shown its inability to formulate and implement strategic measures capable of enhancing the competitiveness of the country's economy, promoting the effective development of SMEs. To strengthen economic security, it is necessary to apply a strategy of adaptation to constantly emerging threats, significantly complicated by the lack of a comprehensive policy in this direction and the weakness of state management. This means that the state should be prepared for any changes in the external environment and have a plan of action in case of crisis situations. The main priority of government activity to ensure the economic security of the state and SMEs in the perspective should be the reform of the system of state regulation of socio-economic processes, the formation of an effective environment for the development of SMEs in Ukraine. Due to the imperfection of the legislative base and insufficient state support, small and medium-sized enterprises in Ukraine have limited opportunities for development and growth. This negatively affects the country's economy as a whole, as SMEs play a crucial role in job creation, stimulating innovation, and contributing to the competitiveness of the economy.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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## CHAPTER 2

# DEVELOPMENT OF FINANCE, ACCOUNTING AND AUDITING

## IMPACT OF THE QUALITY OF FINANCIAL REPORTING INFORMATION ON THE SECURITIES LIQUIDITY OF LISTED COMPANIES ON THE STOCK MARKET IN VIETNAM

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**Citation:**

Duong, T. N. (2023). IMPACT OF THE QUALITY OF FINANCIAL REPORTING INFORMATION ON THE SECURITIES LIQUIDITY OF LISTED COMPANIES ON THE STOCK MARKET IN VIETNAM. *Economics, Finance and Management Review*, (4), 40–50. <https://doi.org/10.36690/2674-5208-2023-4-40-50>

**Received: October 20, 2023**

**Approved: December 25, 2023**

**Published: December 30, 2023**



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**Abstract.** Research on the relationship between financial statement information quality and securities liquidity, making recommendations to improve the liquidity of listed companies. The purpose of this paper is to assess the impact of quality of financial reporting on the liquidity of securities of companies on the stock market in Vietnam. Using a mixed method to measure Financial statement information quality, securities liquidity. Using a regression model to evaluate the influence of financial statement information quality on securities liquidity of 149 companies listed on HOSE and HNS in 2022. The information quality characteristics of the financial statements are: Appropriate, Honest, Understandable, Comparative, Timely, Verifiable. To measure the liquidity of securities, the author uses the price and trading volume of securities of listed companies at the beginning of the year, the end of the first quarter, the second quarter, the third quarter, and the fourth quarter of 2022. The analysis results show that six characteristics Financial reporting information quality has a positive impact on the liquidity of securities in companies listed on the Vietnamese stock market. Among them, the most influential characteristic is honesty. The study offers suggestions based on the aforementioned findings to improve the quality of financial report information in order to promote liquidity. At the same time, to make the recommendations feasible in practice, the study also proposes recommendations to create a legal corridor and practical support for relevant factors. The author recommends that businesses need to have independent auditing companies audit annually, and those companies need to be reputable in the professional world.

**Keywords:** information quality; financial statements; securities liquidity.

**JEL Classification:** G 15, G 24

**Formulas:** 2; **fig.:** 0; **tabl.:** 7; **bibl.:** 5



**Introduction.** Financial statements are one of the information channels that listed companies are required to provide on the stock market. The quality of the information presented on it is crucial for efficient financial markets. One question is whether the information on those financial statements provided by listed companies has any influence on investors' decisions?

When applying Adam Smith's invisible hand theory to the stock market, people see it as a combination of many factors. The first factor is the business and the information it provides. The information provided by the enterprise is shown in the financial statements.

Securities liquidity is affected by many factors, in which the information in the financial statements has received much attention in recent years. Many studies around the world show that with high quality information on financial statements can help increase securities liquidity for companies. So what about this problem in a country where the stock market is still quite young like Vietnam today? Does the quality of the information published in the financial statements of listed companies really affect or help investors in making decisions? That is the reason why the author chose the topic related to the scientific article: *"Impact of information quality in financial statements on the liquidity of companies listed on Vietnam's stock market"*.

After conducting an overview of domestic and foreign scientific studies that are relatively related to the problem of the research topic, the author considers and adds new points in the research such as: information quality comprehensive financial statements in the direction of usefulness of information to help users of financial statements information make decisions; Building a scale of securities liquidity for companies listed on Vietnam's stock market more clearly. Not only stopping at financial information, the study also delves into the relationship between accounting information reflected on financial statements and securities liquidity.

**Literature review.** Some of the company theories are applied to explain the characteristics of financial statement information quality that affect the liquidity of securities as follows:

One of the first studies on agency theory came from Jensen and Meckling in 1976. Agent theory describes the relationship between managers and shareholders. Through agency theory, a problem is raised as to how the financial statement information should be presented to shareholders in order to minimize the conflict of interests between the parties. Therefore, the scope of the thesis is to study whether the information in the financial statements is presented honestly, reliably and in a timely manner.

G.A. Akerlof was the first to introduce the theory of asymmetric information in the 1970s. Through the theory of asymmetric information, it was shown that asymmetry is a consequence of informed stock market participants. information to varying degrees between an information provider and a receiver. In the stock market, joint-stock companies and joint-stock companies have the executive board as the information providers, and investors and stakeholders as the recipients of information. The adverse selection part belongs to investors when receiving less information than the information provider is the Management Board. To reduce

asymmetric information, the information in the Financial Statements needs to be verifiable and comparable so that investors can have more confidence in the Financial Statements.

Signaling theory was conceived in the early 1970s and is based on Spence's 1973 work to clarify information asymmetry in the labor market. Theory suggests that asymmetric information problems can be mitigated if parties signal each other. It has also been used to explain disclosure on corporate reporting. According to signal theory, managers who expect a high growth signal in the future will have an incentive to send this signal to investors. Information on Financial Statements is one of the signaling vehicles where companies will publish more information to signal to investors, to show that they are better than other companies in the market for the purpose of attracting investment and enhancing its reputation. Therefore, when investors receive information on the Financial Statements, it is necessary to ensure that such information is appropriate and understandable to ensure that the Financial Statements are really reliable and of high quality.

Based on the theoretical basis and empirical research results on the information quality characteristics of financial statements affecting the liquidity of securities of companies, the research hypotheses are built as follows:

*1) Basic quality characteristics:*

– *Relevant:*

According to Ferdy van Beest (2009): Information is considered relevant if it makes a difference in the decision-making of users within their capacity as capital providers.

*Hypothesis H1:* The more relevant the quality of information provided in the financial statements, the higher the liquidity of the company's securities.

– *Truthful presentation:*

In order for Financial Statements to be useful, they must be presented fairly, reflecting economic phenomena for what they mean. A truthful presentation is only achieved when the interpretation of an economic event is complete, neutral and free from material misstatement.

*Hypothesis H2:* The quality of information provided on the financial statements presented honestly will increase the liquidity of the company's securities.

*2) Additional quality characteristics:*

– *Comparable:*

According to signal theory, comparability is expressed in information that allows its users to identify similarities and differences between two economic objects. Consistency means the use of accounting policies and procedures that are the same between accounting periods or within an accounting period between businesses. If comparability is the goal, consistency is a condition for achieving it.

*Hypothesis H3:* The easier the information presented in the financial statements is to compare, the higher the liquidity of securities.

– *Verifiable:*

An element of information that can ensure that the information users are presented truthfully according to the nature of the economic phenomenon. Verifiable

information also means that independent users with different knowledge can come to a common, however, not necessarily identical conclusion. For information to be verifiable, it must have one of the following two elements:

- + Information is presented faithfully about economic events without material misstatement
- + Apply a method of recognition or measurement that is reasonable, free of material misstatement or bias.

*Hypothesis H4:* The more verifiable the information presented in the financial statements, the higher the liquidity of securities.

– *Timeliness*

Timeliness means having information available to decision makers before it loses its value and ability to influence those decisions. Having relevant information sooner can increase its influence on decisions, and delays will deprive them of their core, potential value.

*Hypothesis H5:* The more timely the information presented in the financial statements, the higher the liquidity of securities.

– *Understandable*

An element of information that can help users understand the meaning of the information. Comprehensibility increases when information is categorized, clarified, and presented in a clear, concise manner.

*Hypothesis H6:* The more information presented in the financial statements, the easier it is to understand, the higher the liquidity of securities.

**Aims.** The purpose of this paper is to assess the impact of quality of financial reporting on the liquidity of securities of companies on the stock market in Vietnam.

**Methodology.**

1) *Measure dependent and independent variables in the model:*

– *Measure the dependent variable:*

After reviewing domestic and foreign studies, as well as using expert methods, the author uses a yardstick to measure the liquidity of securities for listed companies in Vietnam according to the research of Mr. Bogdan, Siniša, Suzana Bareša, and Saša Ivanović. (2012) is the total return of trading volumes over time.

Total volume earnings are calculated for each time  $t$  for each stock during the year according to the equation:

$$VK = \sum_{n=1}^{Nt} P_n \cdot V_n$$

- VK is the total income.
- $P_n$ : is the price at time  $t$ .
- $V_n$ : is the trading volume at time  $t$ .

VK is determined by the sum of the product price  $P_n$  multiplied by the trading volume  $V_n$  at 5 times: the beginning of the year, the end of the first quarter, the end of the second quarter, the end of the third quarter, the end of the fourth quarter.

– *Measure the independent variable:*

| Variable name | Variable Type | Describe              | Measure   | Dimension of influence |
|---------------|---------------|-----------------------|---|------------------------|
| <b>R</b>      | Quantitative  | Relevant              | Total score for each company.   | +                      |
| <b>T</b>      | Quantitative  | Truthful presentation | Total score for each company.   | +                      |
| <b>C</b>      | Quantitative  | Comparable            | Total score for each company.   | +                      |
| <b>V</b>      | Quantitative  | Verifiable            | Total score for each company.   | +                      |
| <b>L</b>      | Quantitative  | Timeliness            | Number of days from the end of the financial year to the date of publication of the annual financial statements | +                      |
| <b>U</b>      | Quantitative  | Understandable        | Total score for each company.   | +                      |

Determining the total score for each company, the author based on domestic and foreign research documents to build questions and measures, and explain the scoring method. After conducting the measurement method, the author used a qualitative method to survey including experts with experience in the fields of accounting, auditing, finance, securities analysis, investment. ...., thereby confirming the appropriateness of the factors that make up the quality of financial reporting information in the Vietnamese environment. The author uses observational documents that are annual reports of listed companies that have been selected for the research sample.

### 2) Regression model:

The study measures the impact of financial reporting information quality characteristics on securities liquidity. Based on the proposed hypotheses, the overall regression model proposed in this study to test the above hypotheses has the following form:

$$VK = \beta_0 + \beta_1 R + \beta_2 T + \beta_3 C + \beta_4 V + \beta_5 L + \beta_6 U + \varepsilon \quad (1)$$

### 3) Research sample and data collection method:

**Research sample.** The object of the study focuses on sampling companies listed on HOSE and HNS with large capitalization and complete and complete accounting process. With the minimum sample requirement:  $n \geq 50 + 8p$ ,  $n$  is the minimum sample size,  $p$  is the number of independent variables (Nguyen Dinh Tho, 2011, p. 499). So the minimum number of samples required is 98 companies, accounting for 11.2% of the total number of companies listed on HOSE and HNS. The research will select a sample of 20% of the total listed companies in 2022 as the 175 companies with the highest capitalization in each Stock Exchange, specifically described as follows:

**Table 1. Description of sample selection**

|   | HOSE       | HNS        |
|---|------------|------------|
| <b>Total number of listed companies in 2022</b>                 | <b>515</b> | <b>359</b> |
| Rate of 20% of total listed companies in 2022                   | 103        | 72         |
| <b>Total number of companies to be investigated</b>             | <b>175</b> |            |
| <b>Minimum sample requirements: <math>n \geq 50 + 8p</math></b> | <b>98</b>  |            |

**Data collection methods.** The data in the study are taken from the annual reports for the financial year ended December 31, 2022 of companies listed on the website:

cafef.vn. The researcher downloads 175 annual reports with attached appendices from 175 companies in the selected sample. Then, based on that, the author gives the financial report quality score of the independent variables from 175 annual reports according to the following characteristics: Relevant; Truthful presentation; Comparable; Verifiable; Timeliness; Understandable.

### Results.

#### – Survey results on information quality factors of financial statements

120 questionnaires were sent to the subjects, and 118 valid questionnaires were obtained. Overall, 24 questions including 2 questions about dependent variable and 22 independent variables all had a score of 3.5 or higher. Therefore, the set of criteria used to assess the quality of information in the financial statements of enterprises consists of 22 scales.

#### – Research results

Table 2 provides a statistical description of the variables used in the model. In general, the quality of information on financial statements and securities liquidity of listed companies on Vietnam's stock market is still low (average 2.5-3.0).

**Table 2. Descriptive statistics of quantitative variables**

| Characteristic          | N   | Minimum value | The greatest value | Medium               | Characteristic | N   | Minimum value | The greatest value | Medium                       |
|-------------------------|-----|---------------|--------------------|----------------------|----------------|-----|---------------|--------------------|------------------------------|
| VK<br>(ĐV: 1.000.000 Đ) | 175 | 0             | 151.747            | <b>7.552</b>         | C1             | 175 | 1             | 5                  | <b>12,14</b><br>2,75         |
| R1                      | 175 | 1             | 4                  | 2,49                 | C2             | 175 | 1             | 5                  | 2,83                         |
| R2                      | 175 | 1             | 4                  | 2,62                 | C3             | 175 | 1             | 5                  | 2,81                         |
| R3                      | 175 | 1             | 4                  | 2,52                 | C4             | 175 | 1             | 4                  | <u>2,83</u>                  |
| R4                      | 175 | 1             | 5                  | 2,63                 | L              | 175 | 0             | 98                 | <b>11,22</b><br><b>48,91</b> |
| R5                      | 175 | 1             | 4                  | <u>2,52</u>          | V1             | 175 | 1             | 5                  | 2,41                         |
| T1                      | 175 | 1             | 5                  | <b>12,78</b><br>2,96 | V2             | 175 | 1             | 5                  | 2,34                         |
| T2                      | 175 | 1             | 5                  | 3,07                 | V3             | 175 | 1             | 5                  | 2,32                         |
| T3                      | 175 | 1             | 5                  | 3,12                 | V4             | 175 | 1             | 5                  | <u>2,84</u>                  |
| T4                      | 175 | 1             | 5                  | <u>3,07</u>          |                |     |               |                    | <b>9,91</b>                  |
| U1                      | 175 | 1             | 5                  | <b>12,22</b><br>3,02 |                |     |               |                    |                              |
| U2                      | 175 | 1             | 5                  | 3,07                 |                |     |               |                    |                              |
| U3                      | 175 | 1             | 5                  | 3,06                 |                |     |               |                    |                              |
| U4                      | 175 | 1             | 5                  | <u>2,99</u>          |                |     |               |                    |                              |

The author uses SPSS software to evaluate the reliability and value of the financial statement information quality scale and the stock liquidity scale. The results of the reliability analysis of the scale showed that the correlation of all the observed variables was greater than 0.3 and the Cronbach alpha coefficient  $> 0.6$ . So the scale has the necessary reliability.

The results of testing the performance conditions of EFA on information quality factors for financial statements are presented in Table 3. Table 3 shows that KMO results =  $0.948 > 0.5$ , which should be consistent with the requirements for analysis.

factor. In addition, the Bartlett Test has a Sig value. = 0.000 < 0.5. Therefore, the above results show that factor analysis is appropriate.

**Table 3. Testing of EFA's performance conditions on financial reporting information quality factors KMO and Bartlett's Test**

|  |                    |          |
|--|--------------------|----------|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy. |                    | 0,948    |
| Bartlett's Test of Sphericity                    | Approx. Chi-Square | 4865,561 |
|  | Df                 | 231      |
|  | Sig.               | .000     |

The results of factor rotation presented in Table 4 show that there are 2 factors formed as follows:

- *The first factor includes the variables: R1, R2, R3, R4, R5, T1, T2, T3, T4, U1, U2, U3, U4, C1, C2, C3, C4, V1, V2, V3, V4.* These variables relate to the preparation, presentation and disclosure of information.

**Table 4. Table of Rotation Matrix of factors Rotated Component Matrix**

|    | Component |   |    | Component |       |
|----|-----------|---|----|-----------|-------|
|    | 1         | 2 |    | 1         |       |
| R1 | 0,888     |   | U3 | 0,913     |       |
| R2 | 0,881     |   | U4 | 0,946     |       |
| R3 | 0,852     |   | C1 | 0,900     |       |
| R4 | 0,838     |   | C2 | 0,894     |       |
| R5 | 0,902     |   | C3 | 0,920     |       |
| T1 | 0,929     |   | C4 | 0,896     |       |
| T2 | 0,938     |   | L  |           | 0,975 |
| T3 | 0,894     |   | V1 | 0,814     |       |
| T4 | 0,947     |   | V2 | 0,773     |       |
| U1 | 0,936     |   | V3 | 0,928     |       |
| U2 | 0,932     |   | V4 | 0,864     |       |

To check the fit of the model, the study analyzed the Sig significance level. of the F value, the model achieves a good fit when Sig. <0.05

The results of the regression run according to Table 5, we see that the adjusted coefficient  $R^2 = 0.761 < R^2 = 0.771$ . With  $R^2 = 0.771$ , it means that the dependent variable factor 1 is explained by 77.1% by the above independent variables.

**Table 5. Summary of the model with the dependent variable being stock liquidity Model Summary<sup>b</sup>**

| Model | R     | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
|-------|-------|----------|-------------------|----------------------------|---------------|
| 1     | 0,878 | 0,771    | 0,761             | 153,835                    | 1             |

a. Predictors: (Constant), R,T,C,V,L,U

b. Dependent Variable: VK

Table 6, ANOVA analysis shows that parameter F has Sig. = 0.00, showing that the regression model is suitable for the collected data set, and the included variables are statistically significant at the 5% level of significance.

**Table 6. ANOVA analysis – Reliability of research model**

| Model |            | Sum of Squares  | Df  | Mean Square    | F      | Sig.              |
|-------|------------|-----------------|-----|----------------|--------|-------------------|
| 1     | Regression | 351.475.796,569 | 6   | 58.579.299,595 | 24,759 | ,000 <sup>b</sup> |
|       | Residual   | 335.973.194,012 | 142 | 2.366.008,465  |        |                   |
|       | Total      | 687.448.990,581 | 148 |                |        |                   |

a. Dependent Variable: VK

b. Predictors: (Constant), R,T,C,V,L,U

Thus, the regression model with the dependent variable is Securities liquidity and the independent variable is the quality of information Financial statements include 22 factors related to relevancy, truthfulness, understandable presentation. achievable, comparable, timely and verifiable presentation.

Table 7 presents the regression results with the dependent variable being Securities liquidity; The independent variables are relevance, fair presentation, understandable, comparable, timely, verifiable characteristics. Results when considering reliability, the independent variables, Sig values. All < 0.05, showing high reliability. At the same time, the above table shows that the largest VIF coefficient is 3,885 <10, so it can be concluded that there is no multicollinearity phenomenon.

**Table 7. Results table of regression weights**

| Model    | Unstandardized Coefficients |            | Standardized Coefficients | Tstat  | Sig.  | Statistical Multicollinearity |                 |
|----------|-----------------------------|------------|---------------------------|--------|-------|-------------------------------|-----------------|
|          | Beta                        | Std. Error | Beta                      |        |       | Tolerance coefficient         | Coefficient VIF |
| Constant | -5.299,096                  | 646,350    |                           | -8,198 | 0,000 |                               |                 |
| R        | 91,633                      | 873,494    | 0,233                     | 0,110  | 0,000 | 0,039                         | 3,885           |
| T        | 115,513                     | 916,744    | 0,464                     | 1,210  | 0,000 | 0,023                         | 2,626           |
| U        | 427,882                     | 899,064    | 0,283                     | 2,146  | 0,000 | 0,023                         | 3,156           |
| C        | 345,334                     | 927,726    | 0,307                     | 1,723  | 0,000 | 0,028                         | 2,822           |
| L        | 11,076                      | 4,455      | 0,112                     | 0,203  | 0,000 | 0,088                         | 1,012           |
| V        | 222,436                     | 432,199    | 0,207                     | 1,194  | 0,000 | 0,143                         | 2,011           |

Dependent Variable: VK

Based on Table 7, from the statistical parameters in the regression model, the multiple linear regression equation evaluates the quality of financial statements information on the liquidity of securities at listed companies on the stock market. Vietnam stock market with standardized coefficients as follows:

$$VK = 0,233*R + 0,464*T + 0,283*U + 0,307*C + 0,112*L + 0,207*V \quad (2)$$

Thus, all six factors: Relevant, Truthful presentation, Understandable, Comparable, Timeliness, and Verifiable all have a proportional influence on stock liquidity at listed companies listed on the Vietnamese stock market. That is, the higher R, T, U, C, L, V, the higher the liquidity of companies listed on the Vietnamese stock market. Among these 6 factors, the factor that has the strongest

influence on stock liquidity in companies listed on the Vietnamese stock market is the Truthful presentation characteristic ( $= 0.464$ ), Comparable characteristic ( $= 0.307$ ), understandable characteristics ( $= 0.283$ ), Relevant characteristics ( $= 0.233$ ), verifiable characteristics ( $= 0.207$ ), and finally timely characteristics ( $= 0.112$ ). Thus, hypotheses H1, H2, H3, H4, H5, H6 for the official theoretical research model are accepted.

**Discussion.** The quality of financial report information and stock liquidity of businesses listed on the Vietnamese stock market is still poor (on average, 2.5–3.0), according to the descriptive statistics results of the model's variables. This suggests that in order to increase their stock liquidity, corporations must strengthen the variables that influence the caliber of their financial reporting information.

The regression results in Table 7 examine the impact of financial report information quality on the liquidity of businesses listed on the Ho Chi Minh City stock market. The main conclusion drawn from the regression analysis is that all six factors: appropriate, honest, understandable, comparable, timely and verifiable all have a proportional influence on the quality of the product. Stock liquidity at companies listed on the Vietnamese stock market. Thus, the higher the quality of financial reporting information a company has, the higher its liquidity level. Investors will put more trust in companies that provide good quality financial reports.

**Conclusions.** The goal of this study is to investigate and quantify the aspects of accounting information quality that have an impact on the liquidity of companies listed on the Vietnamese stock market. At the same time, consider the difference in assessing the impact of accounting information quality factors affecting the liquidity of companies listed on the Vietnamese stock market.

According to the delegation hypothesis, owners of a joint stock firm have the authority to appoint managers. This authorization leads to conflicts of interest. From conflicts of interest, business managers tend to act in their own interests rather than in the interests of the owners. Meanwhile, according to asymmetric information theory, Managers are information providers, so they tend to hide information, thereby leading to asymmetric information. In order to minimize this situation, the issue of improving the quality of financial reporting information is to increase liquidity for listed companies.

Cronbach's alpha reliability coefficient tool and EFA analysis were used to test the scale in official quantitative research with a sample size of  $n = 175$ . The author has built 22 observed variables for 22 scales. These scales are included in surveys in official quantitative research. As a result, a total of 22 observed variables were grouped into 6 accounting information quality factors that affect the liquidity of companies listed on the Vietnamese stock market: (1) Relevant, (2) Truthful presentation, (3) Understandable, (4) Comparable, (5) Timeliness, (6) Verifiable.

The study offers suggestions based on the aforementioned findings to improve the quality of financial report information in order to promote liquidity. At the same time, to make the recommendations feasible in practice, the study also proposes recommendations to create a legal corridor and practical support for relevant factors.



*Suggestions and Policy recommendations.* Based on the research results of the topic, the author offers some suggestions for managers of companies listed on the Vietnamese stock market in improving liquidity appropriately and effectively. These suggestions are made with the goal of raising the standard of financial reporting data, influencing investors' investment choices and thereby increasing liquidity, benefiting companies listed on the Vietnamese stock market greatly, and creating chances for the Vietnamese stock market to grow and develop.

As a result, the author offers the suggestions below to raise the caliber of financial report data.

Listed companies in Vietnam are currently required to disclose information according to Circular 52. Information quality of Financial statements in a broad sense are evaluated on the basis of the information presented according to this regulation. Although the information required by listed enterprises to disclose according to Circular 52, includes characteristics of financial information as well as non-financial information in accordance with international practices, it is only of a nature suggest. Because each business has a different scale, level of complexity and industry, the quality of financial statement information published by listed businesses is different. This depends a lot on the explanatory part of each enterprise regarding the contents specified in this Circular. In order to improve the quality of Financial Report information, the recommendations will be related to each quality characteristic of Financial Report information:

- *Relevant information characteristics:* Financial statement information can help users have good forecasting ability, when it must be able to predict the activities of the business, make short-term and long term decisions.

- *Characteristics of truthfully presented information:* According to IASB (2010), for information to be truthful, it must satisfy the following requirements: neutral, complete, free from material errors and verifiable. The characteristic of faithful presentation covers both financial and non-financial information.

- *Characteristics of information presented in an easily understandable way:* In addition to presenting a good layout, there should be illustrative charts and specialized phrases presented that explain clearly so that readers can readily understand the information and content presented.

- *The characteristics of information presented are comparable:* When comparing figures within the same business, accounting principles and policies should be implemented consistently. In case there is a change in accounting principles and policies, businesses need to have a clear explanation and explanation of the data when adjusting.

- *Characteristics of timely released information:* Decision makers will no longer find information timely if it is not published quickly enough to boost its utility. As a result, organizations must enhance their information preparation and publication processes.

- *Characteristics of verifiable information:* Verifiable information also indicates that independent users with various levels of understanding can reach a similar conclusion, though not always exactly the same one. Independent auditing

firms serve as the independent verifiable users, and the skill and experience of the auditor and the auditing firm are crucial in helping to reach a reasonable conclusion.

The author recommends that businesses need to have independent auditing companies audit annually, and those companies need to be reputable in the professional world.

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# IMPROVING TAXATION OF TOURISM ENTITIES TAKING INTO ACCOUNT INTERNATIONAL EXPERIENCE

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## Citation:

Shepeliuk, V., Yunatskyi, M., & Roeva, O. (2023). IMPROVING TAXATION OF TOURISM ENTITIES TAKING INTO ACCOUNT INTERNATIONAL EXPERIENCE. *Economics, Finance and Management Review*, (4), 51–61. <https://doi.org/10.36690/2674-5208-2023-4-51-61>

Received: November 23, 2023

Approved: December 25, 2023

Published: December 30, 2023



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**Abstract.** The tourism industry serves as a significant source of tax revenue for countries worldwide. Taxation of tourism has a substantial impact on the overall prosperity of nations, serving as a stable source of financial resources for local communities. Specifically, in European Union member countries, tourism presently contributes to approximately 10% of the gross domestic product, while in certain countries more reliant on tourism, tax revenues derived from tourism significantly exceed this level. In the current stage of development, the tourism sector is experiencing increasingly significant expansion, significantly contributing to enhancing the competitiveness of the national economy and achieving sustainable socio-economic development. The market for tourist services is gaining greater importance, both for specific regions and for many countries as a whole. It stimulates infrastructure development, facilitates job creation, boosts various economic activities, raises the standard of living for populations, and consequently increases the level of tax revenue and collections. Research into the theoretical works of domestic and foreign scholars has confirmed that taxation plays a crucial role in the development of the country's tourism sector and contributes significantly to government revenues. Analysis of both domestic and global experiences has identified both positive and negative aspects of taxing businesses within the tourism sector in Ukraine and worldwide. Based on this research, a series of improvements have been proposed to enhance the quality and effectiveness of Ukraine's tourism sector. The most crucial task is to improve the taxation system for the tourism business. It has been proposed to change the basis for calculating the tourist tax from the minimum wage to the cost of accommodation per night. Equally important is the introduction of a range of tax incentives to promote tourism development in the country and the targeted allocation of the funds acquired to the tourism industry.

**Keywords:** foreign experience; tourism industry; taxation, taxes; corporate income tax; VAT; tourism activities; tour operator; travel agent; tourism product; tourist levy.

**JEL Classification:** H 23, H 73, L 83

**Formulas:** 0; **fig.:** 0; **tabl.:** 4; **bibl.:** 16

**Introduction.** The peculiarities of Ukraine's geographical location, its relief, favorable climate, natural, historical-cultural, and tourism-recreational potential contribute to the intensive development of both domestic and international tourism. The tourism industry in Ukraine encompasses economic entities involved in creating the tourist product; these include tour operators and agencies engaged in selling the tourist product. Like any other activity, tourism-related operations are subject to taxation. Analyzing and refining the existing taxation practices of enterprises within the tourism sector to enhance their operational efficiency, taking into account advanced global practices, remains an important task.

**Literature review.** Tourism entities play a crucial role in global economies, contributing significantly to employment and revenue. The issue of applying taxes and the taxation system in the activities of entities within the tourism industry has been extensively explored in the works of numerous foreign and domestic scholars.

Recent studies emphasize the shift towards destination-based taxation for tourism entities. Authors (Johnson et al., 2021) argue that this approach aligns with international practices and fosters a fair distribution of tax burdens among destination countries.

The advent of digital platforms has posed challenges to traditional tax models. Researchers (Chung & Patel, 2022) explore international experiences in adapting tax policies to address the digital economy's impact on tourism entities.

Value-added tax (VAT) or goods and services tax (GST) reforms are a focal point in enhancing the tax environment for tourism entities. Smith and Brown (2020) provide insights into the effectiveness of VAT/GST reforms in selected international destinations.

Incentive-based taxation policies are explored as mechanisms to stimulate tourism-related economic activities. Garcia and Kim (2023) analyze international cases where tax incentives have successfully promoted sustainable tourism practices.

Collaborative tax planning, involving cooperation between governments, is identified as a strategy to improve the taxation of tourism entities. Wang et al. (2021) present a comparative study on collaborative tax initiatives among popular tourist destinations.

Given the continual changes in tax legislation and the significance of studying this field for the effective functioning of the tourism sector, this subject matter remains relevant and requires in-depth scrutiny and attention. Drawing on international experiences is essential for formulating effective tax strategies in the dynamic tourism sector.

**Aims.** The aim of the article is to identify the tax structure within the tourism industry in Ukraine and examine the experiences of foreign countries regarding the mechanisms for calculating and paying tourist taxes and levies. Additionally, it aims to propose recommendations for modernizing the taxation system for tourism enterprises, taking into account global practices.

**Methods.** Methodological basis of the research comprises specialized and general scientific methods, specifically: analysis and synthesis, induction and deduction, monographic study of literary sources, comparative analysis of various

taxation systems, statistical grouping method, and the method of scientific abstraction.

**Results.** Tourism has become a significant sector in the global economy, generating substantial revenue for countries through tourist services. The tourism industry provides a large number of jobs in the hotel industry, restaurant business, transportation companies, travel agencies, and other related sectors. Increased tourist flow often contributes to the development of infrastructure, such as airports, roads, hotels, restaurants, and other facilities, enhancing the quality of life for local residents. Tourism fosters cultural exchange between countries, promoting mutual understanding and cooperation among nations through encounters and the exchange of experiences. The development of tourism also fosters the growth of small and medium-sized enterprises in regions that become attractive destinations for tourists.

Taxation of tourism is an important aspect of the economy in many countries, as tourism can become a significant source of revenue for the state budget. Modern researchers in scientific literature explore various aspects of tourism taxation and its impact on the economy, the development of the tourism industry, and local communities. Different economists analyze the types of taxes applied to tourism services from a fiscal standpoint. They study the volume of tax revenues from the tourism industry and their utilization for infrastructure development, social programs, etc. For example, in the article by researchers Gooroochurn, N., & Sinclair, T. [1], the basics of fiscal policy are identified in the context of taxing the tourism sector and the economic contribution of tourism to the state budget through taxation.

Researchers are considering possible ways to optimize taxation systems to promote tourism development and ensure more effective use of tax funds. According to the International Air Transport Association (IATA) and the World Economic Forum, one of the main issues concerning tourism taxation is its negative consequences for a country's competitiveness and the excessive burden it places on both consumers and producers. It is fair to argue that tourists are "over-taxed" as they not only bear the burden of specific taxes but also incur value-added tax and other sales taxes on goods purchased during their travels.

Seetaram, N., Song, H., & Page, S. J. [2] found that consumers' response to the taxation of passenger air travel in the United Kingdom is minimal. This leads to the conclusion that consumers either increase their budgets to accommodate the taxes or redistribute their expenses within their existing budgets.

The World Travel & Tourism Council and the London School of Economics [3] proposed five key economic principles to consider when developing tax policies for all industries, including the travel and tourism sector: equity, fair income distribution, efficiency, simplicity, and an effective incentive for growth. These principles enable the development of a tax optimization strategy aimed at increasing revenues from tourism while minimizing the negative impact on tourist demand and competitiveness.

Given the specifics of this business, enterprises in the tourism industry have different taxation systems. Taxation of the tourism business significantly impacts Ukraine's welfare as the generated income can be utilized for providing public goods

and enhancing the quality of the tourism sector. Revenues to the state budget are generated through taxes from individuals and legal entities participating in the tourism market, as well as other mandatory payments stipulated by Ukrainian legislation. National income from tourism intensification increases due to tourists paying for services from tour operators and travel agents, tour guides, the transportation, restaurant, and hotel sectors of the economy, through the consumption of goods and services.

The state's tax revenues from tourism enterprises are generated through the taxation of entities engaged in tourism activities and related sectors, involving direct taxes (such as corporate income tax, personal income tax, and unified tax) as well as indirect taxes (such as value-added tax and excise tax). The peculiarities of the tourism industry arise from the specific nature of services provided by tourism enterprises and organizations. The entities involved in tourism activities encompass tourism operators and travel agents.

Tour operators are legal entities established in accordance with the current legislation of Ukraine. They are key participants in the tourism industry, providing package tour services for travelers. Tour operators create and offer various tourist packages for different types of trips, such as excursions, cruises, beach vacations, mountain getaways, etc. They consolidate services like transportation, accommodation, tours, meals, and more into comprehensive packages.

Travel agents - legal entities, individuals - entrepreneurs, act as intermediaries between tourists and tour operators or providers of tourist services.

The table 1 shows the main characteristics of tourism business entities.

Therefore, it should be noted that tour operators play a significant role in shaping and supporting the tourism industry, providing travelers with the opportunity to conveniently and efficiently relax and explore diverse destinations worldwide. Travel agents play an important role in facilitating and simplifying the travel planning process for clients, offering them professional support and access to a variety of tourism opportunities.

The subject of taxation in the field of tourism activities is as follows:

- For tour operators: the tourist product. Tour operators are involved in either developing their own tourist product or selling a product purchased from third-party organizations under their own brand. Additionally, a tour operator may provide services under commission (agency) contracts related to the supply of tourist products.
- For travel agents: the compensation received from the tour operator (or another party) under commission contracts (agency agreements). Typically, travel agents act as intermediaries in the sale of tourist services, with the tour operator being the owner of the service.

The tour operator, as a legal entity or enterprise, has the option to choose either the general taxation system or the third group of simplified taxation system.

**Table 1. Characteristics of the activities of the subjects of the tourism industry**

| Subjects of tourist activity | Organization of tours   | Access to information   | Reservation and organization of services  | Marketing and promotion  |
|------------------------------|---|---|---|--|
| Tour Operators               | Create and offer various tourism packages for different types of trips  | Typically have access to up-to-date and diverse information about various destinations, events, and travel opportunities. Their connections with hotels, airlines, and other service providers enable them to create interesting and convenient tours for clients | book hotels, transport, tours and other services for clients. They are responsible for the timeliness, quality and availability of these services during the trip.  | actively promote their travel packages through various channels, including online advertising, social media, participation in travel trade shows and other marketing activities. |
| Travel agents                | They assist clients in choosing the best travel options, considering their budget, interests, and preferences. They provide information about different destinations, types of tours, hotels, excursions, and other details that help clients make the right decision | They respond to clients' inquiries regarding tours, destinations, visa requirements, weather, cultural peculiarities, and other useful information. They also assist in resolving any issues or questions that may arise during the trip                          | They assist clients in booking tourist services such as airline tickets, hotel accommodation, transfers, and excursions. They help with the necessary paperwork and ensure that all details are correctly organized | They actively promote their services using various channels such as their own website, social media, advertising in travel magazines, or participating in tourism exhibitions.   |

*Source: systematized by the authors*

In case of choosing the simplified taxation system, according to the Tax Code of Ukraine, the unified tax rate is 3% of income for VAT payers and 5% of income for non-VAT payers [4]. However, the income of such a business entity throughout the calendar year should not exceed 1167 times the minimum wage established by law as of January 1 of the tax (reporting) year. Additionally, a tour operator is required to register as a VAT payer if the total amount of taxable transactions carried out over the last 12 calendar months (excluding VAT) exceeds 1 million hryvnias.

Travel agents, registered as legal entities or individual entrepreneurs, have the option to choose between different taxation systems: general and simplified. If a travel agent chooses the general taxation system as an individual entrepreneur, they are required to pay personal income tax (PIT) at a rate of 18%, as well as 1.5% military fee on the amount of the net taxable income, which is the difference between the total taxable income (proceeds from the sale of goods, works, or services in monetary and non-monetary form) and the documented expenses related to conducting business activities.

In the Law of Ukraine "On Tourism," a tourist product is defined as a pre-developed package of tourist services sold at a specified price, including transportation services, accommodation services, and other tourist services (such as organizing visits to cultural sites, leisure activities, and the sale of souvenir products).

A tourist product is a combination of services, conveniences, experiences, and opportunities offered to tourists in a specific place or region to meet their needs, interests, and expectations during their travels. It comprises various components such as hotels, restaurants, tours, entertainment, cultural events, natural landmarks, sports activities, and other aspects that may be appealing to tourists. The tourist product is developed considering the needs and preferences of the target audience, aiming to create positive experiences and satisfaction during the journey.

In the scientific work of Lyubitsyeva O.O., it is noted that tourist services are divided into basic (accommodation, meals, transportation, and excursion services), additional (domestic, trade, communicative, informational, sports and recreational, cultural), and ancillary (production and sale of souvenirs and tourist equipment, etc.) [6]. However, in the methodology for calculating the volumes of tourist activities, it is indicated that tourist services are divided into characteristic and ancillary. Characteristic tourist services and goods are those intended to satisfy the needs of consumers, the provision and production of which would significantly decrease without their realization to tourists. Ancillary tourist services and goods are those intended to meet the needs of consumers, the provision and production of which would not significantly decrease without their realization to tourists [7]. These specified services are included in the cost of the tourist product and are accounted for when determining the VAT tax base for the tour operator. It does not matter on what terms the tour operator receives them from its suppliers—through direct contracts or agency agreements.

One of the peculiarities of taxing the tourist product is that it's not the full value of the service that is taxed, but rather the amount of compensation received by the tour operator (i.e., the difference between their income and the amount of expenses). The rules for determining the compensation for various types of operations are outlined in the Tax Code of Ukraine [4]:

Consumption within the territory of Ukraine: the taxable object is the difference between the selling price and the expenses incurred by the operator in connection with the creation (resale) of such a product.

Consumption outside the territory of Ukraine: the taxable object is the difference between the selling price and the expenses incurred by the operator in connection with the creation (resale) of such a product.

One of the most common tax payments is the tourist tax. The tourist tax is a type of local tax collected from tourists or providers of tourist services (such as hotels, restaurants, agencies, etc.) in a specific region or locality. This tax is usually aimed at developing and supporting tourist infrastructure, ensuring comfort, and providing safety for visitors.

The main purpose of the tourist tax is to gather funds for the development of the tourism industry in a specific region. These funds can be allocated towards improving



tourist infrastructure (roads, museums, parks, cultural sites), supporting tourism-related events, and funding advertising and marketing campaigns aimed at attracting a greater number of visitors. Table 2 lists the taxes and fees paid by tourists when traveling.

**Table 2. Taxes and fees charged in different areas of tourism expenditure**

| Area of tourist expenses | List of expenses   |
|--------------------------|--|
| Taxes and fees           | visa fee<br>taxes at the airport<br>the cost of the visa                                     |
| Commission               | international travel agent<br>domestic tour operator<br>taxes on services<br>value added tax |
| International trips      | plane ticket<br>fuel costs<br>tariffs<br>transfer to and from the airport                    |
| Rented housing           | cost of living in a room<br>hotel taxes<br>local meetings                                    |
| Others                   | local tours<br>food and other things   |

*Source: systematized by the authors*

The tourist tax is levied on both tourists themselves (for instance, by collecting a certain amount per each overnight stay in a hotel) and on tourism service providers (charging a certain percentage of the service cost they offer). In Ukraine, the tourist tax rate is determined by the decision of the local self-government authority for each day of temporary accommodation (overnight stays) at a rate of up to 0.5% of the minimum wage for domestic tourism and up to 5% of the minimum wage for inbound tourism, as provided in clauses 268.5.1 and 268.5 of Article 268 of the Tax Code of Ukraine. The basis for calculating the tourist tax is the total number of days of temporary accommodation (overnight stays), including:

Hotels, campgrounds, motels, hostels for arrivals, lodges, tourist bases, mountain shelters, recreation camps, boarding houses, and other hotel-type facilities, sanatoriums, and health resorts.

Residential buildings, extensions to residential buildings, apartments, cottages, rooms, garden houses, country houses, any other objects used for temporary accommodation (overnight stays).

In 2023, the maximum amount was 30 UAH for Ukrainian tourists and 300 UAH for foreign tourists. For example, visitors to Rome were required to pay a tax of 3 euros per person per night when staying in a two-star hotel, but 7 euros in a five-star hotel [3].

The table below shows the characteristics of the tourist tax payment system in the studied countries.

**Table 3. Characteristics of the practice of paying the tourist tax in European countries**

| Country        | Base of payment       | Rate/amount tax | Features   |
|----------------|-----------------------|-----------------|--|
| Austria        | Per person, per night | € 0.15 - € 2.18 | The tax amount varies depending on the municipality  |
| Czech Republic | Per person, per night | € 1.00          | Depends on the region  |
| France         | Per person, per night | € 0.20 - € 4.00 | The amount of the tax varies depending on the municipality. Municipalities have the right to add 10% additional state and 15% additional regional taxes to the prices. |
| Italy          | Per person, per night | € 0.30 - € 7.00 | The amount of the tax depends on the municipality and the type of housing  |
| Lithuania      | Per person, per night | € 0.30 - € 1.00 | The amount of the tax depends on the municipality  |
| Poland         | Per person, per night | € 0.37 - € 0.55 | The amount of the tax depends on the municipality  |
| Portugal       | Per person, per night | €2.00           | The amount of the tax depends on the municipality  |
| Spain          | Per person, per night | € 0.25 - € 2.25 | Depends on the city or region  |

*Source: systematized by the authors [8]*

Analyzing the table, it can be observed that in the researched countries, the tax payment varies according to the room rate and the number of stars in the hotel. Therefore, tourists pay taxes based on the cost of their trip, which is more rational and fair.

Analysing the activity of the tourism industry in Ukraine as a source of income for local budgets, it is necessary to note that its budgetary significance remains low today. Some of the reasons for this include shadow employment in the private sector, fluctuations in domestic tax legislation, minimal oversight from local authorities and fiscal bodies in this industry, and other objective factors.

Thus, it can be observed that numerous scholars have delved into the topic of taxation in the tourism industry, exploring various hypotheses. Undoubtedly, taxing the tourism sector is necessary as it serves as a source of revenue for countries or cities. However, due to negative impacts of economic, political, and environmental nature, as well as widespread interference from Russia, Ukraine significantly lags behind European countries and global leaders in terms of the development level of the tourism industry. The tourist infrastructure and the quality of relevant tourism services are not fully capable of realizing their tourism potential.

Based on the analysis, it has been identified that tourist revenues are significantly influenced by value-added tax and corporate income tax. Specifically, reduced rates of these taxes will have a positive impact on the development of the tourism industry in Ukraine. Moreover, in most analyzed countries, it has been observed that the basis for tourist tax is the cost of accommodation in a hotel, not the minimum wage as in Ukraine. The rate varies from 0.2 to 7 euros per person per night.

Optimizing the taxation system within the tourism industry in Ukraine would contribute to the development of tourism and increase its contribution to the country's economy. Reducing tax rates or providing tax benefits for tourism enterprises that

invest in the development and improvement of tourist infrastructure could stimulate investments in the sector.

It is important to develop regional taxation strategies, taking into account the specificity and development potential of each region. This may involve different approaches to taxation depending on the type of tourism and its impact on the local economy.

Utilizing modern technologies and digitalization in the tax collection system can streamline procedures, reduce bureaucracy, and make the system more transparent.

Providing tax incentives or reducing tax burdens for small and medium-sized enterprises in the tourism sector can support their development and enhance competitiveness. Establishing tax breaks or lowering rates during periods of low seasonality can attract tourists when demand is traditionally lower.

It's essential to ensure a clear system for accounting and monitoring the use of funds collected from tourist taxes. This transparency can foster trust in the taxation system and encourage greater business participation.

Increasing the visibility and attractiveness of tourist attractions through marketing campaigns can boost demand and revenues, which, in turn, can impact taxation and profits.

Summarizing the analysis results, it's evident that to bring the contribution of the tourism industry to the development of the domestic economy closer to European standards, one of the strategic goals for both the state and regions should be to enhance tourism attractiveness. Table 4 presents systematized proposals for improving the taxation of tourism in Ukraine, taking into account foreign experience.

**Table 4. Proposals for improving the system of taxation of the tourism sector in Ukraine**

| Area of improvement                         | Offer  | List of countries whose experience was used |
|---|--|---|
| Tourist tax payers collection               | Change the distinction between foreign and domestic tourism  | Austria, France, Italy                      |
| Tax collection base                         | To change the basis of compensation from the minimum wage to a percentage of the cost of accommodation in a hotel, which is set per person per night, depending on the number of stars in hotel                          | Lithuania, Germany, Poland, Portugal        |
| Dealing rate tourist tax                    | Set a rate of 3 to 6% of the room rate, at the discretion of local self-government bodies  | Germany, Netherlands                        |
| Targeted referral                           | The funds collected from the tourist tax should be entirely allocated to improving the tourism infrastructure and quality in Ukraine. Detailed reports on the outcomes of this utilization should be published annually. | France, Germany, Italy                      |
| Tax rate on income for tourists enterprises | Gradually reduce the income tax rate from 18% to 10% for tourism enterprises (decreasing by 1% each year)  | Poland                                      |

*Source: systematized by the authors*

The proposed innovations are based on the experience of more economically and tourism-developed European countries. The suggestions mentioned above will help attract investments into Ukraine's tourism industry, elevating it to a new level, consequently contributing to macroeconomic indicators. Reducing the tax burden will aid Ukraine in investing in tourism development and enhancing the quality of tourist destinations. This practice exists in all European countries and should be applied when the tourism sector is at a low level and generates insufficient revenue for the budget. Additionally, reducing prices will contribute to increasing the country's competitiveness and fostering growth in domestic and international tourism.

**Conclusions.** Reducing the corporate tax rate for tourism enterprises will alleviate the tax burden on the tourism industry and consequently enable a reduction in prices for travelers. This policy also aims to incentivize investors to channel funds specifically into Ukrainian tourism, a strategy previously implemented in neighboring countries such as the Czech Republic, Germany, and Poland.

The main proposed changes concern the tourist tax and its payment system. In our opinion, the rate and collection base should be modified to align more closely with the systems used in European countries. The tourist tax should be levied based on the cost of accommodation rather than the minimum wage. Additionally, the rate should not vary for citizens of Ukraine and foreigners, as this constitutes a discriminatory policy. Equally important is the targeted allocation of the collected funds.

Revenue generated from the tourist tax should be directed towards improving the quality of tourism in the country, a policy utilized by countries such as France, Italy, and Germany, once again proving its effectiveness.

Enhancing the taxation system in the tourism sector in Ukraine requires a comprehensive approach and coordinated actions, taking into account the country's specifics and its tourism potential. Flexibility, investment stimulation, and fostering development could become key factors in advancing this industry.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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# CASH AND CASH CALCULATIONS AS AN OBJECT OF ACCOUNTING, CONTROL AND ANALYSIS

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## Citation:

Shendryhorenko M., & Shevchenko, L. (2023). CASH AND CASH CALCULATIONS AS AN OBJECT OF ACCOUNTING, CONTROL AND ANALYSIS. *Economics, Finance and Management Review*, (4), 62–69. <https://doi.org/10.36690/2674-5208-2023-4-62-70>

Received: November 27, 2023

Approved: December 28, 2023

Published: December 30, 2023



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**Abstract.** In the article, the authors substantiate the expediency of further research into the meaning of money and calculations in the activities of enterprises of various forms of ownership. The views of scientists regarding the definition of the concept of "money" are summarized. The main tasks of accounting, control, analysis of money are specified. Proposals have been made to increase the effectiveness of the control and analytical process in relation to the cash settlement operations carried out in order to promptly prevent violations in the settlement and payment discipline. The purpose of writing this article is to determine the actual issues of accounting, control, analysis of funds in the cash register and directions for their solution. The research used a complex of general scientific methods and techniques of cognition: theoretical generalization, analysis, synthesis, classifications. Grouping and comparison methods were used to determine the essence of money as an object, control and analysis. The methods of concretization and abstraction were used to single out the features inherent in money. The dialectical method, induction, and abstraction became the basis for proposals for improving the control of transactions with money in the process of financial and economic activity of the business entity. The achievements of foreign and domestic scientists in the field of accounting, control and analysis of economic operations are the theoretical and methodological basis of the research. In the research process, general scientific methods and techniques of cognition were used: theoretical generalization, analysis, synthesis, classifications. Grouping and comparison methods were used to determine the essence of money as an object, control and analysis. The methods of concretization and abstraction were used to single out the features inherent in money. The dialectical method, induction, and abstraction became the basis for proposals for improving the control of transactions with money in the process of financial and economic activity of the business entity.

**Keywords:** analysis; cash; cash calculations; control; accounting; enterprise.

**JEL Classification:** M 41, M42

**Formulas:** 0; **fig.:** 2; **tabl.:** 3; **bibl.:** 17

**Introduction.** Russia's military aggression against Ukraine has brought terrible suffering and trials to millions of civilians, as well as large-scale destruction of infrastructure. The war affected all spheres of the Ukrainian economy and led to a reduction in jobs, incomes, purchasing power and the amount of accumulated assets.

In 2022, the national economy lost 29.2% of real GDP, and 13.5 million people were forced to emigrate. Experts from the World Bank and the European Commission estimate the damage from the war in Ukraine in the period from February 24, 2022 to February 24, 2023 in the amount of 134.7 billion dollars, and the need for reconstruction - 410.6 billion dollars.

The state of Ukraine's economy is significantly affected by destruction, damage to physical assets and infrastructure, disruption of logistics, and increased investment risks. At the same time, the Government's increasing support for entrepreneurs in their desire to continue their activities based on the expansion of production capacities, creation of new jobs, etc. is determined. And as a result, the adaptability of business and population to crisis conditions is already higher than expected.

Based on an online survey of domestic enterprises, it can be stated that the problems of effective use of available resources are of primary importance [1]. The management of the business entity faces the task of surviving and persevering during hostilities, deciding on an assortment of competitive products that will meet the realities of today (including assistance to the Ukrainian army, socially vulnerable sections of the population). This will make it possible to prepare for post-war reconstruction, effectively using the potential (including human and financial).

Financial resources are a set of funds at the disposal of the enterprise and are a source for the purchase of other types of resources. The functioning of the company's financial resources can be presented in the form of a cycle of such processes as the arrival of resources to the company, their use to achieve the set goal, obtaining a result as a result of the influence of resources.

Cash is not the same as financial resources but is only a part of them and is the most liquid asset of the enterprise, including cash on hand, funds in bank accounts in banks, deposits and electronic money.

The functioning of the enterprise is impossible without a constant flow of funds, accordingly, it is advisable for the administration to pay significant attention to the issues of accounting organization, control (external and internal), analysis to ensure the effectiveness of the process of managing financial flows and calculations.

In connection with the changes in the current legislation, the need for a thorough study of the methodology of accounting, control, and analysis of funds with the aim of improving it in accordance with today's requirements has become ripe.

**Literature review.** Cash management is a critical aspect of financial management for businesses, encompassing various accounting, control, and analytical processes.

Researchers (Smith et al., 2020) stress the importance of maintaining an optimal cash balance to meet short-term obligations, reducing financial risks.

Recent studies highlight the integration of technology in enhancing cash control mechanisms. Digital tools, according to researchers (Gupta & Sharma, 2021), facilitate real-time monitoring and contribute to fraud prevention.

Scholars delve into the analytical aspect, emphasizing the role of cash flow analysis in decision-making. In their study, Chen and Wang (2022) explore how cash flow data aids in strategic planning and resource allocation.

A growing area of interest is the application of forensic accounting techniques in investigating cash-related frauds. Martinez and Lee (2023) delve into forensic approaches for uncovering irregularities in cash transactions.

The literature also addresses the evolving landscape of sustainable finance and its impact on cash management practices. Researchers (Adams & Turner, 2023) discuss the integration of environmental, social, and governance (ESG) factors in cash-related decision-making.

The problematic aspects of ensuring the effective organization of accounting, control, and analysis of funds in enterprises of various branches of the economy were studied by scientists: F. Butynets (Butynets, 2009), S. Ostafychuk (Ostafichuk, 2011), N. Tkachenko (Tkachenko, 2013), A. Zahorodnyi (Zagorodniy, 2011) and others. However, there is no unity among them regarding the definition of the concept of "cash", since a considerable range of terms is used: "money", "cash flows", "cash", "financial resources", which leads to various interpretations of the essence of these statements in accounting.

The National Accounting Regulation (Standard) 1 "General Requirements for Financial Reporting" No. 73 of 02/07/2013 (as amended in accordance with the Order of the Ministry of Finance of Ukraine No. 18 of 01/12/2023) defines: "cash (money) - cash, funds in bank accounts and demand deposits". This interpretation of money is the most common and is followed by the majority of scientists and practitioners. However, the authors of published scientific monographs and articles do not have a single opinion regarding the nature of the concept of "money", especially in the accounting aspect. The problems of effective organization of internal control (audit), analysis of funds are extremely relevant, which creates an objective necessity of deepening scientific research.

**Aims.** The purpose of writing this article is to determine the actual issues of accounting, control, analysis of funds in the cash register and directions for their solution.

**Methodology.** The research used a complex of general scientific methods and techniques of cognition: theoretical generalization, analysis, synthesis, classifications. Grouping and comparison methods were used to determine the essence of money as an object, control and analysis. The methods of concretization and abstraction were used to single out the features inherent in money. The dialectical method, induction, and abstraction became the basis for proposals for improving the control of transactions with money in the process of financial and economic activity of the business entity.

**Results.** In the economic literature, the concept of "money" is not specified, which leads to an ambiguous understanding of its essence.



We believe that it is appropriate to specify the approaches to the definition of the concept of "money" by scientists. The results of the study are summarized in Table 1.

**Table 1. Definition of the concept of "money" in the publications of scientists**

| Source                  | Definition   |
|-------------------------|--|
| S.M. Ostafiichuk, 2011  | Cash means - cash in the company's cash register, demand deposits, funds in bank accounts that are characterized by absolute liquidity, that is, they can be used for payments at any time, or exchanged for legal means of payment.   |
| N.M. Tkachenko, 2013    | Cash means cash on hand, money in bank accounts, other cash.   |
| A.G. Zagorodniy, 2011   | In economic practice, phenomena that are outwardly different from each other are called money: units of account in which prices of goods are determined, national currency, foreign currency, records on bank accounts, funds spent on the purchase of securities, debt obligations that used for payments.                |
| I.S. Neskhodovsky, 2009 | Money is an abstract measure of economic processes, phenomena, objects, which subjects agree to accept as a means of payment.  |
| O.S. Vysochan, 2009     | Cash means funds in the cash register, electronic money, funds in current and other accounts in banks, which can be used at any time for making calculations in the process of carrying out economic transactions.   |
| M.V. Derius, 2010       | Cash is a means of carrying out cash and non-cash settlements with counterparties; on the one hand, they act as income, and on the other, as expenses, ensuring the movement and exchange of financial resources in combination with the information that is reflected in the relevant accounting and reporting documents. |

*Source: compiled by the authors*

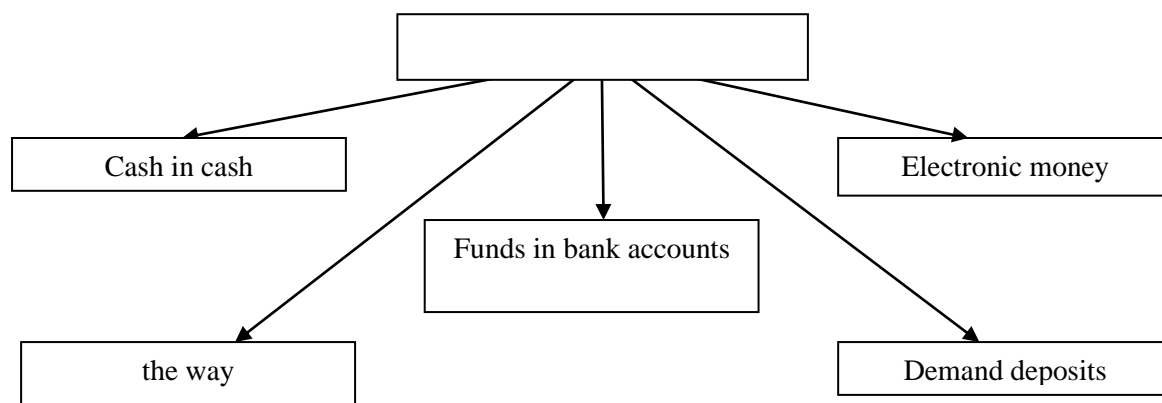
Economist O.V. Zinchenko, based on the systematization of different viewpoints of researchers, clarifies that "cash is an accounting concept that reflects the most liquid assets of the enterprise and can be in the form of cash, funds in bank accounts, demand deposits" (Zinchenko & Priemnytska, 2019). This definition includes the essence of money, the directions of their use and the final result. It is also necessary to include electronic money in the composition of monetary funds, because they have the same characteristics as cash. Electronic funds are monetary units that are a means of payment from electronic devices in which they are stored.

Summarizing the interpretation of scientists, the following definition can be given: cash is an accounting concept that reflects the most liquid assets of the enterprise and includes cash in hand, funds in bank accounts, demand deposits, cash in transit and electronic money (Figure 1).

Article 1087 of the Civil Code of Ukraine regulates that settlements with the participation of natural persons, which are not related to their entrepreneurial activity, can be carried out in cash or non-cash form.

Settlements between legal entities, as well as settlements with the participation of natural persons, related to their entrepreneurial activity, are carried out in cashless form. Settlements between these persons can also be made in cash, unless otherwise established by law.

Limit amounts of cash payments for individuals and legal entities, as well as for individual entrepreneurs are established by the National Bank of Ukraine.



**Figure 1 – Composition of the company's funds**

*Source: developed by the authors*

Regulation No. 148 stipulates that cash settlements/cash settlements are cash payments by economic entities and individuals for products sold (goods, work performed, services provided), as well as for transactions not directly related to the sale of products ( goods, works, services) and other property.

Currently, cash settlements are carried out through registrars of settlement operations (RPO) or with the use of settlement receipts (RC); the cash register of the enterprise - with the registration of profitable cash orders; bank institutions - by depositing cash into the relevant accounts.

According to the Regulation on conducting cash operations in the national currency in Ukraine No. 148, cash operations are operations of business entities among themselves and with natural persons, related to the receipt and issuance of cash during settlements through the cash register with the reflection of these operations in the relevant accounting books.

Cash in the cash register is one of the main objects of accounting, control and analysis.

The main tasks of cash accounting in the cash register are:

- 1) carrying out cash settlements in accordance with the requirements of current legislation;
- 2) timely, complete and correct documentation of operations on the receipt, movement and use of cash;
- 3) ensuring the proper storage of cash and their equivalents in the cash register of the enterprise;
- 4) control of the efficiency of spending cash;
- 5) effective organization and conducting of inventories of cash and receivables;
- 6) timely, complete reflection in the primary documents and accounting registers of cash flows in the cash register of the enterprise;
- 7) compliance with established rules for conducting cash transactions and making calculations between business entities;
- 8) organization of accounting control over compliance with settlement and payment discipline in order to prevent the occurrence of shortages or surpluses of cash, other abuses and fines.

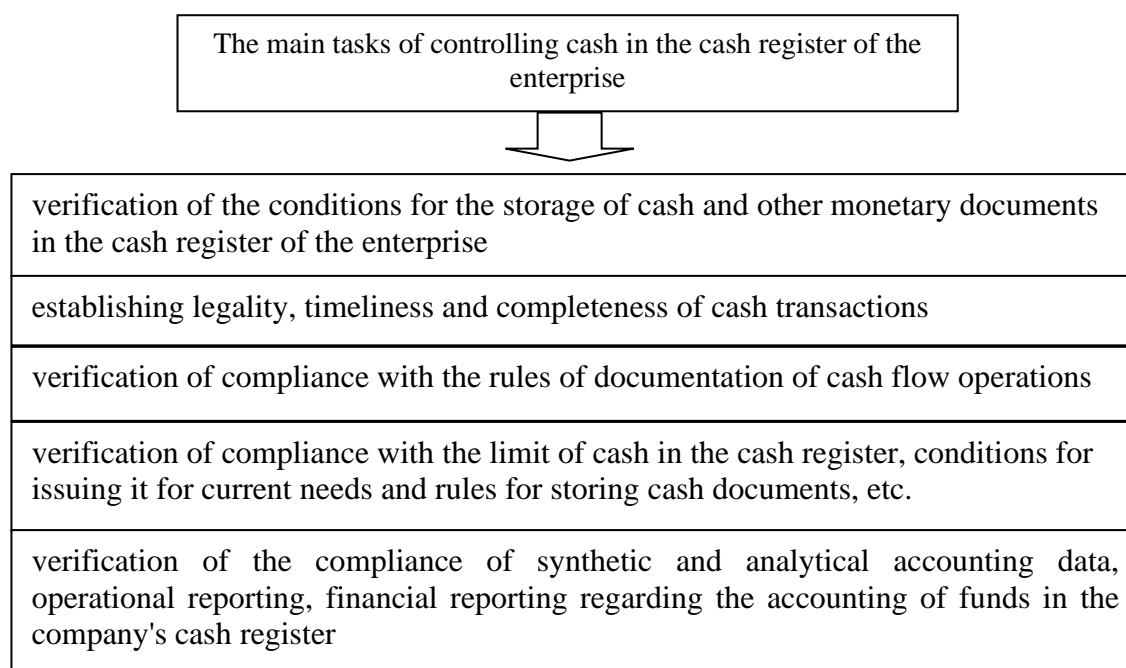
Cash flow analysis is a necessary condition for effective management of cash flows that ensure the financial and economic activity of the enterprise. After all, an imbalance in the timing of cash receipts and payments can threaten the process of implementing a business plan (budget) aimed at obtaining profit.

We believe that the main tasks of the analysis are: analysis of sources of formation and directions of spending of funds; analysis of cash flows by types of enterprise activity; analysis of the relationship between profit and changes in cash flows; analysis of the relationship between the growth of financial and economic activity and the need for cash.

The purpose of control of (external and internal) funds in the cash register is to establish the reliability of data regarding their availability and movement; determining the completeness and timeliness of displaying information in primary and consolidated documents and accounting registers; verification of the correctness of cash accounting and calculations in accordance with current legislation and the adopted accounting policy; determining the reliability of displaying balances in the company's reporting.

The object of control is information on the availability and movement of cash, which is reflected in account 30 "Cash" and in the corresponding forms of financial reporting.

The main tasks of external and internal control of funds in the cash register are specified in Figure 2.



**Figure 2. The main tasks in the control of funds in the cash register of the enterprise**

*Source: developed by the authors*

Internal control at the enterprise should consist of a number of consecutive stages:

- internal audit planning;
- preparation for internal control of the company's activities;
- drawing up an inspection program;
- organization of work on site (object);
- documentary and actual verification of the company's assets;
- systematization of materials for internal control of the state of assets and preparation of an inspection report (a report based on the results of the inspection);
- coordination and discussion of the consequences of the internal audit at the enterprise;
- approval of internal control materials;
- control over the implementation of decisions made based on the inspection materials.

To improve the process of collecting, processing and summarizing data, we offer mock-ups of working documents of the internal auditor, which are listed in Tables 2-3.

**Conclusions.** Thus, the study of funds and cash settlements as objects of accounting, control and analysis allowed:

- 1) carry out a critical review of the concept of "money" in economic literary sources and determine the essence of this economic category;
- 2) specify the main tasks of accounting, control and analysis of funds;
- 3) offer for use by external and internal auditors mock-ups of working documents for summarizing the results of checking cash transactions, which will allow to quickly record violations of payment discipline at the enterprise and carry out their representative analysis for further liquidation.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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**Table 2. Working document of the internal auditor based on the results of checking compliance with the procedure for issuing cash for reporting and its use in \_\_\_\_\_**  
(Name of Company)

| The purposes for which the cash is issued and the name of the responsible person |   | According to the company                            |             |  |             |  |             | According to the result of the inspection           |             |  |             |  |             | Deviation by |                   |
|--|---|---|-------------|--|-------------|--|-------------|---|-------------|--|-------------|--|-------------|--------------|-------------------|
|  |   | issuing cash according to a disbursement cash order |             | reporting of the accountable person according to the Report on the use of funds issued for a business trip or for a report |             | return of the cash balance to the cash register according to the profitable cash order |             | issuing cash according to a disbursement cash order |             | reporting of the accountable person according to the Report on the use of funds issued for a business trip or for a report |             | return of the cash balance to the cash register according to the profitable cash order |             |              |                   |
|  |   |   |             |  |             |  |             |   |             |  |             |  |             |              |                   |
|  |   | date  | amount, UAH | date   | amount, UAH | date   | amount, UAH | date  | amount, UAH | date   | amount, UAH | date   | amount, UAH | dates        | amount, hryvnias. |
| 1  | 2 | 3   | 4           | 5  | 6           | 7  | 8           | 9   | 10          | 11   | 12          | 13   | 14          | 15           |                   |

Source: developed by the authors

**Table 3. Working document of the internal auditor based on the results of checking the correctness of the display of cash flow data in accounting documents and financial statements in \_\_\_\_\_**  
(Name of Company)

| The reporting month under review | Indicators in accounting documents        |        |  |        |           |        |                  |        |                                    |        |      |        | The content of the violation and the name of the person who caused it | The impact of the violation on the reliability of the article in the Report on the financial condition |
|----------------------------------|---|--------|--|--------|-----------|--------|------------------|--------|------------------------------------|--------|------|--------|---|--|
|                                  | receipt of cash on profitable cash orders |        | disbursement of cash by disbursement cash orders |        | Cash book |        | Cashier's report |        | Magazine No. 1 and its publication |        |      |        |   |  |
|                                  |   |        |  |        |           |        |                  |        |                                    |        |      |        |   |  |
|                                  | date                                      | amount | date   | amount | date      | amount | date             | amount | date                               | amount | date | amount |   |  |
| 1                                | 2   | 3      | 4  | 5      | 6         | 7      | 8                | 9      | 10                                 | 11     | 12   | 13     | 14  | 15   |

Source: developed by the authors

# INFORMATION SUPPORT FOR FINANCIAL ANALYSIS OF INDUSTRIAL ENTERPRISES AND THE INFLUENCE OF THE SIZE OF SHOP EXPENSES ON TAX PLANNING AT THE MICRO LEVEL TO IMPROVE MANAGEMENT EFFICIENCY

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## Citation:

Melikhova, T., & Melikhov, Y. (2023). INFORMATION SUPPORT FOR FINANCIAL ANALYSIS OF INDUSTRIAL ENTERPRISES AND THE INFLUENCE OF THE SIZE OF SHOP EXPENSES ON TAX PLANNING AT THE MICRO LEVEL TO IMPROVE MANAGEMENT EFFICIENCY. *Economics, Finance and Management Review*, (4), 71–79. <https://doi.org/10.36690/2674-5208-2023-4-71-79>

**Received: November 27, 2023**

**Approved: December 29, 2023**

**Published: December 30, 2023**



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**Abstract.** Basically, any economic activity contributes significant development of economy field and the country at all. The purpose of this topic is researching activity of some enterprise, finding mistakes and providing recommendations that allows to solve them. We suppose it will help to improve certain areas of enterprise activity in the state. The purpose of the study is to consider the information support of the financial analysis of industrial enterprises and the influence of the size of shop expenses on tax planning at the micro level to improve management efficiency. In the process of the research, the following tasks were completed: the information support of the financial analysis in terms of expenses was investigated; analyzed expenses of the main workshops of "Zaporizhsky Foundry and Mechanical Plant" LLC; the impact of elements of shop expenses on the optimization of the tax planning of the enterprise as a whole at the micro level was analyzed in order to improve management efficiency. The metallurgical industry has a significant and valuable role in the development of Ukraine. Due to this point, our country able to produce own metallurgical products, process metals, create own methods of production in the metallurgical industry, and create new connections with foreign partners for the import and export of metals and metal structures. The conducted research allows us to divide the conclusions into certain points: The information provision of financial analysis is revealed. We found out how expenses affect the financial result of the activity. An analysis of the costs of the main workshops of Zaporizhzhya Foundry and Mechanical Plant LLC was carried out, namely foundry, mechanical shop, metal structures. Proposals for improving the economic activity of Zaporizhzhya Foundry and Mechanical Plant LLC were provided. The influence of elements of workshop costs on the optimization of tax planning of Zaporizhzhya Foundry and Mechanical Plant LLC at the micro level was analyzed in order to improve management efficiency. Summarizing this work, it is worth noting the situation of industrial enterprises in Ukraine is important as a whole. In the face of intense hostilities, they continue their work even with such problems as: logistical disruptions, rocket attacks on enterprises, lack of funds both at the enterprise itself and in the state budget, and all for the sake of speeding up our Victory of the Ukrainian people in this terrible and protracted war.

**Keywords:** analysis; workshop; production; production capacity; implementation; effect; ebitda.

**JEL Classification:** C 81, D 81, H 23

**Formulas:** 0; **fig.:** 3; **table:** 1; **bibl.:** 20

**Introduction.** In today's dynamic business environment, industrial enterprises face numerous challenges and complexities that require careful financial analysis and strategic planning. Effective financial management is critical to the sustainable growth and success of industrial enterprises. One of the key aspects of financial management is tax planning, which involves optimizing tax liabilities to increase overall profitability. In addition, understanding the impact of various costs, such as store costs, is vital to making accurate financial decisions at the micro level.

This study examines the role of information support in the financial analysis of industrial enterprises, focusing on the impact of shop floor costs on micro-level tax planning. The intersection of financial analysis and tax planning becomes especially important as businesses seek to improve management efficiency and overall financial performance.

Ukrainian enterprises are passing not the best times today. The military aggression of the Russian Federation against Ukraine, shelling and terror of Ukrainian lands, economy and industry mutilated by the war. The topic of the work is relevant because each civilized country in the world have to understand that such a disaster can happen to anyone. So, it is necessary to know what to in such cases.

The metallurgical industry has a significant and valuable role in the development of Ukraine. Due to this point, our country able to produce own metallurgical products, process metals, create own methods of production in the metallurgical industry, and create new connections with foreign partners for the import and export of metals and metal structures.

The importance of this study is that it can provide insight into how industrial businesses can use financial data and analysis to make informed decisions about tax planning, especially for shop floor costs. By identifying patterns, trends and correlations in financial data, businesses can develop strategies to minimize tax liabilities while optimizing operational efficiency.

**Literature review.** Recent studies emphasize the importance of advanced techniques in information support for financial analysis in industrial enterprises. Smith and Johnson (2021) introduced novel methods for analyzing financial data, providing insights into optimizing resource allocation and decision-making processes (Smith & Johnson, 2021).

Brown and Davis (2022) explored the intricate relationship between shop expenses and tax planning at the micro level. Their work revealed how effective tax planning, considering shop expenses, can positively influence financial outcomes and overall management efficiency (Brown & Davis, 2022).

Johnson and White (2023) proposed an integrated approach that considers both financial analysis and the influence of shop expenses on tax planning. Their research provides a holistic perspective on how these elements collectively contribute to improved management efficiency in industrial enterprises (Johnson & White, 2023).

The literature review underscores the multifaceted nature of information support for financial analysis and the interconnectedness of shop expenses and tax planning at the micro level in industrial enterprises. By integrating these elements, organizations can enhance their management efficiency, navigate regulatory



challenges, and contribute to sustainable financial outcomes. The synthesis of recent studies emphasizes the need for ongoing research to address emerging trends and challenges in this dynamic field.

**Aims.** The purpose of the work is to conduct an analysis of economic activity and provide suggestions for improvement.

**Key Objectives:**

- Assessing Information Support for Financial Analysis.
- Analyzing Shop Expenses.
- Exploring Tax Planning Strategies.
- Improving Management Efficiency.

By addressing these objectives, this research aims to contribute valuable knowledge to the fields of financial management, tax planning, and industrial enterprise efficiency. The findings may assist industrial leaders, financial analysts, and tax professionals in making well-informed decisions for sustainable business growth.

**Methodology.** Designing a research methodology for our research involves outlining the approach, data collection methods, and analysis techniques. When performing the research, general scientific and specific scientific methods were used: comparison, experiment, analysis, observation and measurement methods (graphic method, comparison methods, etc.). Designing a robust research methodology involves balancing quantitative and qualitative approaches to gain a holistic understanding of the relationship between information support, shop expenses, tax planning, and management efficiency in industrial enterprises. The chosen methods should align with the research objectives and provide valuable insights into improving overall efficiency.

**Results.** The analysis of economic activity was carried out on the basis of the following data of Zaporizhsky Foundry and Mechanical Plant, LLC: production potential, loading of production capacities, productivity of personnel of such shops as:

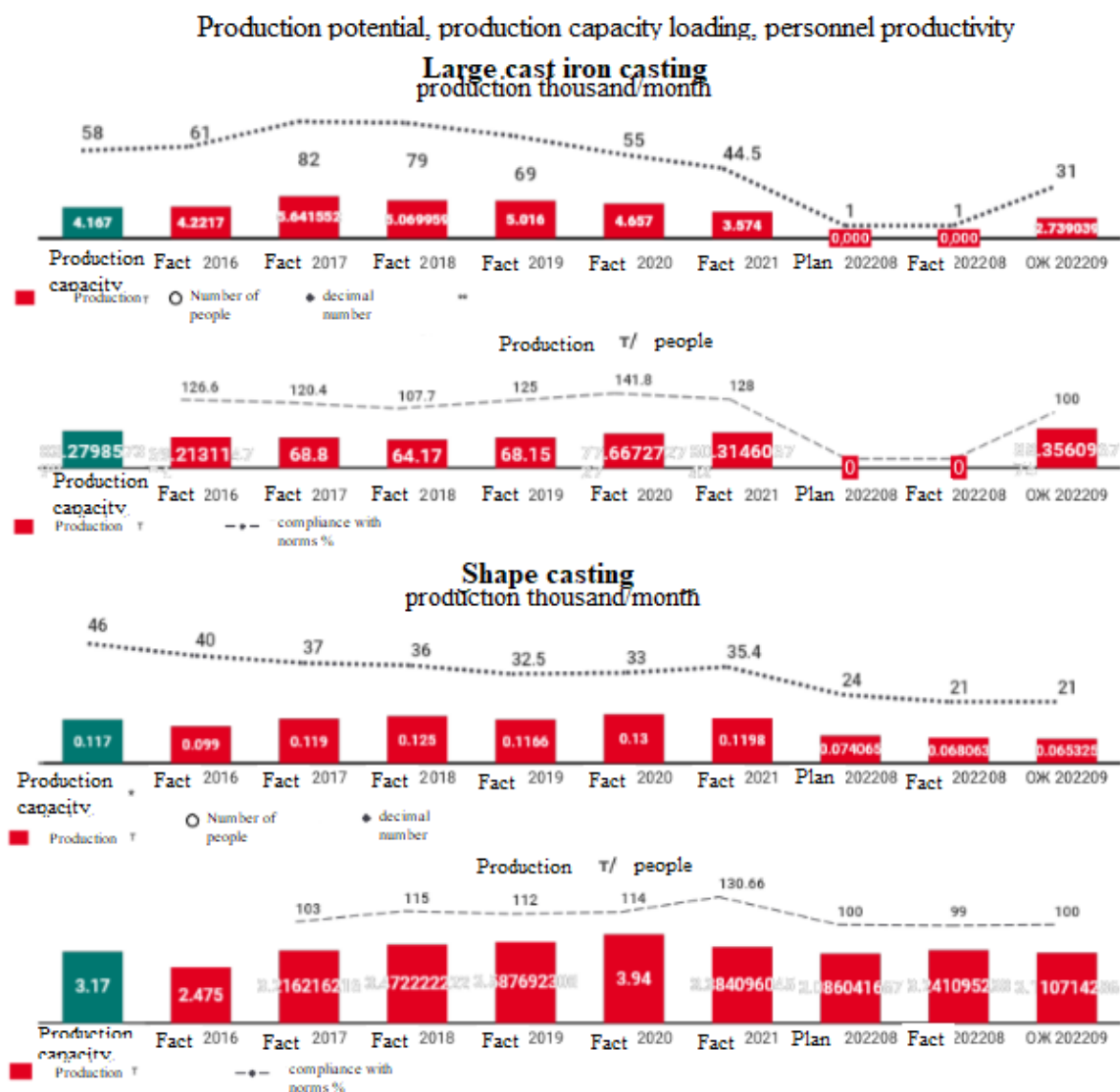
- foundry;
- mechanical shop;
- metal structures.

The results of the analysis of the foundry shop of Zaporizhzhya Foundry and Mechanical Plant, LLC for 2022 are shown in Figure 1.

Based on the results of the analysis, it was established that for large-scale cast iron castings:

- simple branch in August;
- the expected production in May will be 2,739 tons. With a planned number of 31 people, productivity will be 88 tons/person.

That is, when planning, we observe a significant decrease in the production capacity of the enterprise due to intensive hostilities and interruptions in the logistical supply of raw materials and materials.



**Figure 1. The results of the analysis of the foundry workshop of Zaporizhzhya Foundry and Mechanical Plant, LLC**

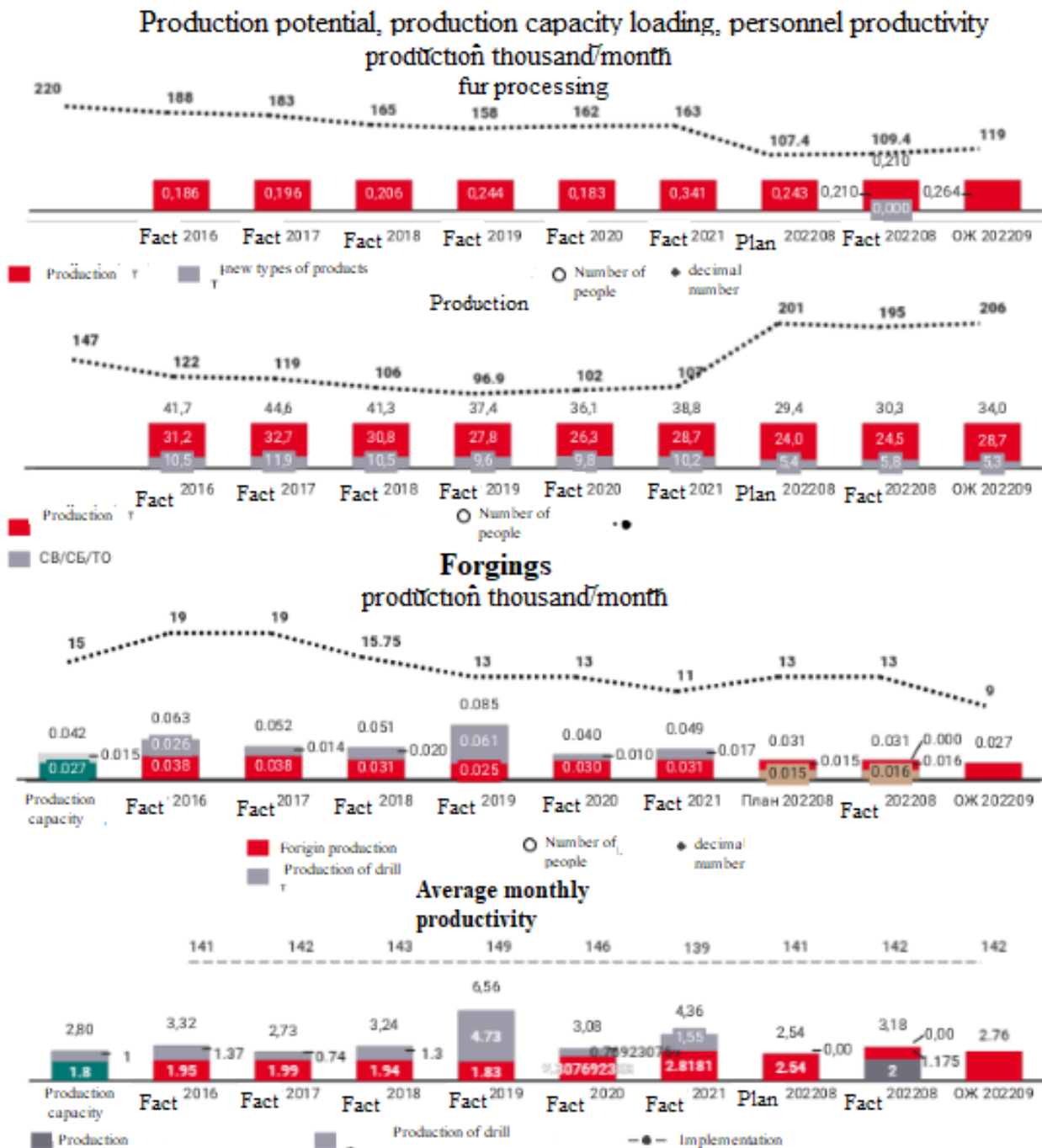
Source: created by the authors based on calculations

The results of the analysis of the mechanical workshop of Zaporizhzhya Foundry and Mechanical Plant, LLC for 2022 are shown in Figure 2.

Based on the results of the analysis, it was established that by mechanical processing:

- production in standard hours for August 2022 amounted to 30.3 n.h., which is 0.9 n.h. value.

- the overachievement of planned production volumes is due to the development of new and additional types of products (pressing assembly, ZKHZ plates, service for cutting teeth of shafts and gears, restoration of the bowl and cone of the backfilling apparatus of the blast furnace).



**Figure 2. The results of the analysis of the mechanical workshop of Zaporizhzhya Foundry and Mechanical Plant, LLC**

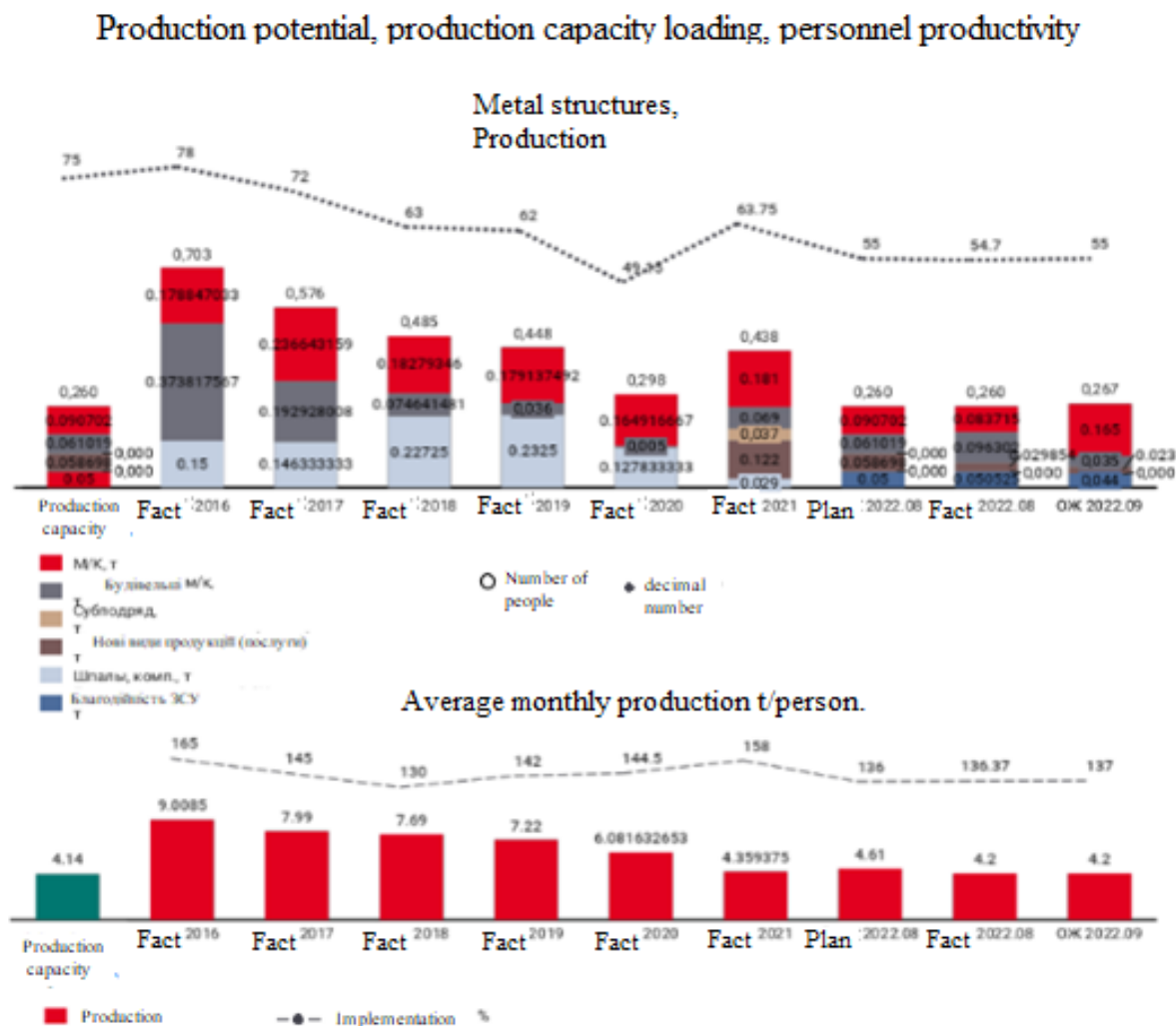
Source: created by the authors based on calculations

On September 2022, an increase in production in tons and standard hours due to the development of new production volumes in connection with the closure of the group's enterprises.

Also, it should be noted that due to finding new (alternative) European suppliers, the enterprise may be granted certain benefits and quotas.

The execution of the production program for forgings (KV) amounted to 15.5 tons against the plan of 15.3 tons. which is 101.4% of the target.

The results of the analysis of the metal construction workshop of Zaporizhzhya Foundry and Mechanical Plant, LLC for 2022 are shown in Figure 3.



**Figure 3. Results of the analysis of the metal construction workshop of Zaporizhzhya Foundry and Mechanical Plant, LLC**

Source: created by the authors based on calculations

Based on the results of the analysis, it was established that the metal construction workshop:

- metal construction production (taking into account services for new types of products) for August 2022 amounted to 260 tons, which corresponds to the planned value;
- production reduction in relation to 2021. related to the refusal to carry out a number of capital repairs, as well as the adjustment of the customer's applications due to the change in the work schedule due to the conduct of military operations;
- the expected production in September will be 267 tons due to the production of metal structures of the Petrovsky Koper SHU (total volume of 379 tons), metal structures of the SUP Armuvannya Rudstanok (total volume of 45 tons), degassing pipelines of the SUP (total weight of 165 tons) and metal structures of the CGSK

(total volume of 210 tons), as well as the production of metal structures for the Armed Forces (20 pieces of modular shelters weighing 44 tons).

Summing up from the study of the production productivity of the workshops, we can say that a lot of work is being done for the smooth operation of the enterprise and all possible assistance to the Armed Forces in the fight against Russian aggression.

Business expenses affect the amount of income tax that the business pays. Therefore, we suggest that the enterprise regularly conduct an analysis of costs and taxes, conduct tax planning in a timely manner in order to optimize the enterprise's costs in order to improve management efficiency. Tax planning of elements of shops expenses (table 1).

**Table 1. Tax planning of elements of shops expenses**

| Indexes                      | Reporting period | The impact of the change in the EUV rate | The impact of wage growth | The impact of inflation of 26.6% on the growth of prices for materials | The effect of changing the depreciation method | Savings or overspending |
|------------------------------|------------------|--|---------------------------|--|--|-------------------------|
| Income                       | 100000           | 100000                                   | 100000                    | 100000   | 100000   |                         |
| Costs:                       | 80000            | 71536,40                                 | 92200                     | 87980  | 83600  |                         |
| Materials                    | 30000            | 30000                                    | 30000                     | 37980  | 30000  | + 7980                  |
| Salary                       | 40000            | 40000                                    | 50000                     | 40000  | 40000  | + 10000                 |
| EUV rate                     | 22%              |  | 22%                       | 22%  | 22%  |                         |
| EUV rate of disabled persons |                  | 8,41%                                    |                           |  |  |                         |
| EUV                          | 8800             |  | 11000                     | 8800   | 8800   | + 2200                  |
| EUV of disabled persons      |                  | 336,40                                   |                           |  |  | -8463,60                |
| Amortization                 | 1200             | 1200                                     | 1200                      | 1200   | 4800   | +3600                   |
| Profit before taxation       | 20000            | 28463,60                                 | 7800                      | 12020  | 16400  |                         |
| Income tax 18%               | 3600             | 5123,49                                  | 1404                      | 2163,60  | 2952   |                         |
| Net profit                   | 16400            | 23340,15                                 | 6396                      | 9856,40  | 13448  |                         |

*Source: created by the authors based on calculations*

The table presents tax planning, namely the impact on the expenses of an industrial enterprise for the reporting period of various indicators that the enterprise faces in the field of microeconomics. The influence of various factors is shown, such as: a change in the rate of the Unified Social Contribution (SSC), wage growth, inflation on the growth of material prices, as well as the effect of a change in the depreciation method.

The company's income in the reporting period is UAH 100,000. The costs, taking into account the mentioned factors, amount to UAH 80,000. An analysis of the impact was made separately for such indicators as material costs, salary, ECV and depreciation. It is noted that the effect of the change in the depreciation method led to an increase in costs by 3,600 currency units.

The total profit before taxation in calculations is UAH 20,000. Income tax is calculated at the rate of 18% and amounts to UAH 3,600. The net profit of the industrial enterprise after taxation is UAH 16,400.

The table also shows the absolute deviations of indicators compared to previous periods, which allows to assess the dynamics of changes and the effectiveness of tax planning of an industrial enterprise.

**Discussion.** Proposals for improving the economic activity of Zaporizhzhya Foundry and Mechanical Plant, LLC:

- attraction of foreign investments;
- participation in international programs and grant projects;
- involvement of administrative departments of the enterprise in obtaining profit by providing services;
- cost savings by administrative departments of the enterprise;
- involvement of SOBOWIDZ foundry, Gdansk, Poland;
- the involvement of scientists in the development of modern materials and production technologies, which are necessary during the war period to overcome Russian aggression in Ukraine;
- the involvement of scientists in the development of modern materials and production technologies, which are necessary in the post-war period for the restoration of infrastructure and the development of Ukraine.

To give an increase in profit and increase in efficiency activity of business.

**Conclusions.** This work presents the actual and planned data of the Ukrainian metallurgical enterprise "Zaporizhsky Foundry and Mechanical Plant" LLC. The company's problems were presented and certain recommendations were made to improve the internal and external situation. The conducted research allows us to divide the conclusions into certain points:

1. The information provision of financial analysis is revealed. We found out how expenses affect the financial result of the activity.
2. An analysis of the costs of the main workshops of Zaporizhzhya Foundry and Mechanical Plant LLC was carried out, namely foundry, mechanical shop, metal structures. Proposals for improving the economic activity of Zaporizhzhya Foundry and Mechanical Plant LLC were provided.
3. The influence of elements of workshop costs on the optimization of tax planning of Zaporizhzhya Foundry and Mechanical Plant LLC at the micro level was analyzed in order to improve management efficiency.

Summarizing this work, it is worth noting the situation of industrial enterprises in Ukraine is important as a whole. In the face of intense hostilities, they continue their work even with such problems as: logistical disruptions, rocket attacks on enterprises, lack of funds both at the enterprise itself and in the state budget, and all for the sake of speeding up our Victory of the Ukrainian people in this terrible and protracted war.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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## CHAPTER 3

### MODERN MANAGEMENT TECHNOLOGIES

#### MANAGEMENT CHALLENGES FOR STRATEGIC RESTORATION OF FINANCIAL AND ECONOMIC SECURITY OF CRITICAL INFRASTRUCTURE IN THE CONDITIONS OF WAR, BANI WORLD, INDUSTRY 4.0 AND DIGITALIZATION

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**Citation:**

Zachosova, N. (2023). MANAGEMENT CHALLENGES FOR STRATEGIC RESTORATION OF FINANCIAL AND ECONOMIC SECURITY OF CRITICAL INFRASTRUCTURE IN THE CONDITIONS OF WAR, BANI WORLD, INDUSTRY 4.0 AND DIGITALIZATION. *Economics, Finance and Management Review*, (4), 80–93. <https://doi.org/10.36690/2674-5208-2023-4-80-93>

**Received: November 22, 2023**

**Approved: December 28, 2023**

**Published: December 30, 2023**



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**Abstract.** The possibilities of the real and potential influence of war, BANI World, Industry 4.0 and digitalization on the processes of strategic management of the financial and economic security of critical infrastructure objects have been clarified. Economic security is defined as such a state of protection of corporate resources and business processes of the business entity from negative impact on their functionality, which makes it possible to use the possibilities of their multiplication and effective use to satisfy the interests of various categories of stakeholders and achieve the strategic goals of the business without the threat of its bankruptcy and liquidation. Management challenges for the strategic restoration of the financial and economic security of the critical infrastructure in the realities of the influence of BANI World, Industry 4.0 and digitalization are summarized. Among them are such as the management of the reconstruction of damaged property, of personnel, of partnership relations, of production and business processes, of intellectual capital, of information resources, of competitiveness and business reputation, of level of financial and economic security. Directions for using digitalization opportunities to restore the state of financial and economic security of critical infrastructure facilities are proposed. The main areas where digitalization processes most affect the level of financial and economic security of critical infrastructure objects are highlighted, such as the financial sector, information space, economic relations, educational environment, production processes, administration and communications. The possibility of obtaining such main positive effects from digitalization as the absence of the need to search and store cash, increasing the speed and efficiency of calculations, the possibility of using information from various alternative sources, its verification and updating, providing timely reminders about the need for calculations, purchases has been established; increasing personnel and intellectual potential; increasing the level of safety of employees due to the absence of the need for their personal presence at the workplace; speeding up the communication process.

**Keywords:** management; strategic management; financial and economic security; war; risks; digitalization; Industry 4.0; BANI world.

**JEL Classification:** D81, H56, M21

**Formulas:** 0; **fig.:** 1; **tabl.** 1; **bibl.:** 13



**Introduction.** An important problem of the national security and defense of the state is the staffing of security-oriented management of the country's critical infrastructure objects, the normal functioning of which was disrupted during the pandemic, destroyed by the war, and requires restoration and qualitative transformations at the level of business processes. Effective responses to management challenges for the strategic restoration of financial and economic security of critical infrastructure in the conditions of war, BANI world, Industry 4.0 and digitalization are largely determined by the availability of personnel potential at critical infrastructure facilities. Never before have Ukraine, its people and economy been under the influence of so many threatening factors at once: war, a global pandemic, economic and social chaos, a new model of world perception and so on. Available scientific publications on the problems of preserving personnel capital and managing the financial and economic security of micro- and macro-level economic systems did not take into account the risks that arose during the war and continue to appear under the influence of hostilities that are being waged on the territory of Ukraine, for the life of the population, conducting business, national security of the state as a whole.

To date, there is no conceptual approach to the strategic management of the system of financial and economic security of business structures in the conditions of post-war recovery. Until recently, the management of critical infrastructure objects used two tools in the fight against risks – insurance and regulatory norms (at the enterprise level – safety norms, regulations, instructions). At the moment, such measures are not enough: business conditions are constantly changing, transforming, and adjusting, reputational risk is growing, and the responsibility of management of economic entities for making managerial decisions at the micro level, and civil servants at the national level, is increasing. Human resources involved in this process are not ready to quickly respond to the challenges of time. Inefficient management of critical infrastructure facilities and all subjects of economic activity without exception, regardless of their level of significance for the state of national security, harms the economic development of the country, as it leads to the loss of resources due to the bankruptcy of participants in economic relations. The liquidation of business, especially large, strategically important enterprises, in particular, due to the cessation of activities during quarantines and lockdowns, and now – as a result of military operations – constitutes one of the greatest threats to the financial and economic security of the national economy of Ukraine. Therefore, informational and consulting support for the economically safe development of business structures with minimal risks in the context of the transition to the Industry 4.0 model is an important theoretical and methodological task that must be solved at the state level in the form of creating a strategy for the development of business activities, and at the level of the top management of facilities of critical infrastructure, a necessary step for further evolution and adaptation to new economic conditions and challenges of Industry 4.0 and the conditions of BANI World is the introduction of enterprise management practices based on effective personnel policy, consistent strategic management and ensuring financial and economic security.

**Literature Review.** Studies of the problems of economic security management at the strategic and tactical levels have been raised in the scientific literature for a long time [1-3]. The formation of the system of financial and economic security of the business entity and its strategic management in the realities of BANI world was considered by us in the work [4]. The activities of critical infrastructure objects and their security in various contexts are also in the focus of scientific research of modern scientists. Thus, I. D. Horbenko, O. A. Zamula and Yu. S. Osypenko propose a concept of cyber security risk assessment of the information system of a critical infrastructure object [5]; V. I. Kotsyruba, A. S. Bilyk, V. B. Bzot and I. G. Dzeverin study the possibilities of protecting critical infrastructure objects of Ukraine from direct missile hits using an underground location [6], O. Azarenko, Yu. Goncharenko, M. Divizynyuk, V. Mirnenko, V. Strelets offer ways to increase the effectiveness of physical protection systems of protected critical infrastructure objects of the state [7], and as part of another team of authors, they are engaged in the development of a mathematical model of optimal security management of a conglomerate of objects of critical infrastructure that are protected [8]; Yu. S. Tarasenko, Yu. V. Savchenko investigate risk-oriented processes of ensuring the safety of critical infrastructure objects [9]; Kyzim M.O., Haustova V.E., Trushkina N.V. take care of the issues of financial support for the development of critical infrastructure in the conditions of the post-war reconstruction of the economy of Ukraine [10]; V. P. Kudryashov identifies problematic aspects of critical infrastructure financing in Ukraine [11]; A. Y. Zhemba, O. O. Klyukha, and O. I. Kachan consider the features of the EU's international policy management in the field of critical infrastructure protection [12]; V. V. Mykytenko and Yu. Z. Drachuk study the spatial management of sustainable management in critical infrastructure in a special period [13]. At the same time, new modern challenges, in particular such as the strengthening of Industry 4.0 trends, tangible signs of Industry 5.0 and the digitalization of most production processes and business processes, form non-trivial threats and risks for critical infrastructure objects, and therefore must be taken into account in the process of strategic management of their activities and when planning their future development.

**Aims.** The purpose of the study is to specify management challenges for the strategic restoration of financial and economic security of critical infrastructure in wartime conditions, BANI World, Industry 4.0 and digitalization.

**Methodology.** The research is based on the use of the content analysis method, which was used to process materials from available information resources in order to clarify the possibilities of the real and potential impact of BANI World, Industry 4.0 and digitalization on the processes of strategic management of the financial and economic security of critical infrastructure objects. The monographic method was applied when determining the needs of critical infrastructure objects in the effective coordination of their strategic restoration processes to strengthen the level of national security of the state. Analysis and synthesis methods made it possible to identify management problems in the context of safety-oriented management of critical infrastructure facilities. The graphic method made it possible to systematize and visualize the main results of the conducted research. The generalization method was

used to formulate concise conclusions and recommendations based on the materials of the research work.

**Results.** Until the moment of separation into an independent direction of scientific research, the economic security of business entities was considered as one of the characteristics of the financial and economic state of the enterprise. Then the specific signs and characteristics of this phenomenon, reinforced by the growth of uncertainty and the number of risks of the external and internal environment of the functioning of economic structures, gave the impetus to the beginning of specialized research on the issue of ensuring the economic security of the enterprise, separated from its financial stability, profitability, financial results, etc., or in combined with them. So far, the management of economic security has acquired the status of a separate direction of management in the management system of enterprises, institutions, organizations, including critical infrastructure objects. This was preceded by years of scientific research and dozens of professional publications, empirical studies, surveys, and analytical works. From the understanding of economic security as a certain state of the assets of a business entity, the result of its functional capacity, scientists have moved on to establish the relationship between the level of economic security and the degree of satisfaction of the interests of the company's stakeholders, its business activity and reputation, information transparency, competitiveness, and the ability to resist raider attacks. At the macro level, economic security and its financial component are studied in relation to the problem of the existence and spread of the shadow economy in Ukraine, the emergence of stable financial dependence on international financial organizations, the loss of financial sovereignty and the disruption of functional links of critical infrastructure objects in connection with the war and the transition to a wartime economy. The issue of economic security is raised in the context of conducting information wars, research related to hybrid threats, political crises, social tension, low level of information and financial literacy of the population, manifestations of trends of Industries 4.0 and 5.0, total digitalization of the economy, activation of the use of digital currencies, etc. Tracking the connection between the state of economic security of the state and the state of economic security of economic structures has become the mainstream of scientific research of modern scientists. At the theoretical and methodological level, the features of different levels of ensuring economic security have been identified and studied – the nano-level (individual economic security, personal security, the economic security of an individual participant in the economic system, economic relations; the economic security of households is also often added to this level), the micro-level (economic security of economic entities of various types of economic activity, forms of ownership, etc.); meso-level (regional economic security), macro-level (state economic security) and mega-level (global economic security).

In the last ten years, the economic security of business entities has been considered from various research positions. For example, publications have appeared in which the state of economic security is closely related to the management of changes in the enterprise, as well as to cost management. Increasingly, one can find in professional economic articles materials devoted to various areas of work with the

economic security potential of the business entity. The search for new approaches to understanding economic security (risk-oriented, client-oriented, stakeholder-oriented) continues, classical approaches, such as systemic and functional, are transformed and modernized. The latter is updated by highlighting new components of economic security, which gives this phenomenon an increasingly complex character. Each such component turns into an independent object for a new vector of scientific research in the field of security science.

Another trend of economic security research at the level of business entities has become specialization – separate scientific research is conducted for enterprises of various types of economic activity, universal and individual features of their economic security systems are determined. In the field of economic security management, the problems of strategic management of economic security, management of personnel and information security in short-term and current perspectives are actively studied from the standpoint of a process approach [1, p.151-153].

The strategic planning of the economic activities of Ukrainian enterprises from the beginning of 2022 is complicated by military actions, mass periodic attacks on infrastructure objects and production facilities by russian troops, uncertainty and intensification of risks, including those that arose after the beginning of the full-scale russian invasion of Ukraine. Classical approaches to the strategic management of financial and economic activities, in which the foresight is calculated for a period of five or more years, in the conditions of conducting business that developed in Ukraine during the wartime economy, lose their relevance and their use is impractical and such that only takes valuable time from managers and experts involved in strategy development. Therefore, there was a need to use atypical flexible scenarios for strategic planning of the functioning and development of economic structures, and first of all – critical infrastructure objects that are under the pressure of the threat of physical destruction or complete cessation of activity due to the lack of resource provision, as well as being influenced by the trends of the BANI world, Industry 4.0 and digitalization.

Management of economic security has become recognized as a separate direction of management in view of the constant increase in the number of risks and challenges for the activities of critical infrastructure enterprises. Economic security is such a state of protection of corporate resources and business processes of the business entity from the negative impact on their functionality, which makes it possible to use the possibilities of their multiplication and effective use to satisfy the interests of various categories of stakeholders and achieve the strategic goals of the business without the threat of its bankruptcy and liquidation.

There are different scientific and methodological approaches to the definition of strategic management, in particular, in the context of ensuring economic security. For example, Dyachkov D.V., Potapyuk I.P., Kapran I.V. note: "The economic security strategy of the enterprise is the general, long-term, most fundamental and important goals, plans, intentions of the enterprise's management, aimed at the formation of a security system, management mechanisms and interaction with the aim of countering

real and potential external and internal threats and risks, effective implementation mission, achieving set of goals and ensuring stable development of the enterprise" [2].

The strategy of ensuring the economic security of a critical infrastructure enterprise should not contradict the imperatives of implementing its main activity, which is important for the normal state of life of the population and business. Best practice may be an approach where the strategy for ensuring economic security or managing it is one of the sections of the general strategy of the company. In such a case, it is quite simple to take into account the interests of most categories of stakeholders, because they are traditionally involved in the process of developing a strategy for the operation and development of a business entity, and the needs of national security in the case of consideration of critical infrastructure objects.

Ensuring economic security at the stage of strategic recovery of the company's activities is implemented in the identification of risks and threats that may become an obstacle to achieving the company's desired goals in the future. It is rational to use the scenario method to create a whole list of possible options for the unfolding of events in the external and internal environment of the enterprise's functioning, and under such an approach, the task of managing economic security in the process of strategic management will be to ensure the implementation of the most favorable and desirable scenario by minimizing threatening factors and their potential negative impact on results of financial and economic activity of the critical infrastructure object. The finale of this stage for the functioning of the economic security system is the determination of the management of strategic goals for the enterprise at different management levels: at the level of organizational management (general goals), at the level of management of economic security and other areas of activity, at the level of individual business processes. Strategic goals can be grouped depending on their functional direction: to restore and develop production, to adjust or modernize logistics, sales, and trade processes, to achieve high financial and investment indicators, to develop competitive advantages and capture a larger share of the market, to achieve social effect, maximizing the level of information transparency, gaining a good business reputation among counterparties and consumers, etc. Accordingly, a high level of economic security can and should be one of the desirable indicators of its activity. As for the strategic goals of economic restoration of the object and management of its economic security, it is rational to single out: protection from external and internal threats, creation and bringing to an effective functionality of the risk management system, development of a mechanism for preventing the influence of negative factors on the state of the company's corporate resources, finding reserves to compensate for losses from unforeseen challenges, etc.

At the stage of strategic analysis, it is important to assess the strengths and weaknesses of the company's activity, and therefore the shortcomings and reserves of the functioning of its economic security system. For this, it is rational to use classical methods and tools of strategic analysis, such as:

- SWOT analysis;
- SPACE analysis;

- PEST analysis (industry analysis);
- factor analysis;
- competitive analysis of the influence of five forces according to M. Porter;
- risk maps;
- map of strategic groups;
- map of strategic goals;
- a balanced system of indicators.

The purpose of strategic analysis is to help the management staff to determine what threatening factors and challenges can prevent the achievement of the general goal and the fulfillment of the key tasks of the enterprise. Among other things, strategic analysis allows identifying potential threats and risks to the functioning and development of the business entity. The distant time horizon allows the management to develop a plan of measures to prevent the occurrence of identified dangers and to create reserves in advance to compensate for their consequences for the financial and economic condition of the critical infrastructure object.

At the stage of rating threats and risks, the experience of the management personnel involved in this process plays an important role. For a small and medium-sized business, whose staff often lacks specialists experienced in various areas of business activity and the assessment of factors that exist in the external and internal environment of the functioning of enterprises, a rational option would be to involve experts in strategic analysis at this stage. Rankings of threats are necessary for choosing priority areas of resource use to ensure a high level of economic security. The limited financial and personnel reserves experienced by Ukrainian companies forces the management to choose a focus for management efforts in the context of preventing threats and risks for the enterprise, which will be recognized as the most priority and the consequences of which can be as negative as possible, critical for the normal functioning of the business or even its continuation activities on the market.

At the stage of assessing the current level of economic security, it is important to determine the normative or oriented values of indicators of the state of various components of the economic security system. Currently, there is no universal practice of assessing the level of economic security generally accepted and recognized by authorities in the field of security science, therefore the management of enterprises usually uses its own, fixed by the internal policy of the company, a set of indicators that characterize its financial condition, staff turnover and loyalty, the level of technical and technological equipment, security of information resources, strength of market position, etc. If there are traditionally normative and critical values for financial indicators, the comparison of the obtained data with which makes it possible to draw an objective conclusion about the level of financial and economic security of the economic entity, then for most of the coefficients that are offered at the scientific and methodological level for assessing the state intellectually and personnel, legal, informational, reputational, interface, market, technical and technological security – numerical benchmarks do not exist. The obtained values of the selected indicators are analyzed either dynamically, or compared with competitors' estimates, or compared with benchmarks proposed by experts based on their experience.

At the stage of development of measures of strategic management of economic security, a set of alternatives is formed regarding planning, organization, implementation and control of the functioning of the economic security system of the enterprise, institution, organization. It is important to predict what positive effect the use of this or that security-oriented management tool will have, and compare it with the costs necessary for its use and with the losses that the business entity will receive if it does not prevent or compensate for the manifestation and impact of a threat or risk.

Planning within the strategic management of economic security can be implemented in the form of a plan to ensure economic security for 1, 3 or 5 years. It was already mentioned above that, although under the traditional approach, enterprise management strategies have long time horizons, however, in the conditions of the wartime economy, under the influence of Industry 4.0 and in the realities of the BANI world, long-term planning, although it is possible to implement it in theory, however, it will be necessary in practice constantly changing and supplementing such plans to take into account environmental trends that are unpredictable during wartime. Plans for ensuring economic security must contain the desired (oriented) values of indicators of various functional components of the economic security system, as well as a set of measures that will contribute to their achievement. The best planning practice can be considered such a plan, which contains instructions on specific sources of funding for security-oriented measures, as well as a list of persons responsible for one or another vector of economic security management, a description of their powers, rights and obligations in the direction of risk management, countering threats, obtaining information from various departments and officials, necessary for making timely management decisions.

At the stage of monitoring and control of security-oriented measures, a comparison of the planned values of indicators of the state of economic security and real assessments received from experts takes place. In the case of negative deviations, it is important for the management staff to receive a professional comment on why such an event happened, what preceded it and what consequences for economic security in general and the financial and economic condition of the critical infrastructure enterprise in particular has or will have in the future the achieved value of this or that indicator.

Control also means establishing the responsibility of persons whose actions or inaction led to a decrease in the level of economic security or prevented its increase to the planned characteristics. The control results and the achieved level of security become the starting point for the formation of a new plan to ensure the economic security of the critical infrastructure object.

The strategic guidelines for ensuring the economic security of economic entities should be reflected in the general strategy of the economic security of Ukraine. The successful achievement of strategic guidelines for ensuring the economic security of enterprises, financial institutions, organizations, etc., will have numerous positive consequences both for the development of financial and commodity markets, and for the financial and economic security of the state in general [3, c.275].

The study of the processes of formation of the system of economic security of the economic entity and its strategic management has its own characteristics in the realities of BANI World and in the conditions of the economy of martial law. In particular, the approach in which the economic security system was built with a clear, unchanging structure, which usually had a fragmented nature and focused on the protection of the main business processes of the enterprise, should be replaced by a model of the security system, which will be characterized by the dynamism of the processes of performing security-oriented tasks and the ability to rapid transformations of own architecture under the influence of new challenges of time. Personnel play an important role in such a system, as their anxiety and uncertainty about the future become the source of a large number of additional risks. The maximum level of information transparency in matters of economic security management, of course, without losing due confidentiality, will make it possible to stabilize the situation in the collective and, with joint efforts, ensure the activities of the business structure in the changing realities of the BANI world.

Strategic management of the economic security of critical infrastructure enterprises should be aimed at achieving the general goal of their activities without excessive detailing of the measures that should be taken for this, but with the maximum frequency of reviewing strategic guidelines. It is not worth spending resources on planning and forecasting threats and risks, but it is advisable to focus on the development of scenarios for the reaction to the occurrence of events that may lead to a change in the strategic vision of the business entity [4, p.60-61].

In fig. 1 we have systematized management challenges for the strategic restoration of financial and economic security of critical infrastructure in conditions of war, BANI World, Industry 4.0 and digitalization.

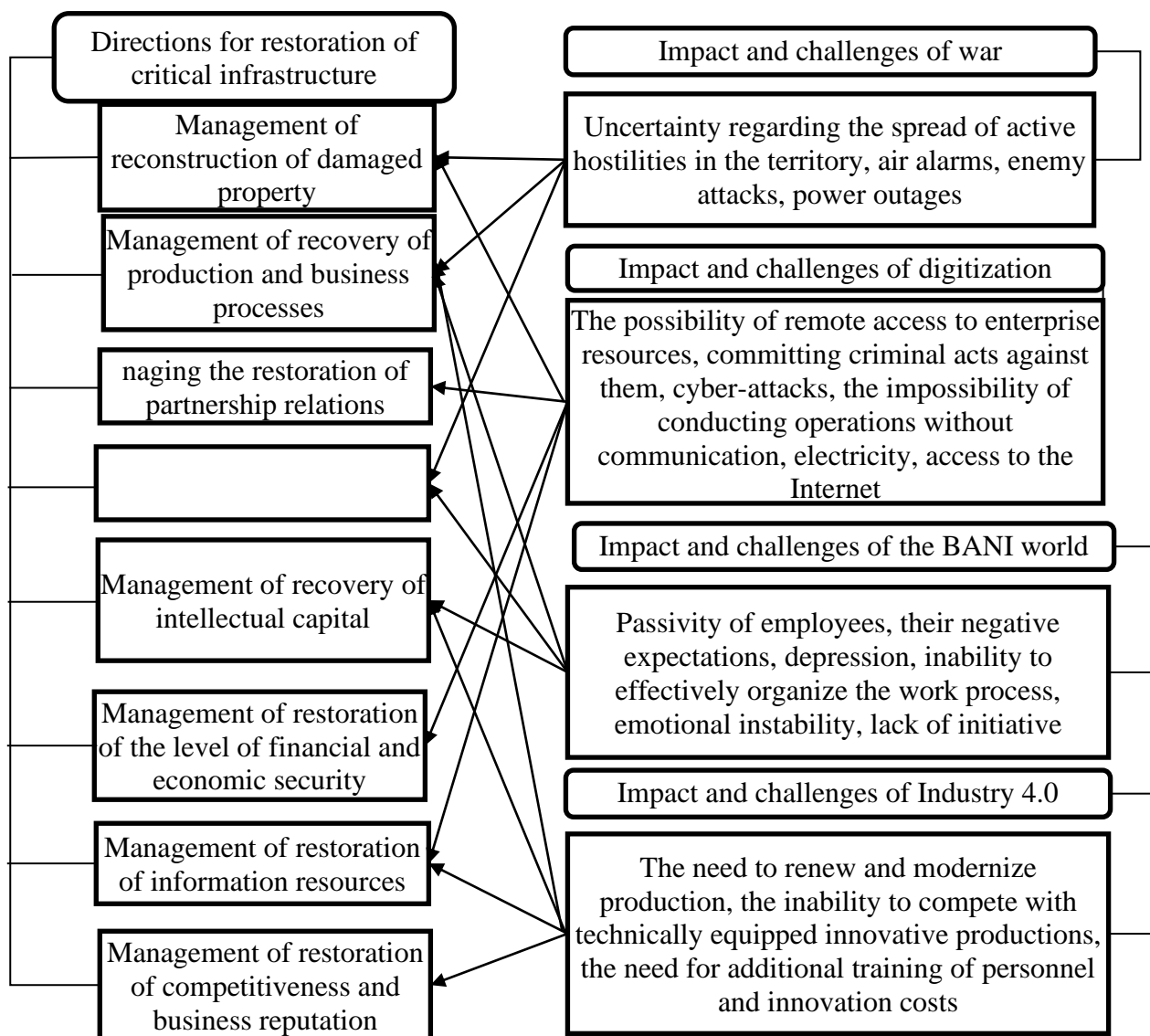
**Discussion.** The effectiveness of economic security strategies is influenced by many factors, some of which are objective, while others arise due to the subjective judgments of strategy developers. We can single out several managerial challenges for the strategic restoration of the financial and economic security of critical infrastructure, which have become especially tangible for the management of economic security after the start of a full-scale invasion in the winter of 2022.

The first problem is the impossibility of providing physical protection of assets and human resources after the start of an aggressive military offensive. However, it is hardly possible to advise anything here, or to assert the need to take certain measures by enterprise managers for the future. At the same time, duplicating all information resources and storing them in cloud storage in order to be able to restore them and access them from any corner of the world is no longer a recommendation or wish, but an urgent necessity for business structures and even for individuals.

The second problem is the violation of partnership relations, logistical procedures for the delivery of raw materials, materials, and finished products to consumers. Blocking of ports, detention of cargoes abroad due to excessive risks of their loss on the territory of Ukraine, and in the end the impossibility of receiving them by the final consumer due to violations of transport networks and infrastructure on the one hand once again emphasized the fact that only a small part of domestic business



entities is characterized by full production cycle, forms sufficient reserves necessary for continuous work, at least in the short term, and properly stores them, as well as calculates several alternative ways of transporting products to consumers in case of disruption of the main transport network.



**Figure 1. Management challenges for strategic restoration of financial and economic security of critical infrastructure**

*Source: developed by the author*

The third problem is the unpreparedness of enterprise personnel to deal with critical situations. Employees are not aware of where in enterprises they can be in moments of danger (if such places were equipped at all before the start of hostilities), how to behave in threatening conditions, which top management needs to give instructions to their subordinates, and those, in turn, how and with what to perform them. The global pandemic has partially fulfilled the task of transitioning business to work online, at least some business processes of critical infrastructure objects have already been transferred to the space of the digital economy. Certain categories of employees have learned to fully or partially perform their job duties remotely, and

this skill has come in handy for business entities that have found themselves in the occupied territories. Thus, the management of domestic enterprises should continue to make efforts to train personnel to work in extreme conditions, using the capabilities of information technologies for the implementation of professional tasks. In an environment where a company may cease to exist physically due to destruction or occupation, its existence in digital form can be chewed through the efforts of its managers and staff.

The fourth problem is the loss of strategic orientations and prospects for further development. Most of the strategies of domestic enterprises have lost their relevance due to military actions and need to be reviewed and adjusted. However, what adjustments can be made if the future is unknown? First of all, the activity of critical infrastructure facilities in Ukraine should focus on economic survival, refusal to stop work even in conditions of financial distress and lack of necessary resources. The functioning of each economic entity is important for the economy of the state, and critical infrastructure enterprises are of strategic importance. If possible, the management of business entities in the rear regions should reorient their activities to military demands or to the primary needs of citizens who remained in the country and continue to work in the rear. If the type of economic activity does not allow this, it is worth at least considering the possibility of increasing the number of jobs, charity, volunteer work. However, economic survival must remain an undeniable priority, and become the main strategic goal of the functioning of the economic security management mechanism of economic entities of various types of economic activity.

The fifth problem is legal and legislative restrictions. In particular, due to the termination of the registers, it became impossible to alienate property, various types of registration of assets or rights. The impossibility of certain categories of citizens to travel abroad in order to establish or continue business contacts in a number of cases destroys the image and business reputation of domestic businesses, making it problematic to continue working with foreign stakeholders. However, digitalization makes it possible to try to solve work issues using video and Internet communication. However, of course, the globalization of the economy and integration into European resource markets for domestic companies will be impossible without personal meetings of representatives of parties interested in cooperation.

Thus, at the beginning of 2022, domestic business entities faced unprecedented, unknown and, without exaggeration, dire challenges to the state of their economic security. And if the reactions to them are already understood and worked out, the process of functioning of Ukrainian business and, first of all, critical infrastructure objects in the realities of wartime must be adjusted in order to support the economic potential of the state.

The table 1 presents promising directions for using digitization opportunities to restore the state of financial and economic security of critical infrastructure objects.

**Table 1. Directions for using digitization opportunities to restore the state of financial and economic security of critical infrastructure objects**

| The plane of digitization         | Possibilities of use in business process management  | Impact on the enterprise   |
|-----------------------------------|--|--|
| Financial sector                  | Online financial settlements, no need for cash, receiving and providing financial services remotely  | No need to find and store cash, increase the speed and efficiency of calculations, expand access to sources of capital, various forms of financing, no need for physical presence to conduct financial transactions  |
| Information space                 | Available repositories for storing digital data, remote access to information sources, a large number of free digital information resources, online reference and analytical services                                | The possibility of using information from various alternative sources, its verification and updating; saving time searching for information; the possibility of saving data in different places, its automatic duplication in order to minimize the risk of irreversible loss  |
| Economic relations                | Digital registers of clients, partners with setting up notifications about the need to take certain actions; ordering the necessary raw materials, providing services online   | Provision of timely reminders about the need for calculations, purchases, stock replenishment, fulfillment of other obligations  |
| Educational environment           | Digital educational platforms for training and professional development, short-term online courses for quick and free acquisition of necessary competencies and skills, higher education in mixed and distance forms | Increasing personnel and intellectual potential without the need to find a replacement for persons studying; no additional costs for personnel training; actualization of skills and competencies in accordance with the needs of the enterprise   |
| Production processes              | Remote debugging, calibration of equipment, remote start-up of equipment, execution of production operations online  | Increasing the level of safety of employees due to the absence of the need for their personal stay at production; reduction of labor costs   |
| Administration and communications | Digital channels for interpersonal communication, transmission of orders, remote control of task performance, monitoring of business processes and production processes in online mode                               | The communication process is speeded up, the digital trail allows you to confirm the fact of issuing an order or its execution, the effectiveness of time management increases, the possibility of group communication is provided without the transmission of information through several people and the risk of its distortion or incorrect interpretation; prompt resolution of work issues |

Source: compiled by the author

Strategic management of economic security at both the micro and macro levels should take place taking into account the need for flexible transformation of vectors of security-oriented management in accordance with new risks and threats that will

continue to arise chaotically in the conditions of the wartime economy and in the process of post-war reconstruction of Ukraine.

**Conclusion.** Domestic managers need to solve a set of strategic tasks related to the low level of efficiency of approaches to managing the financial and economic security of business processes of enterprises in the critical infrastructure support system, which require revision in view of the strengthening of globalization processes, and is, among other things, the factor which caused the weakness of the domestic economic framework and does not allow Ukraine to achieve a high level of economic independence and social convergence with the EU countries.

War, BANI World, Industry 4.0 and digitalization are the modern factors and circumstances that provoke the emergence of new challenges to achieve a high level of economic security of critical infrastructure objects, its maintenance under the influence of new threats and risks, effective management of financial and economic security in the process of economic entities achieving their main strategic goals, purpose and mission of their existence. Therefore, at the level of management, it is necessary to develop a set of responses to predicted challenges, as well as to introduce a flexible management structure in order to be able to make timely management decisions regarding those factors of the external and internal environment of the functioning of critical infrastructure objects, the occurrence and effect of which couldn't be predicted.

**Acknowledgements.** This work is the result of the research supported by the named scholarship of the Verkhovna Rada of Ukraine for young scientists – Doctor of Sciences for 2023.

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# THE INFLUENCE OF INFORMATION TECHNOLOGIES ON THE PROFESSIONAL DEVELOPMENT OF THE RESEARCH AND TEACHING STAFF

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## Citation:

Kozakevych, A., Nykonchuk, V., & Pashkevych, S. (2023). THE INFLUENCE OF INFORMATION TECHNOLOGIES ON THE PROFESSIONAL DEVELOPMENT OF THE RESEARCH AND TEACHING STAFF. *Economics, Finance and Management Review*, (4), 94–107. <https://doi.org/10.36690/2674-5208-2023-4-94-107>

**Received: November 28, 2023**

**Approved: December 25, 2023**

**Published: December 30, 2023**



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**Abstract.** The article defines that the general processes of globalization, which have covered almost all spheres of human activity, stimulate the rapid development of an open information society. The modern educator is objectively forced to be more mobile, informed, critical and creative, and therefore more motivated to self-study and self-development. The purpose of the article is to study the prospects for the use of information technologies for the professional development of educators, the formation of the components of information technologies and the need for their use in improving educators' professional level, namely the use of modern information technologies in professional activities and self-education of teachers and the use of information technologies in the professional growth of the research and teaching staff. The research has proved that the effectiveness of the use of information technology in the professional development of educators depends on the success of solving problems of a methodological nature related to the information content and way of using automated learning systems. The article has examined the influence of the use of information technology on the nature of scientific and cognitive activities of educators, intensification of their independent work with various electronic devices. The research has shown that the use of information technologies is the most effective tool for developing skills and abilities necessary for professional development. The article has also determined the influence of information technologies on the fundamental character of knowledge, diverse and thorough study of the subject area, formation of knowledge necessary for a reasonable explanation of the cause and effect relationships of the studied processes and phenomena, and knowledge of the laws of nature. The research has defined that the direct application of information technologies in the field of education will allow educators to form communication skills and communication culture, will help and teach to search for information and process it using various computer technologies.

**Keywords:** professional development; research and teaching staff; information technologies.

**JEL Classification:** A 29, B 41, M 53

**Formulas:** 0; **fig.:** 1; **tabl. 0; bibl.:** 23

**Introduction.** The general processes of globalization, which have covered almost all areas of human activity (economics, culture, education, administration and many others), stimulate the rapid development of an open information society, which leads to changes in the structure and content of all social institutions and rapid development of education. The professional activities of educators intensively develop under the influence of new forms of education; there are changes in the legal framework and target requirements for teachers, which requires from the pedagogical community to use all available methods to improve their professional level.

At present, it is impossible to imagine the learning process without the use of innovative information technologies for educational purposes. Information and communication technologies are increasingly penetrating various areas of educational activities. The informatization of the society, the need to make changes in the training of educators, and dissemination of modern computer technologies and software in educational institutions facilitate this process.

With the help of informatization, the educational environment becomes informational and educational at the same time. The information model of learning includes supplying educational institutions with the necessary equipment, training teachers how to use it skillfully, creating the necessary electronic resources, using information and information-acting learning patterns, upgrading the methodological support of the educational process, improving information culture and information and communication competence of all participants of the education process.

The modern society, in which information is increasingly becoming a socially significant resource (together with material, energy, financial and other resources), needs highly qualified professionals who are fluent in information and communication technologies and use them effectively in their professional activities. In addition to professional and special knowledge, the work in the field of education requires advanced knowledge and skills of using information and communication technologies. To ensure the effective and efficient operation of universities, it is necessary to implement information technologies in the educational process, because the penetration of the Internet into all spheres of social life is a consequence of the rapid emergence and development of a global “information society”, which changes the usual way of life of people, forms and methods of study, work and communication. The Internet tools (its services) provide specialists with the opportunity to effectively organize the work, as well as to form electronic archives and databases in the interactive mode, to establish professional communications and joint projects with partners from different regions. The information technologies in the field of education is a kind of mechanism that ensures the whole process of effective and efficient work. After all, because of the information technologies, the educational process acquires a new meaning. It becomes more productive and more coordinated.

Today, there is a problem of effective provision of the educational sphere with information technologies. Some higher education institutions in Ukraine do not seek to update the learning process, and others do not have adequate funding. This, in turn, slows down and distorts the learning process. The most significant problem in the use

of information technologies in the education is the ignorance or inability of employees to use the latest technology at work. This, in turn, slows down the educational process and the work cycle of a university. The problem is even deeper when students know more than an educator, because young people are more progressive in the modern society, and some educators do not seek to develop. All this leads to misunderstandings and conflicts within the educational process.

Thus, there is a problem of professional self-improvement of educators in the rapid development of information technologies, which is due to the insufficient development of theory and practice of informatization of education in Ukraine and the contradictions between the society's requirements for high qualification and insufficient readiness of teachers to use information technologies. Therefore, specially organized professional self-development of educators on improving the ICT skills is one of the ways to increase their own rating of professional activity, which makes this self-development relevant and appropriate.

**Literature Review.** The analysis of the scientific research shows that the issues of informatization of education are among the current problems of pedagogical theory and practice and priority areas of professional education. In particular, the works of B. Gershunskyi, R. Gurevych, M. Zhaldak, Yu. Mashbyts, I. Robert and others determine directions and ways of informatization of education.

Theoretical principles and methodology of using information technologies in the educational process were characterized by N. Anisimova, N. Apatova, I. Zakharova, I. Ibrahimov, O. Meniailenko and others. O. Bashmakov, V. Hura and others proposed tools and methods for the development of educational software and information technologies. The psychological and pedagogical aspects of the use of information technologies were characterized by Yu. Zhuk, P. Obratsov, V. Marigodov, Z. Seidametova, A. Undorezova and others. The problems of using educational information technologies in higher education in modern Ukraine were studied by L. Gryzun, V. Krasnopol'skyi, G. Monastyrna, D. Taushan, S. Fedorova and others.

The works of V. Varenko, Yu. Yukhymenko, L. Filipova and others, which deal with the use of the latest information technologies in the training of specialists, are of special significance for the study of this problem. The works of O. Kyrylenko, G. Malyk, M. Tsyvin proposed a mechanism for using information monitoring in the system of training. The research pieces of Ya. Filipov, O. Kobelev, O. Sladkova, O. Chubukova investigated the application of Internet technologies in the education system.

However, despite the breadth and thoroughness of the scientific research, the analysis of the literature shows that the topic is relevant in modern education. Given the fact that the number of new technologies is growing every year, the problem of using information technology in the professional development of higher education teachers remains unresolved.

**Aims.** The purpose of the article is to study the prospects for the use of information technologies for the professional development of educators, the formation of the components of information technologies and the need for their use in



improving educators' professional level, namely the use of modern information technologies in professional activities and self-education of teachers and the use of information technologies in the professional growth of the research and teaching staff.

**Methodology.** Informatization of education in Ukraine is one of the priority reform areas. In a broad sense, it is a set of social and pedagogical transformations associated with the saturation of educational systems with information products, tools and technology. In a narrow sense, it is the introduction of information devices, as well as information products and pedagogical techniques based on microprocessor technology, in the educational institutions.

One of the most important components of the informatization of higher education institutions is the informatization of the educational process, which is the creation, implementation and development of computer-oriented educational environment based on information systems, networks, resources and technologies. Its main purpose is to prepare a specialist for life and work in the information society, a comprehensive restructuring of the pedagogical process, and improving of its quality and efficiency.

The informatization of higher education includes:

- prompt updating of educational information in connection with the development of science, technology, culture;
- obtaining information about the effectiveness of the pedagogical process, which will allow to quickly make the necessary adjustments.

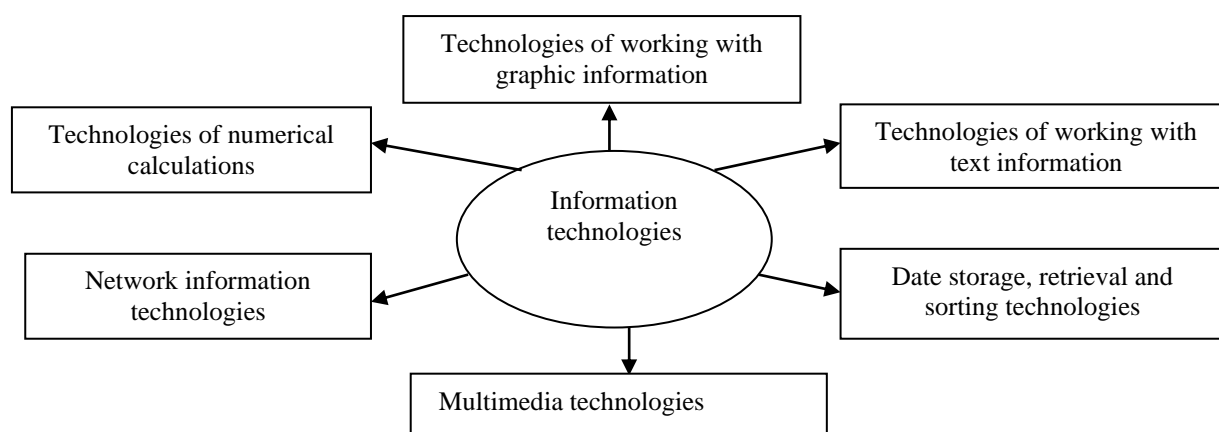
All this contributes to the improvement of the information culture of the research and teaching staff, development of creative potential; improvement of education management; increase in the efficiency of scientific research.

The informatization of education in Ukraine is one of the most important mechanisms that affects the main directions of educational system modernization. The modernization of pedagogical education puts forward new requirements for the professional activity of educators, which are the use of new pedagogical and socio-pedagogical techniques, the use of educational materials in the electronic form, the formation of new guidelines for educational standards, etc. Modern information technologies, which open new perspectives for improving the efficiency of the educational process, play an important role in this process.

Information technologies are technologies that provide and support information processes, i.e. the processes of search, collection, transmission, storage, accumulation, duplication of information and procedures for accessing it [6]. Information technologies promote interaction between people in all areas of their activities, in education in particular. The advantages of information technologies include:

- individual pace of study, convenient time and place, saving time for commuting, independent planning of time, schedule, and even of a list of subjects;
- a possibility to create an individual learning trajectory, choice of educational resources, possibility of multiple return to the content, bank of electronic lessons, useful links;

- learning with a variety of equipment (tablet, laptop, mobile phone), the availability of scanned textbooks, electronic manuals;
- development of electronic educational resources under the control of scientists;
- flexible time and forms of consultation;
- a possibility of automated control, evaluation, and diagnostics of the received knowledge;
- development of skills of independent work, involvement of all interested persons, transparency in education;
- use of leading educational technologies, experience in free international projects and programs, the opportunity to unite with students and teachers from different parts of Ukraine and the world (international projects, conferences);
- acquiring new skills of working with information, constant growth of ICT competence in the society, development of ICT and distance learning technologies;
- a possibility of using during a quarantine, sick leave, etc.;
- effective coordination of the activities of all members of the educational process and prompt dissemination of various messages;
- educational possibilities for people with different physical and mental abilities, with disabilities, different property and social status [9].



**Figure 1. Classification of information technologies**

However, to take advantage of the opportunities provided by the open information society, it is necessary to become a member of the information network, to have the appropriate infrastructure and modern means of communication. Network users should be aware of this area, which is new to most non-professionals.

The introduction of new information technologies in the educational process is an objective process of education development, which is accompanied by an increase in the volume of independent work of the research and teaching staff. The modern teacher is objectively forced to be more mobile, informed, critical and creative, and therefore, more motivated to self-study and self-development.

With the use of information technologies, the possibilities of organizing independent work of educators expand. Independent work with printed research and

educational literature remains an important part of independent work in general, but the basis of this work is now independent work with information databases.

The efficiency of the use of information technologies in the professional growth of the research and teaching staff depends on the success of solving problems of a methodological nature related to the information content, which affects the nature of their educational and cognitive activities and enhances independent work with various electronic teaching aids. The use of information technologies is the most effective tool for developing skills and abilities required for professional training. It also causes a reduction in volume and at the same time complicates the activities of an educator.

The informatization of professional growth greatly contributes to solving the problems of its humanization, because it provides opportunities for significant intensifying of communication, taking into account individual inclinations and abilities, revealing the creative potential of educators, freeing an educator from the need to perform routine technical operations, providing them with different opportunities to solve cognitive and creative problems. The use of various means of information technologies can significantly increase the effectiveness of information due to its timeliness, usefulness, appropriate dosage and availability.

Information technologies play an important role for fundamental knowledge, diverse and thorough study of the subject area, formation of knowledge necessary for a reasonable explanation of the cause and effect relationships of the studied processes and phenomena, and knowledge of the laws of nature

The direct use of information technologies in the professional development of the research and teaching staff is associated with the development of new educational programs, use of the Internet technologies, creation of electronic libraries, reference and information systems, management systems in education, automation and information support of educational documents, use of specialized databases and knowledge, and distance learning.

Information technologies have many advantages because they do not have any geographical or political boundaries. Moreover, they are mass and at the same time individual; that is, everyone acquires the necessary knowledge at own rate. These technologies have a purely motivational basis, i.e. they are effective for people interested in acquiring knowledge as a “commodity” in order to further implement it in a professional career [10].

The use of appropriate technical information tools makes it possible to combine and coordinate all the elements of the professional development of an educator. The accumulated experience of using network resources in various fields of education has shown that this type of information technologies allows effective organizing of joint research projects within one or more universities, research and training centers in both a particular region and different countries. This approach ensures a real research, creative, practical, independent activity of educators using a variety of tools and forms of independent, cognitive and practical creative work. This approach also makes it possible to provide prompt counseling during advanced teacher training. It allows quick sharing of information, ideas, plans on issues and topics of interest,

broadening horizons and raising the general cultural level. Information technologies allow developing among teachers communicative skills, culture of communication, involving in the process of joint search, discussions and comparison of various opinions; help and teach information retrieval and processing with the help of various computer technologies.

The experimental research on this issue was conducted in accordance with the legal framework of Ukraine, which defines the basic principles of organization and use of information technologies in the professional development of educators and requirements for higher education and postgraduate education, research institutions, which give educational services for training and retraining specialists.

The purpose of the research was to develop and implement methodological approaches and materials for the development of skills of information and media literacy among the research and teaching staff of educational institutions.

To achieve this goal, the research used the following methods: questionnaires to identify the readiness of educators for professional self-improvement; observation of the participation of the research and teaching staff in multilevel trainings; selective interviews on the methodological support and introduction of information and media literacy in the educational process; analysis of the research results and prognosis of further study of the problem. The research is based on the integrative approach in education, because in the process of exchanging pedagogical experience, there was an effective professional self-improvement and development pedagogical cooperation skills.

The results of long-term and selective observations gave grounds to claim the lack of the use of the ICT system in the organization of professional development of educators. According to the analysis of the questionnaire results, educators have an insufficient level of readiness for professional self-improvement. Thus, the indicators with the minimal value are “professional and informational communication with students by means of the “Forum” element” – 3%, “creation of a thematic “Forum” for conducting an online seminar” – 3%. The best indicators are “conducting individual and group consultations by means of the “Chat” element – 15%, “archiving and accounting of learning outcomes (tasks for independent work, calculations, tests, course projects)” – 11%. This is due to the fact that educators chat in social networks. Some teachers also download and save reports on student learning outcomes in Moodle. However, in general, this is a small number of enthusiastic teachers.

There are several reasons for this: teachers do not have experience in using network communication tools for consultations and training sessions and do not consider it appropriate to use the elements of games to control the educational and cognitive activities of students; there is no proper systematic technical support of equipment and provision of its components; low level of technical competence of teachers; the lack of a training system for educators on the use of ICT in the educational process and, accordingly, the fear of teachers to use it.

Another method used in this research is the observation of the participation of the research and teaching staff in multi-level training using ICT. The results of the

observations made it possible to state that only some seminars and master classes deal with this issue.

Conducting sample interviews with teachers on methodological support and implementation of information and media literacy in the educational process contributed to the development of info-media literacy and its introduction into the educational process at all stages of training of future and already operating educators. The course of the research provided support and training of the teaching staff of higher educational institutions of the pedagogical sphere. It involved conducting educational classes, seminars and trainings on info-media literacy for 40 research and teaching fellows. The research participants underwent an internal assessment of their ability to expand job capacity opportunities. This helped to develop a special program of cooperation and identify the need for additional support and training of the research and teaching staff.

The results of the experimental stage of the research prove that the research and teaching staff are familiar with modern ICT, partially use them, but need methodological assistance and technical support for the use of ICT in their professional activities.

**Results.** The formation of professional competence of an educator occurs in the following logical sequence. The first stage focuses on the formation of the key competence in the context of future professional activity. The second stage of training focuses on professional tasks and ways to solve them, which develops the basic competence. The third stage is the level of formation of special competence. Basic competence should reflect a modern understanding of the main tasks of professional activity, as well as key ways to solve them. Special competence involves the development of basic and key competence according to the specifics of professional pedagogical activity.

The key competence includes an information competence, which is the universal ability to work with different sources of information and ensure professional and social mobility. The preservation of universal skills, which are part of information competence, varies according to human characteristics and depends on the circular validity of vital tasks. The improvement of this competence is associated, first, with the expansion of sources of information, and second, with the expansion of skills in their use. The information competence of an educator is characterized by the ability to search, analyze and use information for building a professional career. In this case, a career is understood not only as a career advancement, but also as a process of the realization of person's abilities at work.

The information competence allows implementing effective information exchange, which is provided by the formation of a number of information skills:

- assessment of the usefulness and truthfulness of the obtained information;
- selection of personally important information, search for necessary information;
- communication and language skills;
- information and psychological self-defense.

The information competence presupposes that a person uses universal means of informatization and information technology in solving tasks to achieve the goals of own activities. However, an educator uses the means of informatization and information technology in professional activities only based on universal skills. The ability to use informatization tools and information technologies is manifested in all pedagogical abilities. This means that for the solution of professional pedagogical tasks an educator needs to involve these tools and technologies based on the basic and special competence. Therefore, the preparation of teachers for the use of informatization and information technologies in professional activities cannot be carried out only for the formation of the key information competence. It should be connected with the formation of basic and special competence.

The formation of professional competence takes place in three stages. Therefore, the preparation for the use of informatization and information technology should also take place in three stages, in accordance with the logic of the formation of key, basic and special competence. At each stage of training, an educator develops the ability to use information tools and information technologies, which relate to the operational, tactical and strategic level of regulation of pedagogical activities. With this in mind, we have identified the criteria for the development of abilities.

At the stage related to the formation of key competence and operational level of regulation of professional activity, an educator: has an idea about the informatization of education; is familiar with the principles of building algorithms and with basic structures of algorithms; is able to use universal software tools for technology implementation; is able to create text and graphic documents, simple information systems; is able to model simple objects, processes, systems with the help of spreadsheets; is able to use information languages to generate queries to databases and create reports; understands the essence and meaning of pedagogical information; has an idea of the impact of computer science on pedagogy and psychology; is familiar with the use of computers as a pedagogical technical tool; has an idea of the nature of pedagogical activities in terms of the use of informatization and information technology; is able to use software for inter-computer communication; is able to search and receive pedagogical information from electronic resources; understands the importance of information competence for successful professional pedagogical activity.

At the stage associated with the formation of basic competence and tactical level of regulation of professional activity, an educator: knows new pedagogical technologies, their features within the application of informatization and information technology; knows the general ways of constructing the goals, content, methods and forms of pedagogical process in the conditions of informatization of education; knows and is able to use in training technical means and information and civil technologies; is able to create an automated teacher's workplace; is able to analyze and synthesize audiovisual educational information, upload it into the computer; is able to develop and apply electronic didactic and pedagogical software; is able to use professionally oriented software tools for technology implementation; is able to form

a system of teaching aids; is able to use informatization tools and information technologies in management and psychological and pedagogical research.

At the stage of the formation of special competence and strategic level of regulation of professional activity, an educator: knows how to pre-prepare pedagogical information using informatization tools; understands the essence of information modeling in professional activities; is able to choose and form the goals of pedagogical activity in the conditions of informatization of education; is able to plan and implement pedagogical tasks; is able to organize, systematize and structure pedagogical data and knowledge, using the means of informatization; is able to construct information models of pedagogical objects, phenomena, systems; can analyze information models of pedagogical systems and interpret the obtained results; is able to predict the use of informatization tools and information technologies in pedagogical activity; is ready to master new means of informatization and information technologies, designing their application in pedagogical activity.

Thus, the preparation of teachers for the use of informatization and information technologies allows the formation of the key, basic and special professional competence. Professional competence is manifested in the ability of an educator to fulfill organizational, constructive and communicative tasks of pedagogical activity. The development of pedagogical abilities consistently brings an educator to the operational, tactical and strategic levels of regulation of professional activity. Abilities to use informatization tools and information technologies in solving problems of professional activity should also be manifested at different levels of regulation, and their development should take place in accordance with the logic of competence formation.

At the stage of the experiment, our tasks were to develop and introduce into the educational process of professional development of the research and teaching staff of educational institutions the use of information and communication technologies; development of thematic courses in order to increase the methodological and practical levels of professional competence of teachers to the practical application of methods and techniques of media education and information literacy in the educational process.

The result of the research has become a developed and introduced into the educational process of training thematic course “Media education and information media literacy”, which takes into account the specifics of professional activity and development of teachers in educational institutions in the conditions of reform and society’s demand for improving the quality of educational services, main directions of state policy in the field of education, educational standards, requirements for the competence of educators.

More than 200 representatives of the research and teaching staff took part in the thematic course. The implementation of the thematic course “Media education and information media literacy” provided the following results of professional development: knowledge of the main aspects of the implementation of technologies of media education and information media literacy; awareness of strategies for the formation of skills of information literacy among students; gaining skills in designing

a modern lesson and integrating elements of media literacy into the educational process; ability to operate with information critically evaluating it; knowledge of methods and techniques of teamwork, decision making, developing a reasoned position.

In addition, the research allowed developing thematic courses “The use of information and communication and digital technologies in the educational process (basic level)” and “The use of information and communication and digital technologies in the educational process (advanced level)”.

The purpose of these thematic courses was to form among teachers basic and advanced knowledge, skills and abilities in ICT and information culture; effective use of modern information and communication technologies in professional activities, introduction of modern electronic educational materials into the educational process and organization of effective access to them on the Internet.

The implementation of the set purpose provided the research and teaching staff with: understanding of a technique of construction of the educational process with the use of modern information and communication technologies; knowledge of methods and techniques of teamwork and joint networking of participants in the educational process; ability to use online tools for creating educational materials on the subject and other documents; ability to model a personal information environment; ability to develop skills of safe work on the Internet and use of network means of data exchange. More than 350 research and teaching staff representatives took part in the thematic courses.

The courses included interactive lectures, thematic discussions, practical classes (seminars, workshops, trainings, master classes, etc.), and testing (organizational and instructional lesson, conference on exchange of experience). The volume of each thematic course was 30 academic hours (1 ECTS credit).

The knowledge gained during the advanced training helped the research and teaching staff to use in their activities methods and strategies for organizing the educational process focused on the successful solution of various life problems and situations.

During the conversation with the participants of the seminars, it was found that the proposed ICT tools are not new for teachers and they constantly use them in professional activities and in everyday life. However, most of them had difficulties working with them, and not all of them understood the possibilities of their use in educational process. Based on the materials of these master classes, 50 exercises for the development of information literacy skills, sets of materials for mixed learning, sets of educational games “365° on the scale of media literacy”, and cases of educational materials were prepared.

**Discussion.** The methods of active learning with the use of information network technologies increase the interest of educators in acquiring new knowledge and their practical application, promote the search for their own approaches to solving non-standard problems, development of intellectual and creative abilities, teach to navigate in the information space, and contribute to information culture in general.



The positive experience in the use of information technologies in designing and educational activities proves the feasibility of its use in improving the pedagogical skills of the research and teaching staff, promotes the acquisition of new knowledge, skills and abilities, helps in further professional activities, and promotes continuity of education. The rapid development of information technologies and the possibility of remote access to information resources for educational purposes characterizes the new generation educational environment, which will be free, mobile, diverse and accessible for use by all participants of the educational process.

The use of modern information technologies provides all members of the society with equal opportunities to receive educational services regardless of place of residence, time, and social status, which provides equal access to new knowledge. The formula “from education for the whole life – to lifelong education” as a general cultural necessity of modernity is becoming more and more relevant. This direction of education reform determines the development of teaching techniques and management, as there is an update of the content of education and the content of the activities of all subjects of the educational process.

Therefore, the requirements of the modern life and the development of the information society in Ukraine dictate their rules, which must be taken into account in order to effectively use the means of information technologies in the modern educational environment in general and in improving the skills of educators in particular.

However, the analysis of the results of the survey, which had to identify the readiness of teachers for professional self-improvement, showed an insufficient level of formation of this readiness. To this end, within the system of postgraduate teacher training, we have developed interdisciplinary courses “Media education and information media literacy”, “The use of information and communication and digital technologies in the educational process (basic level)” and “The use of information and communication and digital technologies in the educational process (advanced level)”.

On the other hand, the analysis of the survey also showed positive results in the formation of educators’ readiness for professional self-improvement (distance learning courses, automated tests, game complexes, multimedia glossary). The research shows that the readiness for professional self-improvement of teachers can be increased if higher education institutions develop and implement appropriate educational and methodological support.

**Conclusions.** The formation of a proper information and educational environment requires:

- creation of subject-oriented learning and information environments that will allow the use of multimedia, electronic textbooks, etc.;
- mastering the use of communication means (computer network, telephone, television, satellite communication for information exchange);
- learning the rules and skills of navigation in the information space by all participants in the educational process;

- retraining of educators at permanent courses on studying and use of information and network technologies in the educational and pedagogical process;
- active development of distance education, support systems for training people with special needs;
- creation of centers of information and scientific-methodological support of the use of information-network technologies in the educational process;
- creation of websites of educational institutions for the organization of a system of support for collective and individual communication, group interaction of participants in the educational process, in particular the creation of educational environments for collective interaction and online communication tools in teaching subjects;
- creation of modern electronic learning materials and organization of effective access to them via the Internet (open educational resources, textbooks and courses, thematic digital archives of information and methodological resources on educational subjects).

The conducted research does not cover all aspects of the problem under study. The study of the role and practical significance of information technologies in the conditions of a foreign language environment and taking into account the specifics of the subject preparation of educators for distance learning need further research.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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# EFFECTIVENESS OF INFORMATION SUPPORT FOR MANAGERIAL COLLABORATION AMONG HOSPITALITY INDUSTRY ENTERPRISES

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## Citation:

Zhyvko, Z., Rodchenko, S., & Holovach, T. (2023). EFFECTIVENESS OF INFORMATION SUPPORT FOR MANAGERIAL COLLABORATION AMONG HOSPITALITY INDUSTRY ENTERPRISES. *Economics, Finance and Management Review*, (4), 108–123. <https://doi.org/10.36690/2674-5208-2023-4-108-123>

Received: October 18, 2023

Approved: December 25, 2023

Published: December 30, 2023



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**Abstract.** The management accounting tools that are used in management activities and the main factors that are necessary for successful management accounting are analyzed. The goal we set in preparation of our article, is to reveal the main aspects of the organization of the effectiveness of the management accounting system as a source of information support for the process of management decision-making, the identification of problems that arise in the process of formation and functioning of this system, and the advantages it provides to the hotel business enterprise. The main requirements for information in the management accounting system and their influence on the definition of the concept of "management accounting" are outlined. It was found that the definitions presented in Table 1 have in common that the main task of management accounting is to provide unbiased information necessary for making management decisions by the relevant management units of the enterprise. The content of management accounting and methods of its implementation are presented schematically. The organization of information support of the hotel business is considered in the example of hotel "A" and the information equipment of hotel "A" is studied, in particular 14 personal computers that are combined into one network. The efficiency indicators of the information service of the hotel business are analyzed and it is determined that the highest consumer satisfaction with information support corresponds to the service providing telecommunication services, security service, and engineering service, and in turn, indexing the degree of consumer satisfaction with the information base will allow formalizing the organizational work of the hotel based on needs and expectations, and this will make it possible to select strategic alternatives to improve the quality of the hotel enterprise. The effectiveness of information support of managerial collaboration among hospitality industry enterprises has been analyzed, measures have been developed to intensify the management activities of Hotel "A" based on the use of information systems and technology. It was proved that they are effective and can be implemented in the activities of the hotel business.

**Keywords:** management accounting; hospitality industry; management information; information support; effectiveness of the management accounting system; management decision-making; information support system; managerial collaboration; housekeeping; security service.

**JEL Classification:** M 11, L 83

**Formulas:** 0; **fig.:** 3; **tabl.** 3; **bibl.:** 28

**Introduction.** Management accounting has long ceased to be something new for both scientists and practitioners. Its main tools are used daily in their activities by heads of enterprises and individual structural units' managers.

The need for management accounting at domestic enterprises is determined by the following facts:

- 1) the presence of different forms of ownership, which leads to the emergence of different groups and levels of management information users;
- 2) intensifying competition in the domestic and foreign sales markets of domestic products, which requires timely information about their market conditions;
- 3) the integration of the Ukrainian economy into the world economy, which inevitably leads to a reorientation of both practice and theory of accounting knowledge.

The management accounting system is based on an information system that uses input information and relevant processes to obtain results that meet precisely defined management goals.

Information base is used by all management functions, including planning, control, and evaluation functions to make management decisions.

**Literature Review.** The effectiveness of information support for managerial collaboration in the hospitality industry has gained increasing attention in recent years.

Scholars (Lee et al., 2021) discuss the integration of digital technologies, such as cloud-based platforms and collaborative tools, to enhance managerial collaboration in the hospitality industry. The study explores how these technologies influence communication and decision-making processes.

An examination of supply chain collaboration in the hospitality sector reveals the significance of information sharing. Johnson and Smith (2022) analyze how effective information sharing contributes to collaborative decision-making and supply chain optimization.

The impact of social media on collaborative marketing strategies is explored by Chen and Wang (2020). The study investigates how information disseminated through social platforms contributes to collaborative marketing efforts among hospitality enterprises.

Utilizing big data analytics for operational collaboration is the focus of research by Kim and Chang (2023). The study evaluates the effectiveness of leveraging large datasets to optimize operational processes and decision-making in the hospitality sector.

The potential risks and concerns related to information security in collaborative environments are discussed by Wang and Li (2021). The study emphasizes the need for robust cybersecurity measures to facilitate secure information sharing among hospitality enterprises.

Exploring the role of employee training in enhancing collaborative performance, Smith et al. (2022) investigate how well-informed and trained staff contribute to effective collaboration within hospitality enterprises.

Cross-cultural collaboration challenges in multinational hospitality enterprises are addressed by Garcia and Kim (2020). The study examines how cultural differences impact the flow of information and collaborative efforts in a globalized hospitality industry.

Investigating the link between strategic alliances and collaborative innovation, Wang et al. (2021) examine how information exchange within strategic partnerships contributes to innovation within the hospitality sector.

This literature review provides a comprehensive overview of the effectiveness of information support for managerial collaboration among hospitality industry enterprises, covering themes such as digital technologies, supply chain collaboration, social media, big data analytics, information security, employee training, cross-cultural challenges, e-learning platforms, strategic alliances, and sustainable practices. The referenced articles contribute valuable insights to the evolving landscape of collaborative management in the hospitality sector.

Special attention should be paid to the fact that the management accounting system goes beyond accounting and includes elements of planning, control, analysis, and evaluation. It is this fact that caused some disagreements in determining its essence and meaning, principles, and functions among leading domestic and foreign scientists.

**Aims.** The purpose of the article is to reveal the main aspects of organizing the effectiveness of the management accounting system as a source of information support for making management decisions, to highlight the problems that arise in the process of forming and functioning of this system, and the advantages it provides to the hotel business enterprise.

The object of this research is the process of development, implementation, and improvement of management accounting at a hotel enterprise.

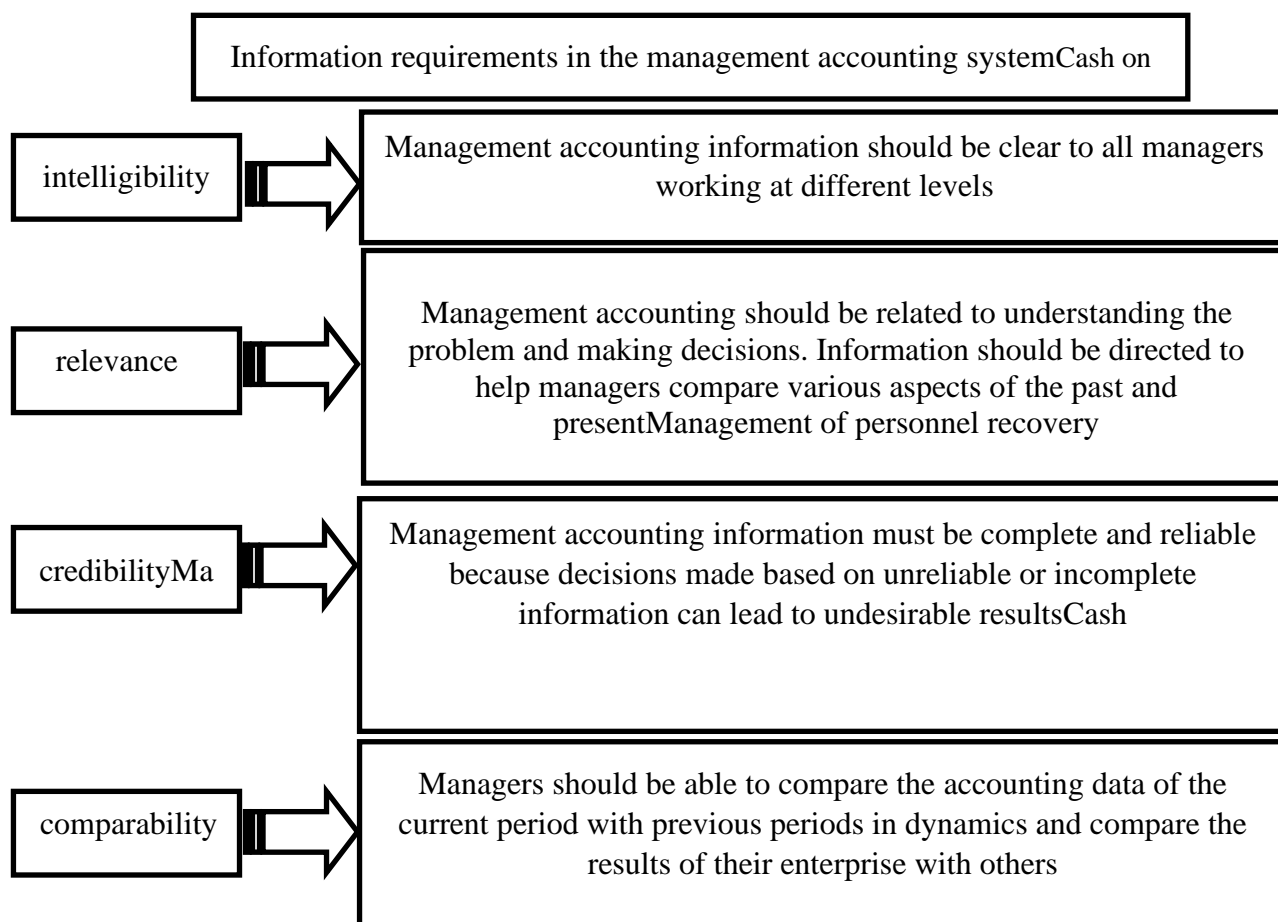
The subject of the study is the theoretical and methodological principles and practical aspects of the organization of effective management accounting in the management system at hospitality industry enterprises.

**Methodology.** The theoretical and methodological basis of the research are the fundamental provisions of economic theory and scientific works of domestic and foreign scientists who were engaged in management accounting at enterprises in the hotel business.

**Results.** Management accounting, like any accounting that is part of a complex accounting system of a business entity, is intended to provide certain information. The requirements that such information must satisfy are illustrated in Fig. 1.

Management accounting information created and prepared for use by management within the enterprise is subject to other requirements that differ from information intended for external users.

The list of such requirements affects the definition of the concept of “management accounting”. Some definitions of management accounting are given in Table 1.



**Figure 1. Information requirements in the management accounting system**

*Source: systematized by the authors*

In Ukraine, the essence of management accounting is legally defined by the Law of Ukraine “On Accounting and Financial Reporting in Ukraine” dated 16.07.1999 No. 996-XIV: internal (management) accounting is a system of processing and preparing information about the enterprise's activities for internal users in the process of managing its activities [9].

As can be seen from the above, there are many different systems of information and analytical support for management decision-making. The choice of a specific system depends on the needs and goals of the enterprise, its size and branch affiliation, the availability of resources, and competencies for its implementation and operation. However, in any case, such a system must be reliable, secure, available, flexible, and scalable. Furthermore, it should provide unbiased information necessary for making management decisions based on facts [10; 11].

Providing unbiased information necessary for management decisions is an important function of information and analytical systems.

These systems provide collection, processing, storage, and analysis of data related to various aspects of the company's activities and provide useful information for managers at different management levels.

**Table 1. Definitions of management accounting given in the works of domestic and foreign scientists**

| N | Definition  | Author, source of information  |
|---|---|--|
| 1 | Management accounting is understood as the process of identifying, measuring, accumulating, analysing, preparing, interpreting, and transmitting information that is used by the management unit for planning, evaluation, and control within the enterprise.   | Butynets F.F.<br>[1, p. 229]   |
| 2 | Management accounting is the process of identifying, measuring, accumulating, analysing, preparing, interpreting, and communicating information used by management to plan, evaluate, and control within an organization and to ensure appropriate, accountable use of resources.   | Holov S.F., Yefimenko V.I.<br>[2, p. 246]                              |
| 3 | An economic system related to the preparation and provision of an information management system during implementation investment, operational and financial activities, which allows to develop and comprehensively adopt the most effective operational, tactical, and strategic decisions at various levels of enterprise management is called management accounting.   | Napadovska L.V.<br>[3, p. 95]  |
| 4 | Management accounting is a subsystem of control, built on the principles of accounting, but taking into account the specifics of a particular enterprise, the main task of which is to provide the management apparatus of the enterprise with relevant, timely, and complete information that serves to make management decisions, is used during planning, control, and analysis of the financial and economic processes of the enterprise.                 | Pankov V.A.,<br>Yeletskih S.Ya.,<br>Mykhailychenko N.M.<br>[4, p. 312] |
| 5 | Management accounting is the provision of information to individuals in the organization itself, based on which they make more informed decisions and increase the efficiency and productivity of current operations.   | Pisarenko T.M., Bukalo N.A. [5, p. 137]                                |
| 6 | Management accounting is an independent subsystem of accounting with its subject, method, and tasks, which is closely related to the management system and is aimed at reducing production costs and increasing company profits.  | Pushkar M.S.<br>[6, p. 124]  |
| 7 | Management accounting is a branch of knowledge and a field of activity related to the formation and use of economic information for management within a business entity   | Sadovska I.B. [7, p. 259]  |
| 8 | Internal economic accounting (the so-called managerial accounting, production controlling) is not independent accounting. This is a continuation, or more precisely, a further deepening, detailing of the data of accounting and financial accounting in terms of expenses and income of activities, when all the effectiveness of the acquisition of resources, their processing, technological and organizational solutions, motivation, etc. is revealed. | V. V. Sopko<br>[8, c. 483]   |

*Source: systematized by the authors*

Information and analytical systems can have different structures, functionality, and purpose, depending on the specifics of the enterprise and its goals. Some of the most common types of such systems are:

- Enterprise Resource Planning (ERP) systems are comprehensive software that integrates all major business processes of an enterprise, such as finance, logistics, production, procurement, sales, and customer service. ERP allows one to automate and optimize the work of the enterprise, improve control and coordination between departments and functions, reduce costs and errors, and improve the quality of products and services. ERP also provides managers with access to up-to-date and reliable information about the state of the enterprise and its resources, which



facilitates the adoption of effective management decisions. Examples of ERP systems are SAP, Oracle, Microsoft Dynamics, etc.

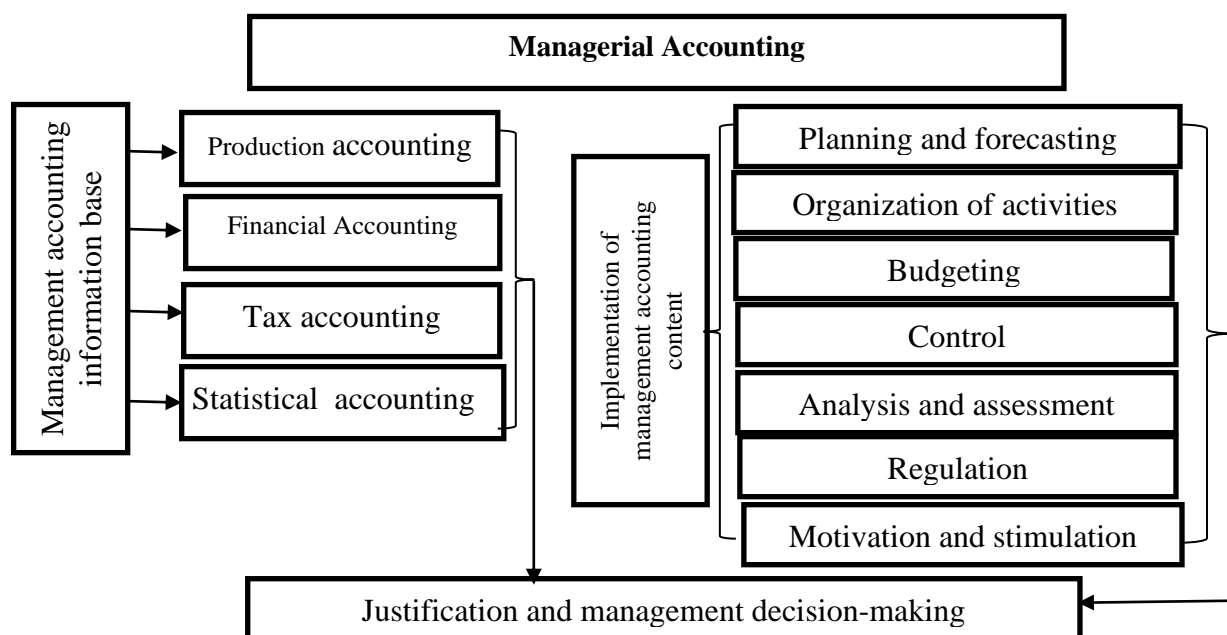
- Decision support systems (DSS) are interactive computer systems that help managers solve complex and unstructured problems. DSS combine data from internal and external sources, analytical models and methods, intuitive and graphic user interface. DSS allow managers to analyze situation, and simulation scenarios, evaluate alternatives, and predict consequences. DSS also facilitate communication and cooperation between participants in the decision-making process. Examples of DSS are Excel Solver, Tableau, Power BI, etc.

- Business analytics (BA) systems are a collection methods and tools that allow obtaining, processing, analysing, and visualizing large volumes of data generated by the enterprise and its environment. BA is used to identify regularities, trends, anomalies, dependencies, and cause-and-effect connections in the data. BA helps managers get value insights that improve understanding situation, identification of opportunities and risks, and promotion of productivity and competitiveness. BA also promotes automation and optimization of business processes and adaptation to changes in market conditions. Examples of BA systems are IBM Cognos, SAS, QlikView, etc.

- Artificial intelligence (AI) systems are computer systems capable of imitating human abilities, such as learning, thinking, perception, language, creativity, etc. AI uses advanced algorithms and models such as machine learning, neural networks, expert systems, natural language processing, computer vision, etc. AI allows enterprises to solve complex and innovative tasks, improve the quality and speed of decision-making, and increase productivity and innovation. AI also helps to personalize and improve interactions with customers and partners. Examples of AI systems are Google Assistant, Siri, Alexa, Cortana, etc.

Common to these statements is that the main task of management accounting is to provide unbiased information necessary for making management decisions by the relevant management units of the enterprise. The content of management accounting is revealed in Fig. 2.

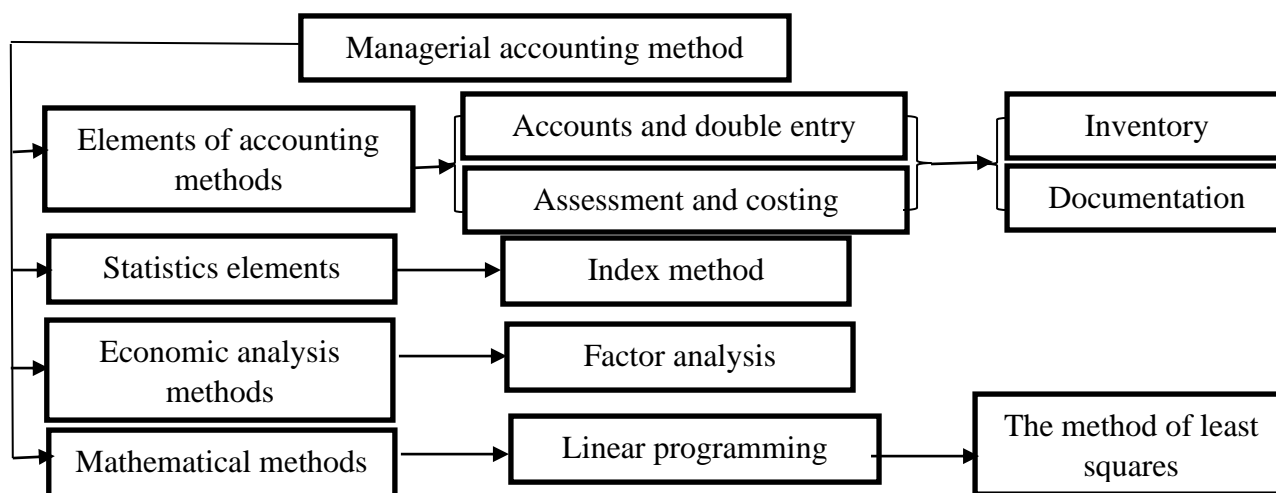
Sometimes the concepts of management accounting and controlling are equated. This is not quite so. There are many common features between them, but there are also differences. Management accounting and controlling are different but related concepts. Management accounting is the process of providing the company's management with information that helps in planning, evaluating, and controlling the organization's activities. Controlling is a management function that analyzes, monitors, and corrects the implementation of the company's strategic and tactical goals. Controlling uses data from management accounting but also includes other aspects such as market analysis, forecasting, risk management, etc. Controllers not only control the implementation of plans but also participate in their formation and adjustment.



**Figure 2. Implementation scheme of management accounting content [5]**

Source: systematized by the authors

Thus, it can be said that it is managerial accounting is the information basis of controlling, and control is one of its functions. That is, management accounting is an integrated system of various economic disciplines, and the method of management accounting contains (Fig. 3):



**Figure 3. Managerial accounting method**

Source: systematized by the authors

Considering the fact that managerial accounting in the narrow sense is a component of the entire accounting system and is related to financial accounting, it must comply with uniform accounting principles, in particular: continuity of enterprise activity; a single monetary unit; completeness and analyticity of information; periodicity, etc.

The main goals of managerial accounting are to provide information that helps the management of the enterprise in achieving the strategic goal, planning, control, evaluation, and optimization of the organization's activities. Managerial accounting information can relate to such aspects as the cost of products (works, services), expenses of structural units and the enterprise as a whole, results of economic activity in various directions, elements of internal pricing, forecasts for the future, settlements with counterparties, etc. Managerial accounting information is formed and provided taking into account the needs of managers of a particular enterprise and is not limited by any standards or rules.

The means of communication at the current stage of the development of society play a significant role in ensuring effective management in the field of hospitality industry. Thanks to communications, hotels can attract the attention of potential customers, improve the quality of service, maintain contact with existing guests, and form a positive image and competitive advantages. Among the modern means of communication for hotels, the following can be distinguished:

- Online booking and web platforms that allow users to quickly and conveniently book a room via the Internet. This contributes to the increase in sales and ensures the availability of services 24/7 [12].
- SEO for hotels helps to improve the visibility of the hotel website in search engines and attract more organic traffic. To do this, it is important to use appropriate keywords and optimize the content [12].
- Social networks and interaction with guests allow you to post up-to-date information about the hotel, special offers, and photos. They also help to conduct a dialogue with clients, answer their questions, and receive their feedback [12].
- Email and newsletters allow one to send personalized letters with information about the reservation, special offers, and updates. Such mailings help maintain contact with customers and stimulate their return [12].
- Messengers and online chats that allow guests to quickly ask questions about service, reservations, or other issues. They also help solve guests' questions in real time [12].
- Contextual advertising for hotels helps to attract the attention of potential guests. Advertisements may appear on pages related to travel, tourism, and hotel services. This helps to attract the target audience and increase the number of transitions to the hotel website [13].

As is evident, modern means of communication for hotels are very diverse and effective. They help hotels adapt to changing market conditions, take into account the needs and wishes of customers, and improve their competitiveness, and profitability.

With the correct organization of the production process at the enterprise, the use of information systems and technology for the transmission of information ultimately significantly increases the economic efficiency of the operation of hotel enterprises.

For research, we have chosen the organization of information support for the hotel business on the example of the hotel "A". In particular, it should be noted that hotel "A" uses a whole range of information equipment, 14 personal computers are

installed, which are connected to one network. Moreover, the following is used for information support of the activities of hotel “A” (Table 2).

**Table 2. Information equipment of Hotel “A”**

| Name              | List of means  |
|-------------------|--|
| Equipment         | <ul style="list-style-type: none"> <li>- 206 Fanvil H3 telephones;</li> <li>- 8 Canon PIXMA i6520 printers;</li> <li>- 2 Panasonic faxes kx-ft 982;</li> <li>- mini PBX;</li> <li>- the hotel has 6 telephone lines;</li> <li>- a video surveillance system operates on the territory and in the middle of the hotel to ensure the safety of hotel guests;</li> <li>- a Siemens fire alarm system was installed;</li> <li>- the hotel is connected to satellite television channels;</li> <li>- the hotel is connected to the Internet, and free Wi-Fi is available on the territory of the hotel</li> </ul> |
| Software products | <ul style="list-style-type: none"> <li>- Windows 7 and its applications;</li> <li>- Microsoft Office 2003 (Word, Excel, Access, Outlook);</li> <li>- Avast Antivirus;</li> <li>- Adobe graphics editor Photoshop;</li> <li>- electronic translators;</li> <li>- Outlook Express mail program;</li> <li>- Google browser chrome;</li> </ul>   |

*Source: systematized by the authors*

This level of information technology use is acceptable for a hotel of this class. The maintenance of the equipment and software is handled by the system administrator, who is in the hotel's staff. Telephone communication and Internet access are provided by the Kyivstar company.

The hotel's automated management system (AMS), complexes of security, life support, and computerization systems are integrated into the hotel's single information field. Consider the chain of flows of basic information in hotel “A”: submitting a reservation request; searching for a number upon request and its reservation; guest arrival, identification, and registration; clear service upon request; control over guest payments; warning about the time of eviction; eviction procedure or extension of stay. This is not a complete list, but it gives an idea of the main functions of the system. The ORAK Hotel R5 system is used for the automation of management in the hotel. The main capabilities of this system include:

- Integration with various internal and external data sources, such as registers, databases, banking systems, electronic signatures, etc.
- Automation and optimization of the service payment process, flexible pricing policy, in addition to the general price list, special prices can be set for corporate clients, travel agencies, reducing costs and errors, improving the quality and speed of service.
- Ensuring the security and confidentiality of personal data, using modern methods of encryption and authentication.

- Providing a convenient and flexible user interface that allows you to choose different login methods booking with the possibility of booking different accommodation conditions within one booking.
- Facilitating communication and cooperation between participants in the decision-making process, providing access to up-to-date and reliable information about the state of affairs and resources.

The main capabilities of this system include: 1) accounting of hotel room stock; 2) reservation; 3) flexible pricing policy; 4) housekeeping; 5) security service.

1) accounting of hotel room stock. Visual display of all information about the current state of the hotel's room stock in the main working window of the program: the status of each room, the number of occupied rooms, the number of reserved rooms, rooms that will be vacated, and free rooms, the number of guests currently staying in the hotel, revenue received per shift.

2) reservation. Creating a reservation due to the universal booking tool for individual and collective orders allows one to book different rooms with different accommodation conditions (check-in and check-out dates, tariff, meal plan) within each reservation. All information about the guest's stay is stored in the database. At any time, you can get information about the guest's previous visit to the hotel.

3) flexible pricing policy. In addition to the general price list, it is possible to set special prices for different types of customers (travel agencies, regular customers, corporate customers). Setting special prices can be based on a discount or specially developed price lists.

4) housekeeping – assigning responsible maids to rooms. Viewing and printing the schedule for changing linen and towels, cleaning rooms after the departure of guests, and scheduled cleaning of vacant hotel rooms.

5) security service – the interface for night security is contrasting. Control of guest and staff access to hotel rooms and office premises. Controlling the debts of departing guests.

However, the ORAK Hotel R5 system has some shortcomings that make work difficult: it does not have a clear visual display of daily service planning; remote access; or staff working time accounting; there is no hint system and integration with other information systems, so it is necessary to improve the automated management system in Hotel A.

Hotel “A” has its website, which contains all information about the hotel's room stock, additional services, and special offers, there is a guest book where hotel clients can leave reviews about their stay at the hotel, and it is also possible to book rooms at the hotel.

Requests for accommodation of guests in Hotel “A” are received from travel companies, private clients, and corporate clients through the use of Internet resources (booking through the website, e-mail), phone calls, and faxes. Managers of Hotel “A” surveyed hotel customers to identify the specifics of their use of Internet technology when searching for and booking hotel rooms. 50 people who used the services of Hotel “A” were interviewed.

A customer survey was conducted according to the main parameters: hotel reservation methods; and hotel reservation on its website. Based on the conducted survey, it was concluded that it is necessary to increase the trust of hotel customers in booking rooms on the website of hotel “A”, as well as so that the hotel does not lose profits due to the participation in the sales process of intermediaries (Internet booking agencies).

Note that with indirect sales, Hotel “A” loses profit, because if the reservation is made on the hotel's website, the hotel receives the full price for the room in the hotel, taking into account minor costs for maintaining the website. However, if the client applies to book a room on the intermediary's website, then the hotel receives less money since the intermediary's percentage usually ranges from 10 to 15% of the room price. Consequently, with this type of online booking, Hotel “A” loses up to 15% of the price, since indirect sales channels were chosen. Thus, we consider it necessary to increase the efficiency of booking on the website of Hotel “A” through active promotion of the site on the Internet.

The specifics of the operation of hotel industry enterprises, as well as all intangible enterprises, require a special form of managerial interaction through the formation of a system of information and communication support. The hotel business is a highly saturated information sphere. The peculiarities of business processes in hotel enterprises provide for the structuring of operations both by technical and technological process and by the time factor, and this requires the availability of systematic and dynamic information support.

Managerial interaction is characterized by focus and intensity, which reflects the sphere of the information and communication field of hotel business enterprises. The basic criterion for the formation of a rational-parity information field is information support. In hotel business enterprises, it is determined by the number of information flows and their content saturation, which depends on information processes in the production and provision of basic and additional services.

Information support for enterprise management involves the organization of targeted arrays of information and information flows, which includes the collection, storage, processing, and transmission of information to analyze the results obtained for the preparation, justification, and adoption of management decisions [14, p. 20].

Information flows are formed from a set of modules and a core, which ensures their integration and separation of powers of employees of the hotel enterprise. The activities of accommodation establishments are accompanied by the preparation of various types of documents that form various information flows.

The basis of information support is the system of interrelations among the divisions of a hotel enterprise and the communications that arise between them, as well as the relationship with the external environment. The formation of effective information support for management interaction is impossible without the presence of information technologies, and therefore, certain costs associated with their use.

Considering that the information and communication field is formed not only through interaction in the internal environment, but it can be argued that this process is accompanied by interaction with all participants in the business process, and for

hotel industry enterprises this is: travel agents, tour operators, airline representatives, etc. Interaction with these participants in business processes is carried out through the use of automated hotel management systems. Further development of the hotel and restaurant industry is impossible without modern equipment and the latest technologies. This concerns first of all information technologies, and effective and reliable protection systems, without which it is impossible to achieve a high level of service quality [15, p.227].

Hotel systems allow one to automate all stages of guest service, starting from ticket booking, check-in, and ending with the final payment, as well as the main business processes – from the work of maids to the organization of reporting at the enterprise. In addition, they provide management of all hotel services and systems available in the room.

For the formation of proper internal information flows in the enterprises of the hotel industry, it is necessary to implement automated systems that allow rational and balanced use.

Diagnostics of the effectiveness of experience, planning, and implementation of information systems and technologies made it possible to outline the reasons for their implementation. The questionnaires of 20 enterprises of the hotel business in the city of “B” were taken as a basis. In most cases of changes in the formation of the information field (60%), forced and voluntary factors are considered as the main motivating impulse. Among the factors predicting changes in the information space, it is possible to single out: deterioration of financial and economic indicators (54%), incomplete satisfaction of consumers (15%), and dissatisfaction of employees with existing information flows (10%).

Functional and line managers of the hotel business evaluate the perception and recognition of the need for constant monitoring of the existing information interaction and the formation of the information field of the hotel enterprise based on it, defining the main barriers that can be ranked as follows:

- lack of competent specialists in modern information technologies;
- lack of awareness of the need to introduce modern information systems;
- lack of financial resources for information changes.

The hotel and restaurant business is an industry with a high level of information saturation, and its success directly depends on the speed of transmission and exchange of information, relevance, and timeliness of receipt. The development of the hotel and restaurant business involves the wide use of the latest information technologies both in the field of introducing new hotel services and in their promotion to the market [17]. Managerial interaction involves the constant use and provision of information units at different levels of management. For hotel business enterprises, it is sometimes difficult and impossible to determine the information flows of strategic and tactical levels of management. To eliminate this problem, information support must be viewed through the prism of information flows generated during the implementation of business processes in the main departments of the hotel. The level of their content, completeness, and intensity ensure rational management interaction and make it possible to determine the index of consumer

satisfaction with the information of the hotel divisions. For selected enterprises of the hotel business in the city of “B”, the data of this indicator are given in Table 3.

**Table 3. Efficiency indicators of hotel business information services**

| The main components of the hotel's information service         | Importance to consumers of components |        | Quality assessment |    |    |   |   | total | average value of the quality | Consumer satisfaction index, % |
|--|---------------------------------------|--------|--------------------|----|----|---|---|-------|------------------------------|--------------------------------|
|  | Bi                                    | %      | 5                  | 4  | 3  | 2 | 1 |       |                              |                                |
| 1. Reception and accommodation service (reception service)     | 5.0                                   | 11.26  | 12                 | 6  | 2  | 0 | 0 | 20    | 4.5                          | 87.5                           |
| 2. Service desk, room management                               | 4.3                                   | 9.68   | 10                 | 5  | 3  | 2 | 0 | 20    | 4.15                         | 78.75                          |
| 3. Reception service and settlement part                       | 4.1                                   | 9.23   | 8                  | 7  | 5  | 0 | 0 | 20    | 4.15                         | 78.75                          |
| 4. Telecommunication services                                  | 4.0                                   | 9.01   | 15                 | 5  | 0  | 0 | 0 | 20    | 4.75                         | 93.75                          |
| 5. Room maintenance service                                    | 4.7                                   | 10.59  | 6                  | 6  | 6  | 2 | 0 | 20    | 3.8                          | 70.00                          |
| 6. Security service  | 4.8                                   | 10.81  | 15                 | 4  | 1  | 0 | 0 | 20    | 4.7                          | 92.5                           |
| 7. Catering service  | 4.9                                   | 11.04  | 5                  | 9  | 4  | 2 | 0 | 20    | 3.85                         | 71.25                          |
| 8. Engineering and technical service                           | 4.5                                   | 10,14  | 15                 | 4  | 1  | 0 | 0 | 20    | 4.7                          | 92.5                           |
| 9. Administrative service                                      | 4.6                                   | 10.36  | 10                 | 6  | 4  | 0 | 0 | 20    | 4.3                          | 82.5                           |
| 10. Additional services (hairstylist, swimming pool, solarium) | 3.5                                   | 7.88   | 6                  | 10 | 4  | 0 | 0 | 20    | 4.1                          | 77.5                           |
| Sum (absolute value of the sum of the numbers in the column)   | 44.4                                  | 100.00 | 102                | 62 | 30 | 6 | 0 | 200   | 43.0                         | 825.0                          |

Source: calculated by the authors

As can be seen from the table, the service providing telecommunication services, the security service, and the engineering and technical service correspond to the highest consumer satisfaction with information provision. Indexing the degree of consumer satisfaction with the information base allows formalizing the organizational work of the hotel based on the needs and expectations of the consumer, which makes it possible to choose strategic alternatives for improving the quality of the hotel enterprise.



**Discussion.** Management accounting in the system of modern management is necessary for everyone who is engaged in entrepreneurial activity. The manager at the enterprise plays an important role, as he/she is responsible for achieving the goals set for him/her by the administration or the founders of the enterprise. The results of the manager's activity largely depend on the information he/she used for planning, control, and regulation of management activities, and even decision-making.

The main goal of implementing a management accounting system for an enterprise is to provide the company's management with the most complete information necessary for more efficient work. Managerial accounting is an integral part of modern management.

Informatization and computerization of business processes are necessary aspects of the effective operation of hotel enterprises. Therefore, we analyzed the effectiveness of information support for managerial interaction of hotel business enterprises, and developed measures to improve management accounting in Hotel "A".

**Conclusions.** Ways to improve the management accounting system in hotels can be different, depending on the specifics and goals of each hotel. However, the general areas of improvement are:

- The use of modern information technologies allows one to automate and optimize the processes of accounting, analysis, and control of costs, income, profitability and other indicators of the hotel's activity. Moreover, information technologies contribute to improving the quality of customer service, saving and protecting information, and ensuring the availability and efficiency of information for managers and employees of the hotel.
- Development and implementation of an effective budgeting system that helps to plan and forecast the financial result of the hotel, determine the optimal allocation of resources between cost and revenue centers, monitor the implementation of the budget and identify deviations, analyze the causes of variance, and introduce corrective measures.
- Application of modern cost accounting techniques that allow you to accurately calculate the cost of hotel services, taking into account all types of direct and indirect costs. As well, such techniques help to analyze the structure and dynamics of expenses, identify areas of excessive or irrational costs, and find ways to reduce or optimize them. Examples of such methods are the ABC method (Activity Based Costing), the TDABC method (Time Driven Activity Based Costing), the Kaizen technique Costing, etc. These are just some ways to improve the management system accounting in hotels. In addition, measures for the intensification of management activities of Hotel "A" based on the use of information systems and technology are proposed, they are effective and can be implemented in the activities of not only Hotel "A" but also other hotel complexes.

**Author contributions.** The authors contributed equally.

**Disclosure statement.** The authors do not have any conflict of interest.

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# *Economics, Finance and Management Review*

*Issue 4 (16), 2023*

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*Printed by: Scientific Center of Innovative Research OÜ, Ida-Viru maakond, Lügánuse vald, Püssi linn, Viru  
tn 8-33, 43221, Estonia*

*Number of copies: 300*

*First printing: December 30, 2023*

*Distributed worldwide by Scientific Center of Innovative Research OÜ - [office@scnchub.com](mailto:office@scnchub.com)*

*Full text available online at <https://scnchub.com>*

*DOI: 10.36690/2674-5208-2023-4*