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ევროპის უნივერსიტეტის გლობალიზაციის ეკონომიკური და სოციალური პრობლემების კვლევითი ინსტიტუტის საერთაშორისო სამეცნიერო გამოცემა

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CURRENT ISSUES IN FINANCE THEORY AND PRACTICE IN THE AGE OF GLOBALIZATION

THE IMPACT OF FINANCIAL INCLUSION ON ECONOMIC GROWTH IN ALGERIA

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ABSTRACT. This research explores the impact of financial inclusion on economic growth in Algeria during the period 2004–2021. To achieve this objective, the researcher utilized the Bootstrapped coefficient estimates method, recognized for its accuracy in analyzing relationships within economic data. The study establishes a significant and noticeable relationship between financial inclusion and economic growth, highlighting the critical role of inclusive financial services in fostering economic development. Specifically, the findings emphasize that borrowing from commercial banks and the availability of ATMs have a positive and meaningful effect on economic expansion. These elements facilitate access to credit and enhance financial accessibility, which are crucial drivers of growth. On the other hand, the study identifies a surprising negative influence of the total number of bank branches on economic growth. This could point to inefficiencies or structural challenges within the banking system that warrant further investigation. The findings underline the need for tailored financial policies.

INTRODUCTION

Global financial inclusion history demonstrates that achieving universal access to basic financial services has been a protracted and constantly changing process. Many organizations started to transition from providing only microcredit services to providing basic availability of financial facilities like insurance and savings starting in the late 1990s and early 2000s.[1]

Financial inclusion became one of the major issues that surfaced on the global scene following the 2008 global financial crisis, highlighting its significance. Low-income households were among those whose financial well-being was significantly impacted by the crisis. The 2009 G20 Pittsburgh Summit recommended pre-financial inclusion to widely open the doors for financial subsidy to unprivileged groups, with recommendations for the improvement of financial inclusion concluded at the 2010 G20 Toronto Summit.[2]

The pandemic of COVID-19 has demonstrated

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1   National Financial Educators Council. (2024). <https://www.financialeducatorscouncil.org/history-of-financial-inclusion/> [Last Access 25.07.2024].

2   Wibowo, D., Mardani, Y., Iqbal, M. (2023). Impact of financial inclusion on economic growth and unemployment: Evidence from Southeast Asian countries. *International Journal of Finance & Banking Studies, 12*(2), pp. 55-66.

the essentiality of financial inclusion, as governments paced to offer monetary funds to underprivileged groups, providing opportunities for expanding financial inclusion amid social distancing.[3]

In light of the economic significance of financial inclusion, the paper targets exploring the influence of financial inclusion on economic growth by scrutinizing the following question: To what extent could financial inclusion affect the Algerian economic boom significantly? The research timespan co-occurred with a series of econometrics from 2004 to 2021.

The study combines the following divisions: Section 2 comprises a review of previous studies in this discipline, section three manifests the relationship between financial inclusion and economic boom, section four highlights the research methodology, and section five contains a discussion and the salient conclusions.

LITERATURE REVIEW

According to (Shahid Manzoor & Amjad, (2023)), Financial inclusion is a frequently debated subject among scholars, governmental officials, and financial experts.[4] International financial institutions, such as the IMF, Alliance for Financial Inclusion (AFI), and World Bank (WB), along with central banks, are actively seeking to promote financial inclusion domestically.

Financial inclusion, according to the Reserve Bank of India (RBI) definition, involves providing financially threatened and vulnerable groups with suitable access to satisfactory monetary commodities and services fairly by dominant institutional agents.[5] According to (G20, (2021)), financial inclusion implies guaranteeing individuals and businesses can access basic financial services like credit, transactions, savings, payments, and insurance that satisfy their essentials in a sustainable promoted way.[6]

In words of (Ozili, (2018)), financial inclusion is viewed as the potential of people to reach governmental financial facilities primarily by having formal bank accounts.[7] Governmental officials responsible for policies and scholars have shown noticeable concern in financial inclusion for four distinct justifications. They have shown a significant interest in Financial inclusion for four key reasons. Financial inclusion is seen as a significant approach to reaching sustainable development objectives, as it enhances social inclusion, decreases poverty, and provides various socio-economic advantages.[8]

According to (Hannig & Jansen, (2010)), financial inclusion can be assessed using various factors, such as:[9]

Access: The capability to utilize financial facilities and products provided by official institutions. Comprehending degrees of access may necessitate understanding and evaluating possible hindrances to opening and utilizing a bank account for any justification, like expenses and proximity of bank service locations (such as branches and ATMs). A simple way to measure access is by tallying open accounts at different financial institutions and evaluating the percentage of the population.

Quality: It refers to how well a financial service or product meets the client's bases. Quality is reflected in the way clients perceive and feel about the products that are accessible to them. The quality measurement determines the level of

3   Sahay, R., Allmen, U., Lahreche, A., Purva, K., Ogawa, S., Bazarbash, M., Beaton, K. (2020). The promise of fintech: Financial inclusion in the post-COVID-19 era. *International Monetary Fund* (No. 20/09).

4   Shahid Manzoor, S., Amjad, A. (2023). Macro dimensions of financial inclusion index and its status in Developing Countries. *MPRA Paper*. No. 118036. pp. 1-20. <https://mpra.ub.uni-muenchen.de/118036/> [Last Access 25.07.2024].

5   Pant, J. D. (2011). Financial inclusion & financial literacy. *BI OECD Seminar-Roundtable on the Updates on Financial Education and Inclusion Programmes in India*. <https://www.oecd.org/finance/financial-education/48303408.pdf> [Last Access

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6   G20. (2021). The impact of COVID-19 on digital financial inclusion.

7   Ozili, P. (2018). Impact of digital finance on financial inclusion and stability. *Borsa Istanbul Review, 18*(4), pp. 329-340. <https://doi.org/10.1016/j.bir.2017.12.003>.

8   Ozili, P. K. (2020). Financial inclusion research around the world: A review. *Forum for Social Economics.* pp. 1-23. <https://doi.org/10.1080/07360932.2020.1715238>.

9   Hannig, A., Jansen, S. (2010). Financial inclusion and financial stability: current policy issues. *ADBI Working paper series* (No. 259).

the financial service provider's relationship with the clients.

Usage: The emphasis is on long-lasting effects and the utilization of the product. To gauge usage, it is necessary to have information on the consistency, frequency, and length of usage throughout a period of time.

Impact: it evaluates how clients' lives have changed due to using a financial product or service.

THE CORRELATION BETWEEN FINANCIAL INCLUSION AND ECONOMIC DEVELOPMENT

These perspectives are evident in the results of the current studies. For example, it was demonstrated (Bayar & Gavriletea, (2018)) that economic boost is boosted by financial inclusion due to improved availability to monetary agencies and markets.[10] This implies that financial inclusion will provide individuals with increased opportunities to access commodities, services, and privacies provided by official financial agencies and in monetary markets. Individuals have the opportunity to utilize these financial commodities to either establish financial work or participate in economic endeavors that support economic development.[11] (Hussain, Rehman, Ullah, Waheed, & Hassan, (2024)) investigated how financial inclusion is linked to economic growth using data from 21 Asian states between 2004 and 2019. Moreover, they addressed the minor samples by separating the total samples into first-world and third-world nations. Financial inclusion in Asia has a salient influence on economic growth in the future, according to their findings. Additionally, the research found that the impact of financial inclusion on economic

growth is stronger in first-world nations as opposed to third-world nations. In addition, these results offer valuable policy ideas for policymakers to create significant and inclusive financial policies to consolidate sustainable economic boom fairly.[12] In the same vein, (Chuka, et al., (2022)) analyzed how financial inclusion determines the economic growth of Sub-Saharan African states from 2012 to 2018 through Panel data. This study employed the Generalized Method of Moments (GMM). By utilizing a combination index of financial inclusion along with specific financial inclusion measures, it was found that the accessibility aspect, reach aspect, and overall access to financial services have a noteworthy effect on economic prosperity, whereas the utilization aspect of access to financial services enhances economic boom but not noticeably. Furthermore, the presence of bank branches and ATMs has a notable effect on economic advancement. Deposit accounts and loans contribute to economic growth, but their impact is not as substantial. On the other hand, high levels of eminent deposits harm economic development. Furthermore, research on moveable money indexes between 2012 and 2018 demonstrated that the presence of mobile money agents inhibits economic growth, whereas the existence of moveable money accounts and transactions adds to economic growth, albeit not noticeably. That is, it is salient to implement financial education policies in Africa to assist Africans have a better grasp of the advantages of using banking services.[13] (christopher & Eunice , (2024)) aims to explore how financial inclusion influences the enlarging of the economy in sub-Saharan Africa. The research was conducted in 47 African countries between 2010 and 2020. The research revealed a significant connection between financial inclusion and eco-

10   Bayar, Y., Gavriletea, M. (2018). Financial inclusion and economic growth: evidence from transition economies of European Union. *Journal of International Finance and Economics*. 18(2). <https://doi.org/10.18374/JIFE-18-2.9>.

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13   Chuka, I., Kenechukwu, O., Eze, F., Samuel, M., Anthony , E., Godwin, I., Onwumere, J. (2022). Financial inclusion and its impact on economic growth: Empirical evidence from sub-Saharan Africa. *Cogent Economics & Finance*. pp. 1-28. <https://doi.org/10.1080/23322039.2022.2060551>.

nomic prosperity.[14] (Biswas, (2023)) investigated to what extent financial inclusion contributes to an economic boom in (4) South Asian states by focusing on its positive impact on human capital. Utilizing panel data and various indicators of financial inclusion to uncover the link between increased access to financial services leading to growth in the economy. The research shows that financial inclusion has a beneficial effect on the economic boom in these nations, indicating that it aids in the development of a state's monetary infrastructure, ultimately boosting economic concerns and generating job opportunities.[15]

(Siddiki & Bala-Keffi, (2024)) Retackles the connection between economic boom and financial inclusion by analyzing information obtained from 153 states. Their examination shows that the connection displays positive but fluctuating impacts at different levels of financial development. Therefore, there is a consistent connection between economic growth and financial inclusion, although the strength and effects of this link differ across countries with varying levels of financial improvement, underscoring the need to customize financial inclusion strategies in light of the particular stage of the monetary industry's development.[16]

(Van Dinh & Linh , (2019)) Assesses the consequences of indicators of financial inclusion on economic boost. The finding manifests that relationships are found between the many bank branches, ATMs, domestic credit in the private sector, and the aggregated rate of prosperity at the economic level. Citizens will attain a luxurious lifestyle resulting from this improvement.[17]

Data & Methodology

This part presents the data, approach, and methodology employed to evaluate the link between financial access to services and economic boost in Algeria.

DATA, SOURCE, AND DESCRIPTION

The paper exploits per annum information for Algeria Country from 2004 to 2021. The choice of the state and sample time range depended upon the access to data on financial inclusion. The study variables are financial inclusion – the independent variable – which can be evaluated by a group of indexes, the sum of (ATMs) amounts to 100,000 for every grown-up adult employed to assess account ownership among individuals or businesses in formal financial institutions, sum of branches of bank which equals 100,000 for adults (NBB) has been used as an alternative indicator to signify to spread of financial institutions, borrowers from commercial banks per 1,000 adults (BOR) have been used as an alternative indicator for credit. The dependent variable is (GDP) assimilating the economic boom.

All data were gathered by the World Bank. Depending on recent literature on financial inclusion (Morgan & Pontines, (2014)),[18] (Park & Mercado, Jr, (2015)),[19] (Sarma, (2008)).[20]

Model

A Bootstrap model was utilized to elucidate the connection between economic boom and access to financial services in Algeria.

$$LNGDP_t = \alpha_0 + \alpha_1 LNATM_{t-1} + \alpha_2 LNNBB_{t-1} + \alpha_3 LNBOR_{t-1} + \varepsilon_t$$

LNGDP is the dependent variable representing the logarithm of gross domestic product. LNATM, LNNBB, and LNBOR denote the logarithmic forms

14   Christopher, B., Eunice, A.-D. (2024). The effect of financial inclusion on economic growth: the role of human capital development. *Cogent Social Sciences*. 10 (1). <https://doi.org/10.1080/23311886.2024.2346118>.

15   Biswas, G. (2023). Financial Inclusion and Its Impact on Economic Growth: An Empirical Evidence from South Asian Countries. *European Journal of Business and Management Research*. 8 (4). <http://dx.doi.org/10.24018/ejbmr.2023.8.4.20>.

16   Siddiki, J., Bala-Keffi, L. (2024). Revisiting the relation between financial inclusion and economic growth: a global analysis using panel threshold regression. *Economic Modelling.* <https://doi.org/10.1016/j.econmod.2024.106707>.

17   Van Dinh, T., Linh, N. (2019). The impacts of financial inclusion on economic development cases in Asian-Pacific Countries. *Comparative Economic Research*. 22 (1), pp. 7-16.

18   Morgen, P., Pontines, V. (2014). Financial stability and financial inclusion. *ADBI Working Paper Series* (No. 488).

19   Park, C.-Y., Mercado, Jr, R. (2015). Financial inclusion, poverty, and income inequality in Developing Asia. *ADB Economics Working Paper* (No. 426).

20   Sarma, M. (2008). Index of financial inclusion. *Working Paper* (No. 215).

TABLE 1. THE RESULT OF THE UNIT ROOT MEASURE

	AT THE LEVEL		AT FIRST DIFFERENCE	
Variables	ADF	PP	ADF	PP
LNGDP	-2.283243 (0.4198)	-2.254232 (0.4336)	-4.408726 (0.0157)	-6.961824 (0.0002)
LNATM	-5.044651 (0.0010)	-12.50823 (0.0000)	-2.483070 (0.1384)	-1.668647 (0.4271)
LNNBB	-4.736690 (0.0028)	-6.844436 (0.0000)	-3.168009 (0.0428)	-3.390251 (0.0274)
LNBOR	-1.086911 (0.6955)	-1.086911 (0.6955)	-4.485694 (0.0034)	-4.459014 (0.0036)

Source: Eviews 13 program outputs.

of the quantities of automated teller machines, bank branches, and loaners from capital banks. serves as the intercept while are parameters for estimation, representing the error term. In conclusion, stands for temporal relations.

The findings of the ADF test and PP test (Table 1) indicate that all the variables fixedness at the first difference I (1). Except for two variables (LNATM, LNNBB), their stationarity was confirmed at the level I (0).

Data Analysis

It is significant to elucidate thoroughly the fixedness of the variables before estimating the model to validate correct application. For the end of this goal, unit root measures such as the Augmented Dickey-Fuller (1981) and Phillips-Perron (PP) test (1988) were utilized (see Table 1).

Model Estimation

Table 2. Model Estimation Results
Dependent variable: LNGDP
strategy: Least Squares
Sample: 2004/2021
Included reviews: 18

TABLE 2

Variable	Coefficient	Std. Error	t-Statistic	Prob
LNNBB	-1.728851	3.676974	-0.470183	0.6455
LNBOR	0.615002	0.270753	2.271453	0.0394
LNATM	0.457639	0.200055	2.287565	0.0382
C	30.08081	5.680555	5.295400	0.0001
R-squared	0.929392	Mean dependent var		30.25266
Adjusted R-squared	0.914261	S.D. dependent var		0.383215
S.E of regression	0.112210	Akaike info criterion		-1.343762
Sum squared resid	0.176275	Schwarz criterion		-1.145901
Log-likelihood	16.09386	Hannan-Quinn criteria		-1.316480
F-statistic	61.42566	Durbin-Watson stat		1.658549
Prob (F-statistic)	0.00000			

Source: Eviews 13 program outputs.

FIGURE 1. RESULT OF JARQUE-BERA TEST

Series: Residuals	
Sample 2004 2021	
Observations 18	
Mean	1.78e-15
Median	0.017365
Maximum	0.133779
Minimum	-0.270865
Std. Dev.	0.101829
Skewness	-1.039101
Kurtosis	3.931007
Jarque-Bera	3.889276
Probability	0.143039
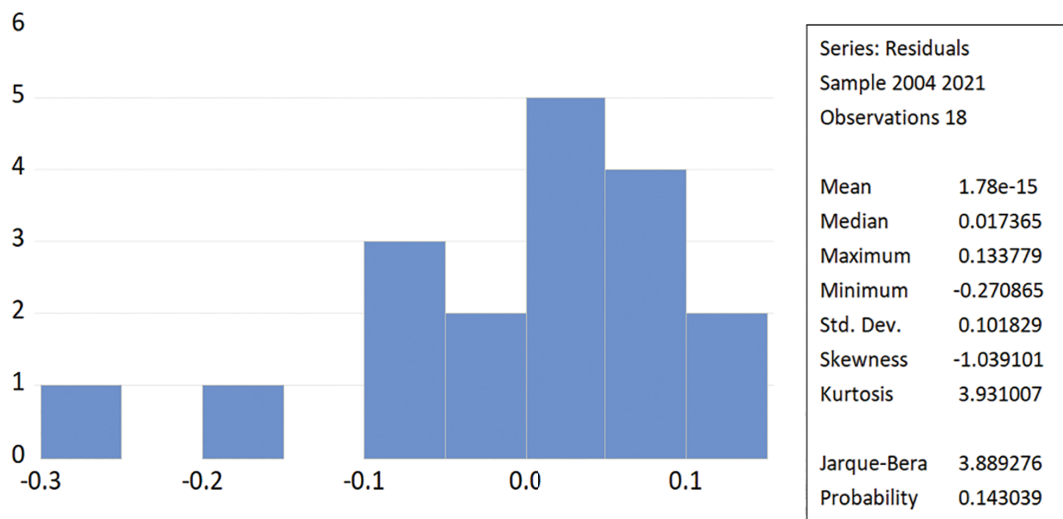
Source: Eviews 13 program outputs.

Bootstrapped coefficient values and standard errors (10000 repetitions) (see Table 2)

- The totality of branches of the bank is 100,000 per adult, which has a negative impact of – 1.728851 on GDP, but this impact is not noticeably significant at a 5% level. This implies an inverse link between the total sum of branches of the bank and GDP, where an accretion in bank divisions brings a decrease in GDP. This outcome does not align with the earlier study (Wibowo, Mardani, & Iqbal, (2023)) that identified a direct correlation between the number of bank branches and economic advancement.[21]

- A significant (0.615002) effect of the people who borrow from commercial banks was proven to be 1,000 per adult (BRO) on GDP, and this effect is significant at a 5% level, which means there is a direct relationship between the people who borrow from business banks and GDP. In other words, the more increase in the percentage of the borrowers from commercial banks, the greater the degree of GDP. This finding is consistent with previous work (Arab & Allai, (2023)).[22]

- There is a positive effect (0.457639) of ATMs per 100,000 adults on GDP, and this effect is significant at 5%, that is, there is an immediate link between ATMs and GDP, which is consistent with economic theory. That is, as long as the total sum of ATMs increases, the GDP will increase in turn. This finding is consistent with previous work (Van Dinh & Linh, (2019)).[23]

In conclusion, the R-squared coefficient measures 0.929392. This percentage indicates how well the model explains the changes in (GDP) by examining the impact of independent variables and their contribution to understanding these changes. In simpler terms, the model's variables account for 92.93% of the changes observed, with the remaining 7% attributed to variables not part of the model.

The Jarque-Bera test is utilized to assess if the residuals adhere to a normal distribution. The outcomes of this test are displayed in the diagram (see Fig.1):

From **Fig.1**, it is noted that the rest of the parts of

21 Wibowo, D., Mardani, Y., & Iqbal, M. (2023). Impact of financial inclusion on economic growth and unemployment: Evidence from Southeast Asian countries. *International Journal of Finance & Banking Studies, 12*(2), 55-66.

22 Arab, F., & Allai, F. (2023). Measuring The Impact of Financial Inclusion And Digital Financial Srvices on The Level of Economic Activity in Algeria In Light of the Corona Pandemic. *Journal of Economic Growth and Entrepreneurship JEGE*. 6 (4).

23 Van Dinh , T., & Linh , N. (2019). The impacts of financial inclusion on economic development cases in Asian-Pacific Countries. *Comparative Economic Research*. 22 (1), 7-16.

the graph take a normal standard of differentiation since the Jarque-Bera value is 3.88, which is smaller than the tabulated Chi-square value of 5.99. Additionally, the p-value is 0.143. It is larger than 5%.

Serial Correlation Test: The Breusch-Godfrey Serial Correlation LM Test is utilized to examine the values of autocorrelation. The test value (Obs*R-squared) is 0.297623 and has a p-value of 0.8617, exceeding 5% (P-value = 0.8617 > 0.05). This shows agreement with the null hypothesis, which posits that there is no autocorrelation in the residuals of the estimated model. The Following Table 3.

TABLE 3. BREUSCH-GODFREY LM TEST FOR AUTOCORRELATION

Breusch-Godfrey Correlation LM Test

Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.100876	Prob. F (2,12)	0.9048
Obs*R – Squared	0.297623	Prob. Chi-Square (2)	0.8617

Source: Eviews 13 program outputs.

Test of Heteroscedasticity: There are several tests to determine heteroskedasticity in time series econometric, namely the Breusch-Pagan Godfrey.

The result of **Table 4** showed that the test value was (Obs*R-squared = 0.919528) with a probability greater than 5% (P-value = 0.8207 > 0.05). Such findings consolidated the truth of the null hypothesis and highlighted that the variation of the error evaluations is similar.

TABLE 4. TEST OF HETEROSKEDASTICITY

Heteroskedasticity Test Breusch-Pagan-Godfrey

Null hypothesis: Homoskedasticity

F-statistic	0.251230	Probability. F (3,14)	0.8591
Obs*R-squared	0.919528	Probability. Chi-square (3)	0.8207
Scaled explained SS	0.815198	Prob. Chi-square (3)	0.8458

Source: Eviews 13 program outputs.

CONCLUSION

This work highlighted the ties between increased access to financial services leading to growth in the economy in Algeria. Hence, the paper concluded the following:

- There is an inverse link between the total sum of branches of banks and economic boom, indicating a negative deviation. According to Cameron, this means that the level of bank proliferation is insufficient, in addition to the low-scaled access of banking facilities to all social sectors.
- A noticeable relationship between ATMs and the economic boom in Algeria was concluded. This means that ATMs increase in number results in easy reach of the citizens to governmental financial sources. Thus, recognition of financial facilities will be aggregated, making people more knowledgeable about the different financial products offered.
- There is a significant link between borrowers from commercial banks and economic growth. This result can be interpreted as a large segment of individuals using formal borrowing channels.

Recommendations:

- Banking institutions must adopt savings products for marginalized and poor segments of society.
- The state must open opportunities for the youth, they represent a large percentage of the Algerian society because they suffer from obstacles such as not benefiting from financial facilities.
- The government should work on decreasing the differences between the higher and lower classes – from a financial point of view – by expanding social protection programs, supporting marginalized groups, and meeting their needs for goods and necessities for daily life.

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KEY ASPECTS OF IMPLEMENTATION OF PARTICIPATORY BUDGETING MODEL IN GEORGIAN MUNICIPALITIES

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ABSTRACT. The article, based on the latest literary sources and factual materials, consistently studies such an important issue of financial theory and economic practice as the key aspects of implementing participatory budgeting in Georgian municipalities.

The factors affecting the effectiveness of the implementation of the participatory budgeting model are discussed: the urban structure of the municipality, the size of the budget of the municipality, and the development of civil society.

It is determined that any model of participatory budgeting should adhere to the following principles: model design and implementation procedures should be based on good management principles; The selected procedures should take into account the specific context of a particular municipality, including urban structure, budget size, and population participation; At the planning stage, active actors of the model, interested parties should be identified and their rights and duties defined; The model should fully comply with the legislation of Georgia and the established forms of citizen participation.

Based on the international experience and the reality of Georgia, the factors affecting the effectiveness of the implementation of the participatory budgeting model are discussed: the urban structure of the municipality, the size of the municipality's budget, and the development of civil society.

It stands to reason that any participatory budgeting model should have, as a minimum, the following working procedures: population group meetings, information campaigns, development and submission of project proposals, voting, and final decision, and Evaluation of participatory budgeting process and work procedures.

1. INTRODUCTION

Since the 1990s, the formulation of a "participatory budgeting model" or "participatory budgeting process" has increasingly appeared in scientific discourse, which was more closely associated with the activities of local government bodies. However, later, it was associated with other spheres, such as educational and/or social service organizations. As a result, we have the reality that various models of participatory budgeting are being actively implemented in an increasing number of cities, municipalities, and organizations around the world, more and more people are involved in the processes, and both the population and the state benefit more.

The participatory budget process is one model of participatory democracy in which the population decides what to allocate municipal and state budget funds and then checks the effectiveness of the use of the allocated resources.

This approach to the state budgeting process allows citizens to identify, discuss, and prioritize projects to be funded by public spending and empowers them effectively to make real decisions about how money is spent.

The local specifics of a particular municipality, the combination of goals and objectives declared by its executive and representative authorities, provide the diversity that currently characterizes the models of participatory budgeting. As a result of their systematization, a typology of participatory budgeting was developed in 2012, through which all the existing models were described, and the following six models of participatory budgeting were identified: Participatory Democracy Model, Proximity Democracy Model, Participatory Modernization Model, Multi-Stakeholder Participation Model; Neo-Corporatism Model; Community Development Model.

Out of 6 practical models of participatory budgeting, the most widespread in the world are the Participatory Democracy Model, Proximity Democracy Model, and Community Development Model, which is, due to a greater focus on social justice with a certain uniformity of legislation defining the powers of local government; extensive use of formal and informal instruments of direct democracy in the processes.

The practice also shows that the success or failure of participatory budgeting is not necessarily dependent on the magnitude of municipal budgets. Its implementation may be successful in very poor cities/settlements where public resources are severely limited, as well as in very wealthy municipalities.

The global trend of implementing participatory budgeting could not pass by Georgia unnoticed. Therefore, based on international practice and the experience of Georgia, it is necessary to discuss the main aspects of the implementation of the participatory budgeting model in order to better adapt to the characteristics of a particular municipality in our country.

2. RESULTS AND DISCUSSION
2.1. Factors affecting the effectiveness of the implementation of the participatory budgeting model

According to the study, when implementing a particular model of participatory budgeting, it is necessary to take into account several main factors that have the greatest impact on the effectiveness of the model implementation based on the realities of Georgia. These factors include (1) the urban structure of the municipality, (2) the size of the municipality's budget, and (3) the development of civil society.[*]

The urban structure of a municipality. Based on the territorial arrangement system of Georgia, there are a total of 76 municipalities.[**] Of these, 71 are self-governing communities, and five are self-governing cities. Accordingly, three types of municipalities are distinguished:

1. An urban municipality.[***] When implementing participatory budgeting in city-type municipalities (self-governing cities), the main challenges

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*   Each factor and its combination determine what problems we may encounter when implementing participatory budgeting and how effective the process itself will be.

**   The presented number of municipalities does not include the Autonomous Republic of Abkhazia and the 4 occupied municipalities in the Shida Kartli area: Akhalgori, Tighvi, Eredvi, and Kurti municipalities.

***   Municipalities of this type are self-governing cities: Tbilisi, Rustavi, Kutaisi, Poti, and Batumi.

******   Such municipalities are represented by self-governing com-

of the model[****] are the high concentration of the population in a small territory, less self-organization of the population, and a low level of communication in urban areas, neighborhoods, and within the neighborhood; a nihilistic attitude to the processes taking place in the municipality; a low level of awareness about the processes taking place in the municipality; a high level of politicization of society; A large number of citizens live in the township who are not registered voters in the municipality, which raises the question of allowing these citizens to participate in the municipal budget process; The need to implement large and costly infrastructure projects.[1]

When implementing participatory budgeting in urban-type municipalities (self-governing cities), *strengths* include the following circumstances: a relatively strong desire of citizens for democratic governance; a sufficiently developed civil society, which is an important factor in solving problems at the local level; a large volume and less deficient budget of the municipality; municipality management is more inclined to introduce new initiatives and innovative methods in management; the ability to use developed.

These advantages can be effectively used with the use of e-government tools and the involvement of active citizens and interest groups to implement a specific model of participatory budgeting.

2. A Rural municipality.[*****] When implementing participatory budgeting in rural municipalities (self-governing communities), the main challenges of the model are the conservatism of citizens and increased resistance to innovation, simultaneously with a nihilistic attitude to the processes taking place and a high level of politicization; with a low level of the municipality's budget revenue and strong dependence on targeted and equalizing transfers from the central budget; with a

complex socio-economic background; The rural township is home to a large number of voters who have moved to other regions of Georgia, as well as temporarily or permanently moved to live abroad.

The strengths of participatory budgeting in rural settlements are the following: a sufficiently high level of self-organization of citizens within districts and communities; a high level of communication based on family ties; a high level of involvement of residents in common cause based on archetypes of behavior historically developed in the community; the possibility of achieving visible results with small investments; less need for large and costly infrastructure projects.

These advantages can be leveraged by using direct communication tools and engaging formalized and informal community groups to implement a particular model of participatory budgeting.

3. Mixed municipality.[******] A mixed-type municipality has both the problems and advantages typical of both urban and rural municipalities. In such municipalities, as a rule, the center of the municipality (city or town) has the characteristics of an urban-type municipality, and the rest of the settlements correspond to the rural type. Accordingly, the implementation of participatory budgeting should take into account these circumstances and choose an appropriate model.

The size of a municipality's budget. Depending on the size of the budget revenues in Georgia, the following types of municipalities can be distinguished:

1. Subsidized municipalities.[*******] A number of municipalities in Georgia suffer from a lack of budget revenues when exercising their powers and are subsidized municipalities. On the one hand, the municipality's revenues are low due to the absence of large economic agents on the territory of the municipality and the tax policy determined by Georgian legislation. At the same time, most of their budget is formed at the expense of financial resources coming from the state budget at the expense of equalizing and targeted

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[****] Each challenge and its combination creates logistical problems, making it difficult to reach target groups and involve the masses in the decision-making process.

[1] Vanishvili, M., Shanava, Z. (2022). Legislative and legal provision of local budgeting in Georgia (on the example of self-governing cities). Scientific Collection "InterConf", (122), 38-55.

[*****] Municipalities of this type are represented by small self-governing communities, such as Ambrolauri, Tianeti, Kazbegi, Ninotsminda, Chkhorotsku, and others.

munities such as Telavi, Zugdidi, Marneuli, Khashuri, Gori, Samtredia, and others.

[*******] Municipalities of this type are represented by self-governing communities such as Tsalenjikha, Chkhorotsku, Ninotsminda, and others.

transfers. Because of all this, the availability of financial resources necessary for the participatory budgeting process is very low. On the other hand, it is precisely this circumstance that should push the leadership of the municipality to the result-oriented and effective planning of activities and finances. A participatory budgeting process can help a municipality's leadership to better prioritize and focus its scarce resources on the most pressing issues. In the case of subsidized municipalities, it is possible to use the model of participatory budgeting, which is better adapted to address thematic (for example, social, youth, gender, and vulnerable groups) issues.[2]

2. Less subsidized and/or under-subsidized municipalities.[*] A number of municipalities in Georgia do not suffer from a shortage of budget revenues. As a rule, these are municipalities with large urban settlements of urban type. Revenues derived from taxes and local levies of economic entities in the municipality (including large ones) allow for the efficient provision of public services to the population, applying for funding for infrastructure, social, cultural, and other types of projects. As a result, in a participatory budgeting process, a municipality's leadership can safely allocate significant financial resources and promote the involvement of the population in the redistribution process. On the other hand, access to resources may encourage municipal leaders to prioritize their allocation without involving the population and to direct resources to projects that the population not only does not support but even opposes.

Civil Society Development. According to the level of development of civil society (non-governmental organizations, business associations, trade unions, organized groups of citizens, etc.), the following types of municipalities can be distinguished in Georgia*:*

1. Municipalities with highly developed civil society.[**] Civil society is very well developed in some municipalities of Georgia. Civil society organizations have an influence on the decision-making process at the municipal level, actively cooperate both with the population and local self-government bodies, and have networks and external relations at the local level. They enjoy the high authority and trust of the population. Also, civil society has the desire and often the resources to actively support the participatory budgeting process to help the municipality with information and educational campaigns. On the other hand, there is a danger that in the case of a strong civil society, a number of active organizations will try to gain influence over the participatory budgeting process. To reduce this risk, a form of participatory budgeting should be chosen that ensures, on the one hand, high involvement of civil society and, on the other hand, covers the associated risks.

2. Municipalities with less developed civil society.[***] In those municipalities of Georgia, where the level of development of civil society is low, the municipality leadership loses an active partner in the process of participatory budgeting. Therefore, it will be forced to shift the entire burden of logistics and information support within the process onto its shoulders. The management of the municipality is also deprived of an external controller who will point out problems that arise in the process and jointly try to fix them. Therefore, a form of participatory budgeting should be chosen, where a low or medium level of involvement of civil society is determined, on the other hand, in this situation, precisely within the framework of the selected model, the process of participatory budgeting can contribute to the formation of a strong civil society in the municipality, to make thematic groups (vulnerable groups, disabled people, the elderly and others) to form at the formal level and to gain knowledge, experience, and authority within the process.[3]

2   Kokashvili, N., Sosanidze, M., Vanishvili, M. (2022). Gender budgeting in the field of Georgian health and social protection: Analysis and evaluation. European Science Review, (5-6), 61.

*   Municipalities of this type are represented by: self-governing cities – Tbilisi, Poti, Batumi; Self-governing communities – Marneuli, Bolnisi, Kazbegi and others.

**   Municipalities of this type are self-governing cities such as Tbilisi, Rustavi, Kutaisi, Poti, and Batumi.

*** Municipalities of this type are represented by self-governing communities such as Tsalenjikha, Chkhorotsku, Ninotsminda, and others.

3   Kokashvili, N., Vanishvili, M., Osadze, L. (2022). Methodical foundations and challenges of gender budgeting in Georgia. *European Science Review, (7-8),* 48-53.

2.2. Principles and requirements of participatory budgeting.

Any model of participatory budgeting should adhere to the following operational principles: (1) The model's design and implementation procedures should be based on good governance principles, including transparency and accountability; (2) All processes of the model should follow the PDCA cycle (Plan, Do, Check, Act) also known as the Deming cycle, which ensures effectiveness and compliance with relevant legislation; (3) Customized procedures should consider the specific context of a particular municipality and its geographical characteristics, including urban structure, budget size, and population participation; (4) During the planning stage, the active actors and stakeholders of the model should be identified and their rights and responsibilities defined. It is essential that each process within the model has its responsible executor/accountable entity. Additionally, an independent organization or agency responsible for process management, monitoring, and evaluation should be established; (5) The model should fully comply with the laws of Georgia and the established forms of citizen participation. If existing forms are considered insufficiently effective in engaging the population in processes, the legislation of Georgia allows for alternative forms that better meet the requirements of citizen participation.

2.3. Models of participatory budgeting by types of participation.

Based on the results of the assessment and typology of existing participatory budgets at the international and Georgian levels, we can identify three types of participatory budgeting models:

1. Procedure of the community-type participatory budgeting model. The procedures of this model are oriented towards the active involvement of small groups within the municipality, for which the territory of the municipality is divided into smaller operational areas (zones). These areas may correspond to existing administrative divisions or historically defined thematic criteria. It is also important to consider the inclusion of diverse groups (socially vulnerable, youth, newcomers, women,

elderly, PWDs, and others) in the model. The participation of a larger number of small groups in decision-making and the implementation process is crucial for a more effective and diversified allocation of funds on various projects.

The participatory budgeting model of the territorial type is characterized by the following main features: (a) The model is more focused on local, specific residential areas and the resolution of their problems, with a greater emphasis on infrastructure development/renewal projects. (b) It involves the implementation, discussion, and coordination of interzonal and subzonal project initiatives. (c) The selection of such project initiatives, which will mainly address the existing problems of the entire municipality, is more challenging.

Some of the weaknesses of the model are the high logistical and organizational effort and the availability of human resources, but these issues can be corrected by optimizing the size of the area and planned work, as well as additional support from various actors (donors, non-governmental and humanitarian organizations, local businesses in social responsibility) through the involvement of human, material and financial resources.

The drawbacks of the model can be overcome by excluding certain types of infrastructure projects (e.g., road construction, outdoor lighting, sewage, water supply, etc.) from the line item of the participatory budgeting and transferring them to other budget items. Thus, the achievement is innovative, socio-cultural, and more focused on the needs of vulnerable groups.

2. Thematic type participatory budgeting model procedures. Within the framework of the thematic model, all project proposals must comply with a pre-defined topic (social assistance and allowances, support of youth and elderly population, development of school readiness and non-formal education system, development of certain skills of adults, etc.).

The thematic model of participatory budgeting is characterized by the following *main features*: (a) The model is primarily focused on addressing issues at the municipal level, through which services are provided to the entire population of the municipality. Projects can be implemented within a specific locality, but in such cases, the entire municipality should benefit, not just the residents of that particular area.

(b) In some cases, this model, as implemented in different countries, excludes the implementation of infrastructure projects that provide benefits exclusively to a single territorial unit.

One of the disadvantages of this model is that the population is less ready to actively participate in the process of solving problems at the municipal level. Hence the importance of the awareness campaign. Only a well-organized and active campaign ensures the high involvement of the population.

Civil society is a very important actor in this model. Its role is all the more important, the larger the budget. The involvement of active representatives of civil society in the development of model procedures and control processes will only have a positive impact on the effectiveness of the model.

3. Procedures of the model of participatory budgeting of the mixed type. The mixed participatory budgeting model is a compilation of the two previous models: the model allows for discussion and voting on both community proposals and thematic projects. Therefore, from the very beginning, it should be determined which part of the PB budget will be allocated to the needs of the community and which part to thematic project proposals.

The mixed-type model of participatory budgeting is characterized by the following *main features*: (a) the model is focused both on solving local problems of one particular settlement or community, as well as on the development of projects to be implemented within the municipality as a whole; (b) the main actor of the model should be the active representatives of the civil society, from which the implementing, regulatory and controlling formal bodies will be formed; (c) The structural units of the municipality are involved in the process as supporting actors who will carry out the expertise and logistical support of the project proposal.

As practice shows, the involvement of the population within the mixed model is high, as a socially active person can participate in the process of budgeting in the role most convenient for him (controlling, organizational, or group of development of project proposals). As a result, the readiness of the population to participate in the processes and trust in the actual results is high under the competent management of the processes.

Nevertheless, in the above model, the influence of entities formed from the population on the final decision is small because, under current Georgian legislation, the mayor/governor of the municipality is responsible for developing the budget, and the developed budget is approved by the city council, so they have leverage over the final decision.

2.4. The procedure for selecting a participatory budgeting model

As we have already mentioned above, when choosing a model of participatory budgeting, it is necessary to take into account the socio-cultural and geographical features of a particular municipality. As part of this process, several basic issues should be discussed, and based on the results, a model adapted to the municipality should be selected:

1. The amount of funding for the participatory budgeting process by the municipality in the next budget year. The amount of available funds determines the amount of funds needed to implement project proposals in the next budget year, as well as the amount of work needed to develop information and education activities and the project proposal under development.

As a result of the analysis, the approximate answers reflecting the amount of financing of the participatory budgeting process are "small" and "large", after which the desired model is determined by additional questions. The given answers, in turn, determine the subsequent questions: if the answer is "low", you go to question №2, and if "high", – go to question №3. Ultimately, it is important that all three questions are answered.

Georgian and international practice shows that in those models of participatory budgeting, where small financial resources are allocated, the intended goal – maximum involvement of the population – has not been achieved. At the same time, those models where large amounts of financial resources are available require more attention and external control.

Therefore, it is important to determine from the beginning what financial resources will be available when choosing a model. For the participative budgeting process, the funds needed to finance the outreach campaign and other logistical costs should be

allocated. At the same time, it is necessary to carry out at least three budgeting cycles in order to be able to evaluate both the model itself and the effectiveness of the works to be implemented.

2. The type of urban development of the municipality. As we mentioned above, the type of urban development of the municipality reflects the logistical problems that arise in the implementation of the model, the difficulties of delivering information to the target groups, and the involvement of the masses in the decision-making process.

As a result of the analysis, the probable answers reflecting the urban development of the municipality are "rural type", "urban type", and "mixed type". As Georgian and international practice shows, the type of urban development has a great influence on the participatory budget model. What can be easily achieved in a city-type settlement is associated with very high logistical, human, and financial costs in rural municipalities with difficult terrain (and not only), which directly limits the effectiveness of the model: (a) In most cases, in rural and mixed-type municipalities, depending on their specificity, it will be more appropriate to introduce a model of participatory budgeting that ensures high involvement of the population of historically existing communities and small settlements. This is due to the close ties of relatives and acquaintances within the community and the experience accumulated within the framework of community mobilization projects historically formed in the community and implemented by the efforts of various municipal or donor organizations. It is also important that the standard forms of ensuring citizens' participation defined by the Local Self-Government Code (general meeting of the settlement, meetings with the mayor/governor, and petition) are better adapted to the specifics of small settlements and communities and are actively used by the municipality's leadership; (b) In city-type settlements there are less close social ties between the population, that is why it is important to involve the civil society as much as possible in the process.

3. The level of development of civil society. As mentioned above, an analysis of the level of development of civil society is important for choosing a model suitable for high-budget funding and/or urban-type settlements. In these models, civil society

is included both as a subject of monitoring of the process and as a subject of outreach campaigns. Moreover, active representatives of civil society have skills in developing project proposals and experience in implementing such types of work.

As a result of the analysis, the probable answers reflecting the level of civil society development are "high" and "low". As Georgian and international practice shows, in the model of participatory budgeting, where civil society is developed, the involvement of citizens is high, the implementation of projects is effective, and the spending of public funds is efficient. Such models represent a mixed type of participatory budgeting, where project proposals correspond to both thematic and community-type processes, which ensure low risks.

At the same time, regardless of the size of the municipality's budget and/or the municipality's urban development, if the level of civil society development is low, in order to minimize logistical risks, it is preferable to select only participatory budgeting thematic models. Within such a model, the processes are easier to manage, and the methods of direct democracy can be used for decision-making (for example, municipal voting, including the use of electronic systems).

At the same time, it should be taken into account that what can be easily achieved in an urban settlement is associated with very high logistical, human, and financial costs in the case of rural and mixed-type municipalities, which directly limits the effectiveness of the model.

2.5. Work procedures of the participatory budgeting model

Any model of participatory budgeting consists of various working procedures, which must comply with a set of methods and approaches that characterize this particular model. At the same time, it is necessary to comply with the principles of good governance and to ensure their effectiveness and compliance with the law as much as possible.

Regardless of which model is chosen, the sequence of work must be very clearly established and detailed in the work procedures, and the actors responsible for it must be identified. At a minimum, any model should have the following

work procedures: (1) population group meetings; (2) outreach campaign; (3) development and submission of project proposals; (4) voting and final decision; (5) evaluation of the participatory budgeting process and work procedures.

1. Group meetings of the population. One of the important working procedures of participatory budgeting is group meetings of the population. The purpose of these meetings is to identify problems and priorities at the local and municipal levels through the involvement of the population and to identify ways to solve them.

Depending on the model, group meetings of the population can be held: (a) at the level of a community, village, township, or city with a small area or a historically formed district; (b) at the village, district, and/or city level; (c) at the municipality level; (d) in specific vulnerable population groups.

All decisions at group meetings must be made by voting and/or other methods of direct democracy. The type of voting and how the results are determined must be determined in advance and outlined in the voting procedures for group meetings with the public. At a minimum, the ballot should identify (a) budget priorities for the next year, (b) problems at the local and municipal level, (c) possible solutions to the problems identified, and (d) representatives of the population who will be involved in the work of the entities created by election.

Conducting and facilitating group meetings should be provided by the subject introducing participatory budgeting. Besides, the active participation of public mobilizers, representatives of the mayor's office, and deputies of the city council in this activity is possible. Active participation of non-governmental organizations is also possible. However, it must not reduce the level of involvement and influence of citizens in decision-making.

Maximum attention should be paid to the gathering of citizens in places for which: (a) citizens' meetings should be held in places easily accessible to the public so that they do not have to travel long distances; (b) school buildings should be used as much as possible for meetings with young people; (c) transportation services will be provided to vulnerable groups to attend both thematic and general meetings, if necessary.

2. Informational and educational campaign. As part of the participatory budgeting process, it is mandatory to conduct an outreach campaign as intensively and extensively as possible. The purpose of the campaign is to raise public awareness of the rules and principles of participatory budgeting, to provide information about the development of the state budget, and to provide multifaceted, reliable, and up-to-date information about the budgeting process.

The outreach campaign should be conducted throughout the entire budget period. It is important from the very beginning to determine both the work plan and the organization responsible for implementation and allocate the appropriate amount of financial and human resources.[4]

As part of the outreach campaign, the following should be planned:
- Providing information on participatory budgeting (including up-to-date information on objectives, principles, working procedures, and ongoing processes). It is also important that information about submitted project proposals be provided in as broad and detailed a manner as possible;
- *Supply of reference and outreach materials.* The materials should reflect the information and results of the implementation of various projects planned within the budget of the previous year, as well as financing from the municipal and central budgets;
- *Providing information about public and municipal budgeting rules.* Provide reference and informational materials that reflect the rules for developing public and municipal budgets and municipal projects;
- *Providing reference and information materials.* Materials should reflect the information and results of various projects planned under the previous year's budget, as well as those financed from the municipal and republican budgets.

What the working procedures of the outreach campaign will be depends entirely on the model chosen. For example: (a) If the model is based only on the extensive use of the Internet system and less attention is paid to the gathering of population groups, it is important that all available communication and media tools are provided to disseminate detailed information about the cur-

rent participatory budgeting processes and the project proposals submitted; (b) If proposal development and final decision-making is the mandate of a participatory budgeting entity, it is important that their members are trained in the rules and requirements of municipal budgeting.[*]

3. *Development and submission of project proposals.* Working procedures for the development and submission of project proposals must reflect the approaches and characteristics initially incorporated into the chosen model of participatory budgeting: (a) who is the subject of submission of project proposals – only citizens or also represented by groups of citizens are acceptable; (b) submission of proposals for documentation is carried out through the Internet system or in the documentary form. The latter issues, on the one hand, are purely technical, but they need to be well understood when developing working procedures.

It is important to use all possible ways to submit project proposals and to be as close to the voters as possible. For example: additionally, project proposals can be submitted in schools located in localities and in the service centers of the Ministry of Justice, for which, on the one hand, procedures must be developed from the beginning and, on the other hand, appropriate funds and human resources must be allocated.[4]

4. *Voting and making final decisions on project proposals.* The main requirement of participatory budgeting is the determination of project proposals for funding by citizens through voting, which can be implemented using the following model:

- *Directly by citizens using traditional voting procedures.* This model requires large logistical, human, and financial costs, although its level of legitimacy is the highest. In addition, it is possible to achieve the maximum involvement of vulnerable groups by arranging a special polling station for them;

- *Directly by citizens using electronic voting procedures.* This model is similar to the previous one and relies on information and communication technologies for which websites and phone applications are used. The drawback of this model is the low level of skills in using information and communication technologies for certain groups of the population and technical problems with access to the Internet in some municipalities;

- *Participatory budgeting by representative bodies composed of citizens and, in some cases, elected using voting procedures.* Depending on who has the right and duty to make the final decision on project proposals within the selected model of participatory budgeting, an appropriate procedure should be developed. The content of the procedure also depends on the method of voting – electronic or traditional.

The decision itself can be made by the following type of voting: (1) single-choice voting, when a citizen chooses only one project proposal that is most acceptable to him; (2) multiple-choice voting, when a citizen chooses several project proposals that are most acceptable to him; (3) multiple-choice voting, when a citizen chooses several project proposals in the ballot, prioritizing them in the ballot.[5]

How many projects will be included in the municipality's budget for next year depends on the amount of funds allocated and other parameters and must be determined in advance.

5. *Evaluation of the participatory budgeting process and working procedures.* Evaluation of the participatory budgeting process and working procedures should be carried out to improve the model of participatory budgeting, increase efficiency, and gain and strengthen public confidence. Evaluation procedures are carried out by the su-

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**** At any stage of the campaign, it is possible and desirable to involve representatives of non-governmental organizations and donor organizations.

4 Vanishvili, M., Katsadze, I., Vanishvili, N. (2021). Public finance reform and state transfer policy in Georgia. *Theoretical and empirical scientific research: Concept and trends: Collection of scientific papers «ΛΟΓΟΣ» with proceedings of the II International Scientific and Practical Conference,* (Vol. 1), 26-30.

5 Vanishvili, M., Chelidze, M., Gelitashvili, G. (2023). Challenges and perspectives of municipal participatory budgeting in Georgia. *Conference proceedings of the International Scientific and Practical Conference «Modern Knowledge: Research and Discoveries»* (102-119). Vancouver, Canada (In order to make the budgeting process even more effective, it is possible to use several voting rules, which will be adapted to each work procedure and the rights and duties of the subject).

pervisory body of participatory budgeting policies and processes. The evaluation should look at how thoroughly the procedures were followed, whether there were any systemic problems and/or complaints from actors involved in the processes, how existing problems were resolved, and how effectively the allocated funds were spent. Particular attention should be paid to the effectiveness of the outreach campaign and the involvement of vulnerable groups in the processes.

The content of each procedure depends entirely on the specifics of a particular municipality, but depending on the chosen model, if necessary, it is possible to add other procedures, which will further increase the effectiveness of the planned work.

CONCLUSION

When implementing a specific model of participatory budgeting, it is necessary to take into account several main factors, which most affect the effectiveness of the model's implementation, based on the reality of Georgia. These factors include (a) the urban arrangement of the municipality, (b) the size of the municipality's budget, and (c) the development of civil society.

Any participatory budgeting model should be based on the following operating principles: (a) good governance principles should be respected in the model design and implementation procedures; (b) all model procedures should be based on the so-called PDCA cycle (Deming cycle). This cycle en-

sures the effectiveness of the procedural management system and compliance with applicable legislation; (c) the established procedures should take into account the context and geographical characteristics of the particular municipality; (d) the actors of the model should be identified and their authority clearly defined at the planning stage; (e) the forms of citizen involvement defined by Georgian legislation and additionally should be used to the maximum extent possible.

Taking into account the international practice and experience in the field of participatory budgeting in Georgia, there are three types of participatory budgeting models: the model of participatory budgeting of the community type, the model of participatory budgeting of the thematic type, the model of participatory budgeting of the mixed type.

When selecting a model of participatory budgeting, the socio-cultural and geographical features of a particular municipality should be taken into account. As part of this process, several basic issues should be discussed, and based on the results choose a model adapted to the municipality: the amount of funding of the participatory budgeting process by the municipality in the next budget year; the type of urban development of the municipality; the level of development of civil society.

Any participatory budgeting model should have at least the following operating procedures: (a) group public meetings; (b) an outreach campaign; (c) development and submission of project proposals; (d) voting and final decision; (e) evaluation of the participatory budgeting process and operating procedures.

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გლობალიზაციის პირობებში ბიზნესის ციფრული, ინფორმაციული, ტექნოლოგიური პრობლემატიკა

DIGITAL AND TECHNOLOGICAL ISSUES IN BUSINESS WITHIN THE GLOBALIZATION FRAMEWORK

FORECASTING CUSTOMER BANK BEHAVIOR USING WEKA AND CLASSIFICATION ALGORITHMS

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ABSTRACT. Banks derive significant profits from loans, necessitating careful customer selection to mitigate default risks. This study analyzes customer behavior at Société Générale Algeria Bank using three classification algorithms and using Weka software. A dataset comprising 300 customers was evaluated with three algorithms: Bayesian Network, Naïve Bayes, and the J48 Decision Tree. The goal of this study was to identify the most effective algorithm for classifying prospective customers as acceptable or not for loan approval. The performance of these algorithms was compared, focusing on accuracy and reliability. The results of this study indicated that the J48 Decision Tree algorithm outperformed the other methods, demonstrating superior classification accuracy. This suggests its potential as a robust tool for optimizing decision-making processes in the bank's loan system. By integrating the J48 Decision Tree into its operations, the bank could enhance its ability to identify suitable customers, minimize risks, and ensure sustainable profitability in its lending practices.

KEYWORDS: DATA MINING, WEKA, BANK, LOANS, CLASSIFICATION ALGORITHMS

1. INTRODUCTION

Banks and businesses alike are in a volatile, pressured world. They need to be more responsive to customers, helping them manage finances and access services quickly and easily on their channel of choice while at the same time delivering operational efficiencies. To accomplish that, these modern banks are not only employing management information systems but are also starting to introduce robust data mining practices more and more into their core business processes. Data mining, the process of identifying hidden patterns from the data that are relevant to the business, is considerably practical in the business area and yields successful results. The data mining methods are benefiting from ever-developing technology, and people are also intensifying their efforts. Over 60% of banks are currently using data mining methods to help them gain a better understanding of their customers' behaviors.

One of the best-known open-source tools for data mining practice is Weka. Weka contains tools for data pre-processing, classification, regression, clustering, association analysis, and visualization and allows for output model and inclusion func-

tion diagrams. The dataset used in the study contains financial transactions associated with people. The study has considered the prediction of customer banking behavior, and for this, several algorithms of the Weka tool are applied. The necessity of being able to predict the future possible application of the customer is needed to prevent possible negative results. The aim is to determine whether or not the account of the customer will be open or closed in the future. The methods applied are Naive Bayes Classifier, Random Tree Classifier, J48 Classifier, SMO Classifier, and Simple Logistic Classifier. The best success result has been achieved with the J48 Classifier. With the data mining methods, marketing campaigns for the customer can be applied, and business strategies can be developed and tailored to the target customers' behaviors.

2. LITERATURE REVIEW

A Classification-based model to assess customer behavior in the banking sector. This study used three classifiers, K-NN, decision tree, and artificial neural networks, for predicting customer behavior in the banking sector, and this study concluded that Artificial neural networks (ANNs) outperform both decision trees (DTs) and k-nearest neighbors (k-NNs).

A Case Study of Predicting Banking Customers' Behaviour by Using Data Mining. In this study, the proposed data mining framework manages the relations between banking organizations and their customers, the results indicate that the Neural Network model achieves better accuracy but takes a longer time to train the model.

An Efficient CRM-Data Mining Framework for the Prediction of Customer Behaviour. The goal of this study is to predict the behavior of customers to enhance the decision-making processes for retaining valued customers, using two classification models, Naïve Bayes, and Neural networks, in the end, the results show that the accuracy of Neural Network is comparatively better.

A Prediction Model for Bank Loans Using Agglomerative Hierarchical Clustering with Classification Approach. The goal of this study is to leverage machine learning techniques to enhance

decision-making processes in the banking sector, it reached the following findings: the data with decision tree obtained an accuracy of 84%, with the random forest obtained an accuracy of 85%

3. METHODOLOGY

Data mining is a scientific and computational process used to extract knowledge represented by hidden relationships in large datasets. It relies on various computational and statistical tools and techniques to enable machines to learn and deduce new knowledge. Below, we introduce the algorithms used in our data mining study and the Weka software utilized for different stages of the study.

3.1. Bayesian Network Algorithm (Bayes Net Classifier)

This probabilistic model addresses the problem of interdependent relationships among variables. It is used for the formal representation of variables and probabilistic relationships in a network structure called a Bayesian network, which consists of nodes (representing variables) and links (indicating relationships between variables). This network structure assumes that parent variables influence others, relying on mathematical and statistical principles such as conditional probability.

- **Conditional Probability: P(A/B)**
This represents the occurrence of event A, given that event B has occurred. It is expressed by the following phrase:

$$P(A|B) = \frac{P(A \cap B)}{P(B)} \ (1)$$

- **Chain Rule of Probability**
This rule allows us to express the joint probability of multiple variables using conditional probabilities. For example, given three variables A, B, and C, we can express it with the following formula:

$$P(A, B, C) = P((A|B, C) \times P(B|C) \times P(C) \ (2)$$

- **Bayes' Rule or Bayesian Theorem**

Bayes' rule allows us to calculate the conditional probability of a hypothesis H given evidence E, using the likelihood of the evidence given the hypothesis and the prior probability of the hypothesis. It is expressed by the following formula:

$$P(H|E) = \frac{P(E|H) \times P(H)}{P(E)} \quad (3)$$

Where:
- P(H/E) is the **posterior probability** of the hypothesis H given the evidence E.
- P(E/H) is the **likelihood** of the evidence E given the hypothesis H.
- P(H) is the **prior probability** of the hypothesis H.
- P(E) is the **probability of the evidence** E.
- The Structure of the Bayesian Network

The Bayesian network is represented by a directed acyclic graph (DAG), where the nodes represent variables, and the directed edges represent probabilistic dependencies between the variables. The structure of the Bayesian network encodes the conditional probability distribution over all the variables.

3.2. Naïve Bayes Classifier

The Bayesian Theory, Named after Thomas Bayes, this theory is vital in probability studies. It relates the probability of event A given event B to the probability of event B given event A.

$$P(A/B) = \frac{P(B/A)P(A)}{P(B)} \quad (4)$$

Naïve Bayes classification organizes information into categories by making predictions based on a simplistic assumption that all variables are independent, though this is often not realistic. Despite this assumption, Naïve Bayes works effectively in fields such as healthcare.

The basic idea of the Naive Bayes classifier is to determine the probability that a person with certain characteristics (X) belongs to a particular group (class). It assumes that these characteristics are independent of each other and calculates the probabilities accordingly. Then, it selects the group with the highest probability as the most likely group for that person.

Let Ci be the individual's class, and X the characteristics. This probability is expressed by the following statement:

$$P(C_i/X) = \frac{P(C_i)P(X=x_1,\ldots\ldots x_p/C_i)}{P(X=x_1,\ldots\ldots x_p)} \quad (5)$$

3.3. Decision Tree Algorithm (J48)

The J48 algorithm, an improved version of the C4.5 algorithm, classifies data by building a tree model that relies on sequential decisions. Each branch in the tree represents a decision, and the leaves represent final classifications. In data mining, decision trees help to describe, classify, and generalize specific datasets.

- **Tree Structure**

The internal non-terminal nodes are tests and are called decision nodes. The branches are the outcomes of these tests. The terminal leaf nodes represent decisions and are referred to as default classes. Each leaf represents a decision for a specific class based on all the tests performed from the root to that leaf (see Fig. 1).

FIG. 1: THE DECISION TREE DIAGRAM
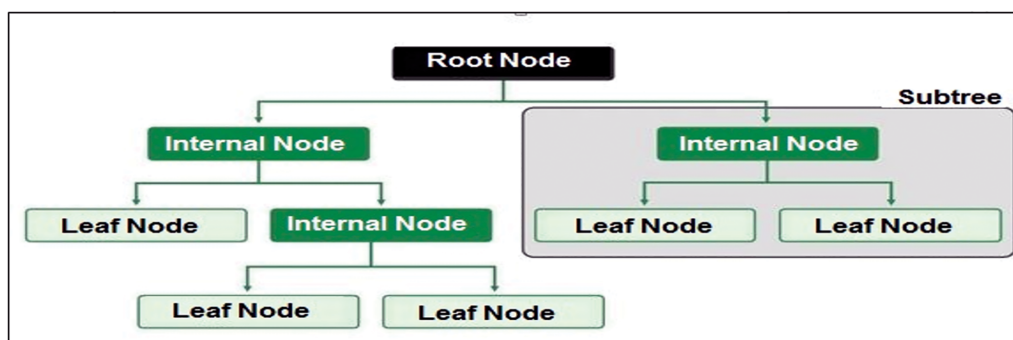
Source: prepared by the researcher

FIG. 2: STUDY STAGES USING THE DATA MINING METHODOLOGY
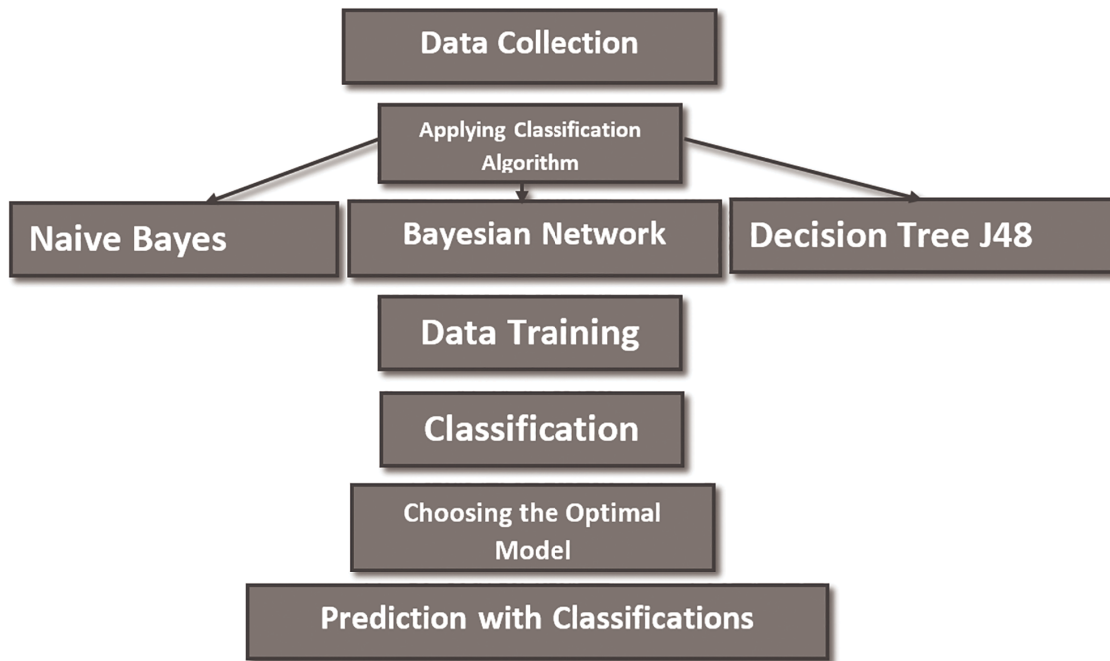
Source: Prepared by the Researcher

3.4. Model Evaluation

● **Confusion Matrix**

Using the confusion matrix and performance indicators like accuracy, sensitivity, and error rate, we evaluated the model's performance, assessing correct and incorrect classifications.

● **Performance Metrics**

These indicators are calculated based on the confusion matrix (Adnan, Sarno, & Sungkono, 2019, 124) [15]:
We use the following symbols:
- ○ VP: True Positive;
- ○ FP: False Positive;
- ○ VN: True Negative;
- ○ FN: False Negative;
- ○ P: Total number of positive observations;
- ○ N: Total number of negative observations.
- » Error Rate = (FP + FN) / (N + P), which represents the percentage of individuals or observations that the model classified incorrectly.
- » Sensitivity = VP / (VP + FN), which mea-

sures the model's ability to detect true positives.
- » Specificity = VN / (VN + FP), which measures the model's ability to correctly identify true negatives.
- » Accuracy = (VP + VN) / (N + P), which represents the percentage of individuals that the model correctly predicted.

4. EMPIRICAL RESULT AND DISCUSSION

The data mining study using Weka followed these steps: data collection, training, application of classification algorithms, and selection of the optimal classification model to make predictions on new classifications (see Fig. 2).

● **Study Variables**

The study aimed to create a model aiding bank consultants in decision-making regarding loans. Variables considered include previous credit history, loan purpose, salary, gender, housing status, loan duration, and age. The sample comprised 300 customers.

FIG. 3: STATISTICS FOR ALL VARIABLES
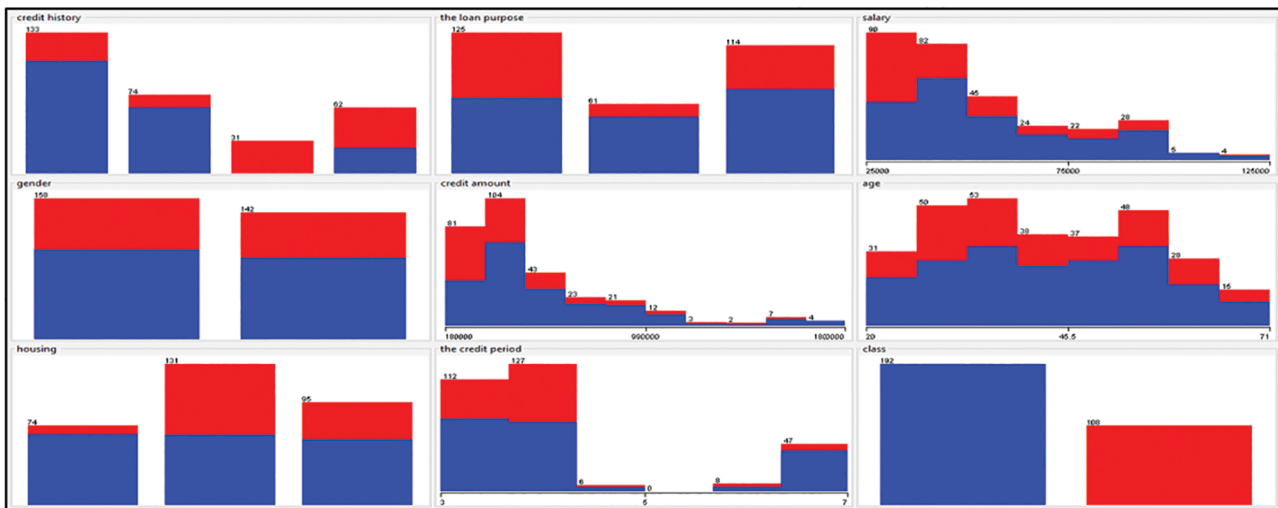
Source: Outputs of the Weka Software

● **Descriptive Study of Study Variables**

The following section presents various statistics for each variable. The Weka software displays detailed information for each variable (see Fig.3).

For instance, regarding the customer's previous loans variable, 133 customers had no prior loans, 74 had paid off all their loans, 31 had delayed payments, and 62 still had outstanding balances. The loan purpose variable showed that 125 customers took loans for household appliances, 61 for home layouts, and 114 for purchasing a motorcycle. The income variable ranged between 25,000 DZD and 125,000 DZD. For the gender variable, 158 were male and 142 were female. The loan value variable ranged from 180,000 DZD to 1,800,000 DZD. The age variable spanned from 20 to 71 years. In terms of housing status, 74 customers owned their homes, 131 rented, and 95 lived in free accommodations. The loan term ranged between 3 and 7 years. The customer classification variable resulted in 192 classified as 'good' and 108 as 'bad'.

4.1. Study Results

The classification process involves grouping data based on shared variables in the form of categories. To achieve this, data mining offers numerous classification algorithms, including those used in this study:

» Naïve Bayes Algorithm;
» Bayesian Network Algorithm;

FIG. 4: RESULTS OF THE J48 DECISION TREE ALGORITHM

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances        243            81      %
Incorrectly Classified Instances       57            19      %
Kappa statistic                         0.58
Mean absolute error                     0.2195
Root mean squared error                 0.3933
Relative absolute error                47.5951 %
Root relative squared error            81.9316 %
Total Number of Instances             300
```

Source: Outputs of the Weka Software

FIG. 5: RESULTS OF THE BAYESIAN NETWORK ALGORITHM

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances          241               80.3333 %
Incorrectly Classified Instances        59                19.6667 %
Kappa statistic                          0.558
Mean absolute error                      0.2743
Root mean squared error                  0.3651
Relative absolute error                 59.4814 %
Root relative squared error             76.0509 %
Total Number of Instances              300
```

Source: Outputs of the Weka Software

» J48 Decision Tree Algorithm.

These algorithms were applied to create a model to predict the behavior of new loan-seeking customers. The results were as follows:

● **Classification Results with J48 Decision Tree Algorithm**

After applying the J48 algorithm using Weka on the sample under study, the results were as shown in the table (see Fig. 4):

After applying the J48 algorithm using Weka on the sample data, the results are shown in the following table. We observe that the Kappa statistic has a value of 0.58, indicating a moderate agreement between predicted classifications and actual data categories. The model's classification accuracy was 81%, correctly classifying 243 customers, while 19% (57 customers) were misclassified.

● **Classification Results with Bayesian Network Algorithm**

After applying the Bayesian Network algorithm using Weka on the sample under study, the results

were as shown in the table (see Fig. 5):

The Bayesian Network algorithm, when applied with Weka on the sample data, showed a Kappa statistic of 0.55, indicating a moderate level of agreement between predicted and actual classifications. The model's accuracy was 80.33%, correctly classifying 241 customers, while 19.66% (59 customers) were misclassified.

● **Classification Results with Naïve Bayes Algorithm**

After applying the Naive Bayes algorithm using the Weka program on the sample under study, the results are as shown in the table (see Fig. 6):

The Naïve Bayes algorithm produced a Kappa statistic of 0.36, indicating a lower agreement level. The model achieved a classification accuracy of 68.66%, correctly classifying 206 customers, while 31.33% (94 customers) were misclassified.

● **Selecting the Optimal Classification Algorithm**

The following table shows the performance

FIG. 6: RESULTS OF THE NAIVE BAYES ALGORITHM

```
=== Stratified cross-validation ===
=== Summary ===

Correctly Classified Instances          206               68.6667 %
Incorrectly Classified Instances        94                31.3333 %
Kappa statistic                          0.3662
Mean absolute error                      0.3162
Root mean squared error                  0.4167
Relative absolute error                 68.5794 %
Root relative squared error             86.8041 %
Total Number of Instances              300
```

Source: Outputs of the Weka Software

TABLE 1: EVALUATION METRICS FOR THE THREE ALGORITHMS

INDICATOR	J48 ALGORITHM	BAYESIAN NETWORK ALGORITHM	NAIVE BAYES ALGORITHM
Sensitivity	0.810	0.803	0.687
False Positive Rate	0.241	0.265	0.294
Accuracy	0.808	0.801	0.719
F-Measure	0.808	0.799	0.693
MCC	0.581	0.563	0.378
ROC Area	0.842	0.863	0.819
PRC Area	0.825	0.875	0.832

Source: Prepared by the researcher based on Weka software.

metrics for the three algorithms, based on which we determined the optimal algorithm (see Table 1):

The J48 Decision Tree algorithm achieved the highest classification accuracy, making it the best choice for customer classification in this case.

- Decision Tree Diagram

Below is the decision tree diagram obtained using the J48 algorithm (see Fig. 7).

- Predicting New Cases of Prospective Loan Customers

To verify the quality of the obtained model, we tested it on five customer cases with known outcomes, and the results were as follows:

Figure 07 represents the decision tree obtained from the J48 classification algorithm, which will be used to predict the status of new loan applicants.

The figure illustrates the decision tree followed by decision-makers in the institution under study to determine or predict customer behavior. The tree considers all cases, and when applied to the cases shown in the following table, the results are as follows (see Table 2).

From the table, we have five out-of-sample cases. We predicted each case's behavior based on the J48 decision tree, and almost all results matched the actual classifications except for the first case. In that instance, the true classification categorized the customer as "Poor," while the de-

TABLE 2: PREDICTION RESULTS

PREVIOUS LOAN STATUS	LOAN PURPOSE	MONTHLY INCOME	GENDER	LOAN AMOUNT	AGE	HOUSING STATUS	LOAN PAYMENT TERM (YEARS)	ACTUAL CLASSI-FICATION	PREDICTED CLASSI-FICATION
Has outstanding payments	Motorcycle purchase	25,000	Male	340,000	28	Homeowner	3	Poor	Good
Payment delays	Home appliances	25,000	Female	280,000	30	Rented	4	Poor	Poor
Fully paid	Home appliances	60,000	Female	640,000	39	Rented	4	Good	Good
No previous loans	Home renovation	59,000	Male	890,000	60	Homeowner	5	Good	Good
Has outstanding payments	Home renovation	82,000	Male	600,000	54	Free	6	Poor	Poor

Source: Prepared by the researcher using J48 Decision Tree

cision tree classified them as "Good".

4.2. Analysis of Study Results

Three different classification algorithms were applied: the J48 decision tree algorithm, the Naive Bayes algorithm, and the Bayesian Network algorithm. These were implemented using Weka software, with a sample of 300 customers for whom all relevant variables were available and whose loan behavior was known. Classification was based on whether the customer was "Good" or "Bad" for the loan. The model was trained using cross-validation, and the results were as follows:

Using the correct classification rate as the evaluation criterion, J48 Decision Tree had the highest accuracy at 81%. To evaluate this model's performance, the indicators were as follows:

Kappa Statistic: The kappa coefficient was 0.58, indicating moderate agreement between predicted and actual classifications, suggesting a reliable classification model, though some error is present.

Correct Classification Rate: The model's accuracy reached 81%, equating to 243 correctly classified customers, as indicated by the sensitivity metric, which reflects the model's capability to detect correct classifications.

Incorrect Classification Rate: The error rate was 19%, corresponding to 57 misclassified customers.

False Positive Rate (FP Rate): The FP rate was 0.24, meaning that 24% of negative cases were incorrectly classified as positive.

Precision: The model's precision reached 0.808, as reflected in the F-measure, indicating that 80.8% of cases predicted as positive were indeed positive, while 19.2% were incorrectly classified as positive.

ROC Area: The ROC area was 0.842, indicating a reasonable ability of the model to distinguish between positive and negative cases, with an 84.2% probability that a randomly selected positive case would be correctly classified over a negative one.

PRC Area: With a PRC area of 0.825, the model demonstrated a good balance between precision and recall for distinguishing positive and negative cases.

The final form of the decision tree comprised 36 nodes with 21 leaves. The root node was represented by the "Credit History" variable, indicating its primary influence on loan eligibility decisions.

We used this model to predict the behavior of loan-seeking customers with a sample of 5 customers outside the previously used dataset. The results were satisfactory, as 4 out of the five customers were classified correctly.

CONCLUSION

This methodology contributes to the early prediction of the behavior of loan-seeking customers in the banking institution, providing decision-makers, such as customer advisors, with a preliminary understanding of the individual's behavior. This, in turn, enhances and rationalizes decision-making. It allows decision-makers to reject cases where indications suggest that the customer might be unsuitable for the loan, thereby reducing the risk of dealing with clients who are unable to repay loans and improving the overall quality of the bank's clientele.

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DIGITAL FINANCE IN ALGERIA: ANALYZING THE IMPACT OF COVID-19 ON E-BANKING ADOPTION

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ABSTRACT. This study aims to analyze the impact of the COVID-19 pandemic on the development of electronic banking in Algeria, focusing on how the health crisis has accelerated the digital transformation of the banking sector and identify the challenges and opportunities associated with this transition in a specific Algerian context. The study uses a descriptive and analytical approach. It is based on statistical data to illustrate the evolution of electronic banking in Algeria. The analysis focuses on public policies, bank initiatives, and consumer behavior.

The study reveals that the COVID-19 pandemic has significantly impacted the development of e-banking in Algeria. There has been a sharp increase in digital transactions, including bank transfers, electronic payments, and ATM withdrawals. Electronic banking has played a crucial role in ensuring the continuity of financial services during the lockdown periods. However, challenges persist in terms of security, financial inclusion, and the development of digital infrastructure.

KEYWORDS: COVID-19, ELECTRONIC BANKING, ALGERIA, DIGITAL TRANSFORMATION, CHALLENGES AND OPPORTUNITIES

1. INTRODUCTION

The world is currently living in the era of the digital revolution, in which information technologies prevail. Advances in information and communication technologies (ICT) have revolutionized business management methods. Technology serves as an essential link between the information and business processes. ICT has had a significant influence in almost every sector,[1] and banks, like other business entities, have been leveraging ICT for many years. The health crisis with the emergence of the COVID-19 pandemic at the end of 2019 and its rapid spread worldwide threatened the collapse of the global economy, banking sector, and various vital sectors in countries. Algeria is one of the countries where this pandemic appeared, which required preventive measures to

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1   Yi, L., & Thomas, H. (2007). A review of research on the environmental impact of e-business and ICT. *Environment International*, *33*(6), 842. <https://doi.org/10.1016/j.envint.2007.03.015>.

prevent the spread of COVID-19 among the population; this is the process of closing borders and all public institutions, schools, and universities and freezing various economic, financial, and banking activities to preserve the security of citizens. To ensure the continuity of the banking sector in Algeria, it was necessary to support continuous developments in the field of technology by relying on digitization through the promotion and use of information and communication technologies.

Where the State has sought to redouble its efforts to meet the needs of customers and achieve digital transformation because of its various positive effects on the national economy and the banking sector, by supporting and stimulating the use of digital means and electronic processes in payment, where the general framework for the transition to a non-monetary payment system has been developed, in accordance with recognized international standards, taking into account local variables, as came after the precautionary measures imposed by the health crisis and urged by the Ministry of Health, and the National Corona Virus Monitoring and Tracking Committee, by providing the most appropriate climate for the exercise of these online operations through remote work due to the activation of social distancing, the process adopted by the banking sector, which is considered an intermediary between customers, where electronic banking or online banking services have enabled the customer to manage online transactions.

Internet and technological advances have transformed the way financial services are offered and used.[2] E-banking has transformed the banking sector by providing clients with the ease of doing financial transactions at any time and from any location. Furthermore, e-banking has enhanced the effectiveness of banking procedures and reduced the cost of providing services.[3]

Banks and various financial institutions offer innovative and alternative electronic channels to maintain competitive advantage and meet customer expectations, and banking institutions offer various types of electronic banking services. These include ATMs, e-wallets, debit cards with chips, electronic payment terminals (EDCs), mobile banking, and online banking.[4] Customers are increasingly using their mobile devices and desktops to make payments for products and services through online banking.[5]

Global e-banking played a pivotal role during the COVID-19 pandemic by operating entirely electronically without exchanging tangible goods to protect people and maintain social distance so that people feel completely safe and easily accessible in online transactions (such as payments for essential items (food and medicine), billing, top-up, money transfer, receipt of payments, etc.) Online banking is now an essential e-commerce application adopted by financial institutions to satisfy the growing demands of their customers and remain at the forefront of technological advances.[6]

This study helps us understand how the COVID-19 pandemic accelerated the digital transformation of the banking sector in Algeria. As digitalization becomes essential worldwide, it is crucial to see how a country like Algeria has responded and adapted its banking services to this new reality. It also highlights the Algerian banking sector's challenges, including security, financial

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2   Malaquias, R. F., Hwang, Y. (2019). Mobile banking use: A comparative study with Brazilian and U.S. participants. *International Journal of Information Management,* 44, 134. <https://doi.org/10.1016/j.ijinfomgt.2018.10.004>.

3   Allada, V., Dubey, R., Agarwal, S. (2014). Exploring antecedents of online banking customers and empirical validation. *International Journal Productivity and Quality Management,* 14, 475. <https://doi.org/10.1504/IJPQM.2014.065559>.

Indrasari, A., Nadjmie, N., Endri, E. (2022). Determinants of satisfaction and loyalty of e-banking users during the COVID-19 pandemic. *International Journal of Data and Network Science,* 6(2), 498. <https://doi.org/10.5267/j.ijdns.2021.12.004>.

Lapina, E. N., Orazaliev, A. A., Kalnaya, A., Oseledko, I. V. (2021). Increasing the availability of financial services as a factor in ensuring socio-economic stability in the region. *The Challenge of Sustainability in Agricultural Systems,* 722. <https://doi.org/10.1007/978-3-030-72110-7_78>.

4   Indrasari, A., Nadjmie, N., & Endri, E, Op. cit., 498.

5   Zhang, T. L., Kizildag, M. (2018). Banking "on-the-go": Examining customer's adoption of mobile banking services. Int.J. Qual. Serv. Sci, 10, 283. <https://doi.org/10.1108/ijqss-07-2017-0067>.

6   Hammoud, J., Bizri, R., El Baba, I. (2018). The Impact of E-Banking Service Quality on Customer Satisfaction: Evidence from the Lebanese Banking Sector. SAGE Open, 8, 54. <https://doi.org/10.1177/2158244018790633>.

inclusion, and digital infrastructure. At the same time, it explores the opportunities created by this digital transition, such as the potential to improve access to financial services for a more significant portion of the population. This study aims to review the evolution of electronic banking services in Algeria, focusing on recent developments related to the COVID-19 pandemic.

The subsequent sections of this document are organized as follows: Section two provides a literature review. Section three outlines the conceptual framework. Section four discusses the role of the pandemic in accelerating the digitalization of the banking sector in Algeria. Section five examines the contribution of digital financial services to economic recovery. Finally, section six summarizes the progress in implementing electronic banking services in Algeria and suggests avenues for future research.

2. LITERATURE REVIEW

The rapid advancement of information and communication technologies has revolutionized the banking sector, leading to the widespread adoption of electronic banking.[7] E-Banking is an innovative tool that is rapidly becoming a necessity and a strategic asset for banks to remain profitable in a competitive market.[8] The Covid-19 pandemic accelerated this transformation, with lockdowns and social distancing measures requiring the use of digital channels.

Several key factors influencing customer satisfaction with electronic banking services in Libyan banks. These factors include perceived usefulness, ease of use, credibility, and customer attitudes[9]. This study reveals that customer attitude is the most important factor, followed by ease of use, credibility, and perceived usefulness. These findings suggest that banks need to focus on these aspects to improve customer satisfaction. The adoption of electronic banking by Algerian customers is analyzed through factors such as technological acceptance, ease of use, and transaction security[10]. This study highlights that key barriers to adoption include security concerns and a lack of awareness of the benefits of e-banking. Suggested strategies to improve adoption include strengthening security measures and increasing awareness of the benefits of e-banking. In addition, another study also explores the relationship between the quality of electronic banking services and customer satisfaction with financial services, identifying key factors such as reliability, efficiency, and security[11]. This study provides empirical evidence of the importance of these factors in improving customer satisfaction and proposes strategies for banks to improve their e-banking services. The use of digital financial services has increased significantly, especially in developing economies where access to traditional banking services is limited.[12]

During the COVID-19 pandemic, e-banking has highlighted its role in operating entirely electronically without exchanging tangible goods to protect people and maintain social distancing. People feel completely safe and easily accessible in online transactions (e.g., payments for essential items (food and medicine), billing, top-up, investment, money transfer, and receiving payments).[13]

7   Rehabi, S., Trad Khoja, H. (2021). The impact of providing electronic banking services during crises on increasing the competitiveness of banks - The case of the COVID-19 pandemic. *Al-Asil Journal of Economic and Administrative Research*, 270.

8   Ceyla, P., & al. (April 2020). Digital financial services. The World Bank Group. <https://www.worldbank.org/en/topic/financialsector/publication/digital-financial-services> [Last Access 30.09.2024].

9   Almansour, B., Elkrghli, S. (2023). Factors Influencing Customer Satisfaction on E-Banking Services: A study of Libyan banks. *International Journal on Technology, Innovation, and Management (IJTIM)*

3(1), 37. <https://doi.org/10.54489/ijtim.v3i1.211>.

10   Bellahcene, M., Latreche, H. (2023). E-Banking Adoption by Algerian Bank Customers: Towards an Integrated Model. *International Journal of E-Services and Mobile Applications, 15* (1), 5. <10.4018/IJESMA.317943>.

11   Vilhena, S., Navas, R. (2023). The impact of COVID-19 on digital banking. *Journal of entrepreneurial researchers, 1* (1), 24. <https://doi.org/10.29073/jer.v1i1.11>.

12   Bank, W. (2022). COVID-19 Drives Global Surge in Use of Digital Payments. <https://www.worldbank.org/en/news/press-release/2022/06/29/covid-19-drives-global-surge-in-use-of-digital-payments>. [Last Access 30.09.2024].

13   Vruti, C. (2021). Effectiveness of E-banking during the COVID-19 Pandemic. *International Journal of Advanced Research in Computer and Communication Engineering, 10*(10), 3. <10.17148/

Digital financial services have enabled governments to disburse money to those who need it quickly and efficiently and have enabled many households and businesses to quickly access payments and financing online. Risks to stability and integrity may exist, which could be exacerbated if the use of digital financial services is rapidly expanded in times of crisis without appropriate regulations and safeguards.[14]

Electronic financial services, developed during the 2008 financial crisis, played a crucial role in addressing the challenges posed by the COVID-19 pandemic[15]. The use of modern financial technology positively affects the work and policies of banks and financial institutions.[16] The pandemic has accelerated the digitization of banking services by several years, forcing banks to modernize their infrastructure and improve their online user experience.[17] The use of electronic payment methods in the Corona era accelerated and facilitated financial transactions and provided security.[18] The impact of COVID-19 on digital banking, noting a significant acceleration of digital transformation in the banking sector. Customers prefer these channels to traditional methods because of their convenience and security.[19] The pandemic has pushed banks to modernize their legacy systems to meet growing customer expectations.[20]

To examine the impact of the COVID-19 pandemic on the adoption of online banking services in Indonesia, comparing the effects on Islamic and conventional banks, the study shows that the pandemic has significantly boosted the use of these services. Factors such as perceived usefulness, ease of use, and trust have proven to be crucial in this process[21]. This demonstrates the importance of meeting customer needs and preferences to drive the adoption of digital services. Traditional banks face several challenges when adapting to the digital age. These challenges include the need to update legacy systems, ensure the security of digital transactions, and address customer concerns about privacy and trust[22]. To overcome these challenges, banks should prioritize improving the perceived usefulness, ease of use, and credibility of their e-banking services. In addition, targeted marketing campaigns and incentives can help improve customer attitudes towards digital banking. The COVID-19 pandemic has catalyzed the development and adoption of e-banking across the globe, with banks investing heavily in technology to facilitate remote transactions and ensure the continuity of services during lockdowns.[23] Digital banking has played an important role in improving financial inclusion.[24]

Fintech solutions play a crucial role in the banking industry's digital transformation.[25] Fin-

IJARCCE.2021.101001>.

14   DiCaprio, A., Bischof, D., Edwards, S., Facter, S., Goulandris, A., Meynell, D., Vrontamitis, M. (2020). Digital rapid response measures taken by banks under COVID-19. *International Chamber Of Commerce, 6.* <https://iccmex.mx/comision/posturas-herramientas/icc-covid-response-banks-best-digital-practice-2020pdf.pdf> [Last Access 30.09.2024].

15   Arner, D. W., Barberis, J., Walker, J., Buckley, R. P., Dahdal, A., Zetzsche, D. A. (2020). Digital finance & The COVID-19 crisis. *SSRN Electronic Journal.* <https://doi.org/10.2139/ssrn.3558889>.

16   Imran, A., Jaail, D. (2020). Modern Financial Technologies and Their Effects on Banks and Financial Institutions. Al-Aseel Journal of Economic and Administrative Research, 117. <https://www.asjp.cerist.dz/en/downArticle/462/4/1/118777>. (in Arabic). [Last Access 30.09.2024].

17   McKinsey & Company. (2020). The COVID-19 recovery will be digital: A plan for the first 90 days. Retrieved from McKinsey Digital <https://www.mckinsey.com/capabilities/mckinsey-digital/our-insights/the-covid-19-recovery-will-be-digital-a-plan-for-the-first-90-days> [Last Access 30.09.2024].

18   Razmat, K., Munad, S. (2022). The Importance of Electronic Payment Methods in the Time of Corona. *Journal of Ijtihad for Legal and Economic Studies*, 650.

19   Mansour, R., Tahraoui, M, Op.cit., 80.

20   Vilhena, S., Navas, R., Op.cit., 26.

21   Indrasari, A., Nadjmie, N., Endri, E. Op.cit., 500.

22   Carranza, R., Díaz, E., Sánchez-Camacho, C., Martín-Consuegra, D. (2021). E-banking adoption: an opportunity for customer value co-creation. *Frontiers in Psychology, 11*, 3. <https://doi.org/10.3389/fpsyg.2020.621248>.

23   O'Reilly, M. (2020). Deloitte Insights. <https://www2.deloitte.com/us/en/insights/economy/covid-19/banking-and-capital-markets-impact-covid-19.html> [Last Access 30.09.2024].

24   Ene, E., Abba, G., Fatokun, G. (2019). The Impact of Electronic Banking on Financial Inclusion in Nigeria. *American Journal of Industrial and Business Management, 9*, 1411. <https://doi.org/10.4236/ajibm.2019.96092>.

25   Campanella, F., Serino, L., Crisci, A. (2023). Governing Fintech for sustainable development: evidence from the Italian banking system. *Qualitative Re-*

tech companies have introduced innovative financial services that are profitable, efficient, and convenient, thereby improving their financial inclusion. For example, digital wallets and peer-to-peer lending have enabled individuals and SMEs to access financial services without going through the strict processes of traditional banks.[26]

3. CONCEPT OF ELECTRONIC BANKING SERVICES

Electronic banking is defined as the conduct of banking operations using modern information and communication technologies, whether for withdrawal, payment credit,[27] transfer, securities trading, or other banking activities. It is also defined as the provision of banking services using information and communication technologies through the Internet, automated vending machines, private networks, mobile phones, and fixed and personal accounts. Banking service is available after and within 24 hours, every day of the week, at high speed, at a lower cost, and without a meeting place between the customer and the bank.[28] There are several types of electronic banking services, which are services that depend on the use of the Internet and rely on highly skilled human frameworks[29] and community trust in financial institutions, and the development of e-commerce in this environment.

search in Financial Markets, 15(4), 560. <https://doi.org/10.1108/QRFM-01-2022-0009>.

26   Bousrih, J. (2023). The impact of digitalization on the banking sector: Evidence from fintech countries. Asian Economic and Financial Review, 13(4), 271. <https://doi.org/10.55493/5002.v13i4.4769>.

27   Hussein, R., Miaraj, H. (2004). Electronic Banking as an Approach to Modernizing Algerian Banks. Proceedings of the National Symposium on the Algerian Banking System and Economic Transformations - Realities and Challenges - University of Chlef, Algeria, 98. (In Arabic).

28   Nourine, B., Kandouz, A. (2007). Electronic Banking in Banking Institutions as an Approach to Building the Digital Economy in Algeria. Afak Journal, 04, 21. (in Arabic).

29   Tala, L. (2020). Electronic Administration and Modernization of Public Service: A Strategic Technological Choice for Administrative Reform. Al-Asil Journal of Economic and Administrative Research, 42. (in Arabic).

4. THE ROLE OF THE COVID-19 PANDEMIC IN ACCELERATING THE DIGITIZATION OF THE BANKING SECTOR IN ALGERIA

The Coronavirus has contributed to the acceleration of digitization in the banking sector in Algeria, where account-to-account transfers have reached a recovery, registering more than 2.9 billion dinars in 2020, an increase of 137% compared to 2019. Electronic payment has also been upgraded, and the number of transactions related to electronic payment services via the golden card has increased significantly, with more than 6.6 million cards with 3.8 million renewed cards issued in 2020. The Golden Card also recorded nearly 4 million transactions in 2020 compared to 2019 (about 670,000), an increase of 487% in one year.

The new self-payment service launched by Algeria Post via the Postal Mob application (which allows Gold cardholders to schedule the transfer of funds from a current postal account to other postal accounts) increased by 557% in transfers in one year (991,991 transactions in 2020 compared to 150,992 transactions in 2019). The same goes for payments via the electronic payment terminal (EPT), which increased by 773%, in addition to ATM withdrawals, which amounted to DZD 956 billion, an increase of 15% compared to 2019.[30]

The spread of the Coronavirus has forced the government to look for ways to develop electronic programs used in virtual transactions using the Internet between the customer and the banking and banking institution through virtual marketing, improving the quality of remote banking services and their expansion in Algeria, facilitating the adoption of receiving funds and allowing the receipt of hard currency funds, even partially, on "Western Union" in addition to establishing clear mechanisms for the process of sending money abroad that are distributed to all banks, and the establishment of bureau de change to ease the control of parallel markets.

The state was able to reach the neediest groups through social transfers and other financial aid through digital financial services. In the

30   Agency, A. P. (2022). Electronic payment "evolved" due to the COVID-19 pandemic in Algeria. Retrieved April O2, 2024. (in Arabic).

era of the Corona pandemic, it is crucial to prioritize the augmentation of transfer money allocated to beneficiaries and promote the use of digital operations. Amidst the current circumstances, digital financial services aid companies in resolving pressing liquidity issues. They facilitate seamless communication with financial service providers, expedite the withdrawal of funds from existing credit lines, and provide alternative financing options to offset the scarcity of liquidity in conventional financial operations.

5. HOW CAN DIGITAL FINANCIAL SERVICES PAVE THE WAY FOR ECONOMIC RECOVERY IN ALGERIA?

Algeria and the MENA area have experienced economic shocks worsened by the coronavirus epidemic, leading to decreased oil prices. The most recent estimates from the Economic Observatory indicate that the Algerian economy had a substantial decline in real GDP for 2020. Algeria's pursuit of digital transformation, a prominent development objective before the epidemic, has become crucial in the country's recovery efforts. Access to cheap financial services is crucial for reducing poverty, promoting economic development, and building resilience. It also facilitates financial inclusion, particularly for women. In Algeria, a significant portion of the population currently needs access to basic transaction accounts, with 57% of adults and 71% of women unable to safely and effectively make and receive payments.

Consequently, they needed to provide access to more extensive financial services such as savings, insurance, and credit. In conjunction with conventional financial service providers, financial technology can decrease expenses, enhance efficiency, ensure safety and transparency, and provide more secure financial services. Expanding the availability of digital payment options would serve as an entry point for Algerians who need to be more knowledgeable about the financial industry to utilize digital financial services. The expansion of mobile phones in many developing nations has been used by mobile financial services to initiate the "first wave" of digital financial services. Despite having better access to mobile

broadband networks than the MENA average, the adoption of digital financial services in Algeria still needs to grow. Only 16% of Algerian adults and 11% of women utilize digital payments, whereas the regional average is 23% for adults and 18% for women. In comparison, emerging and developing countries have a significantly higher adoption rate, with 36% of adults and 32% of women using digital payments.

While many countries have begun to address the underlying enablers of digital financial services and digital payments management, they need vital enablers, enabling legal and regulatory frameworks, financial and digital infrastructure, and ancillary government support systems. To address these three areas, policymakers need to consider a wide range of critical issues, ranging from basic digital connectivity and mobile penetration, access to national payment infrastructure and e-money, non-banking services or the deployment of digital and biometric identity systems, enabling access to government data platforms and ensuring competition for digital financial services.[31] The benefits of financial services for the poor are well documented; however, they carry risks for users and the broader financial system: issues related to data privacy, unequal access to technology and the "digital divide", cyber security and operational risks, financial integrity, and challenges for competition authorities. This requires high regulation, control, and supervision by the competent authorities.

6. THE DEVELOPMENT OF CERTAIN ELECTRONIC BANKING SERVICES IN ALGERIA

Digital financial services provide governments with expedient and secure means to assist those in need via social transfers and other financial help, particularly when mobility is risky or restricted. Prior to the onset of the coronavirus crisis, it was evident that two specific applications of digital financial services, excluding mobile money transfers, money transfers, and government-to-person payments, were especially ad-

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31 Report, W. B. (2015). Aspects of Payment by the Committee on Payments and Market Infrastructures.

FIG. 1. CHECK OF BALANCE BY PHONE OR INTERNET IN ALGERIA (+15%)
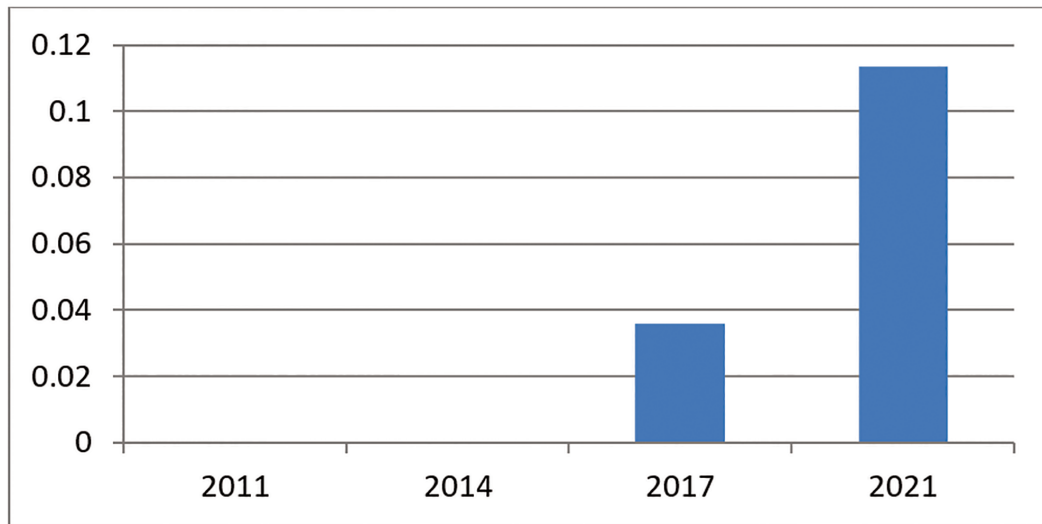
Source: Prepared by researcher based on World Bank data
<https://www.worldbank.org/en/publication/globalfindex/Data>

vantageous for impoverished individuals. Based on the World Bank's Global Remittance Prices Database data, the average overall cost of sending funds is 6.8%; however, digital transactions will reduce the cost to 3.3%. According to Findex statistics, many Algerians own a bank account, although they continue using services outside their bank accounts for domestic transactions. Hence, augmenting the financial resources allocated to remittance beneficiaries and promoting digital platforms is crucial. Implementing digital payment systems may enhance the transparency and oversight of governments that provide emergency cash to individuals and enterprises by facilitating the monitoring of financial disbursements and actions. Digital financial services provide solutions for companies facing liquidity issues, allowing them to engage with financial service providers, access credit quickly and seamlessly, and secure alternative financing options. These services are helpful not only for addressing liquidity gaps in traditional financial channels but also for supporting innovative business models that cater to underserved populations. Significant e-commerce platforms are becoming more critical as Jumia expands its operations into Algeria to join existing local platforms like OuedKnis, Batolis, and IdealForme. Telecommunications operators have

used the capabilities of digital financial services to streamline payments and provide pay-as-you-go options for solar energy, insurance, and loan services.

Although Algeria has made strides in supporting fintech technologies and advancing digital financial services, there is still room for improvement in increasing awareness of their advantages and fostering their expansion. Algeria aims to promote economic activity and improve the lives of its residents by increasing the availability of digital financial services. This will enable individuals to grow their wealth, make productive investments, and, most importantly.

Electronic banking services in Algeria have made good progress in recent years. Most Algerian banks have set up mobile applications and online banking services through which customers can carry out banking transactions such as checking their balance, transferring funds, paying bills, etc. The advent of electronic debit cards (CIB, Visa, and MasterCard) has also facilitated access to online banking services (see Fig. 1).

This chart effectively communicates the steady growth in digital banking adoption in Algeria, mainly using mobile and Internet technologies for essential banking functions such as checking account balances. The graph shows a gradual in-

FIG. 2. DIGITAL PAYMENT IN ALGERIA (% AGED 15 +)
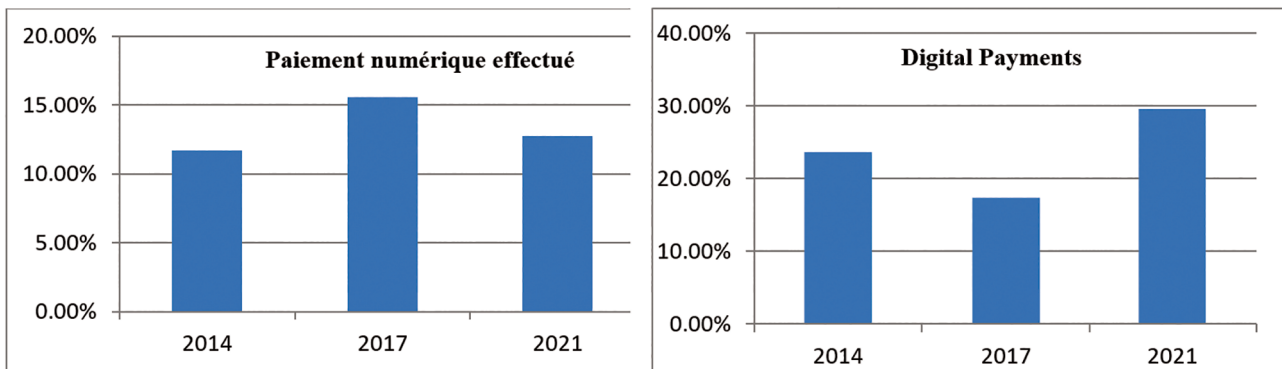
Source: Prepared by researcher based on World Bank data
https://www.worldbank.org/en/publication/globalfindex/Data

crease in the use of mobile phones or the Internet to check the balance of accounts from 2011 to 2021. In 2011, usage was minimal; there was a slight increase in 2014, with a notable increase in 2017. The most significant growth in 2021 indicates a significant adoption of numerical account balance verification. This increase could be influenced by increased Internet penetration, the development of online banking, and increased public awareness and confidence in digital banking in Algeria. This period also coincides with global trends in digital transformation and the impact of the COVID-19 pandemic, which has accelerated the adoption of digital services across the globe.

This rise is fuelled by several factors, such as the proliferation of mobile devices, improved internet access, emerging online banking services, and increasing public awareness and confidence in Algeria's electronic banking environment. It is also an era of global digital transformation, boosted by the COVID-19 pandemic, which has led to the rapid implementation of digital service proposals worldwide (see Fig. 2).

Both graphs show that there has been a general increase in digital payment activities in Algeria between 2014 and 2021. However, the growth rate differs between those who make payments and those who receive them. Approximately 10% of people aged 15 and older have made a digital payment. This percentage increased to around 12%, showing modest growth in digital payments adoption over three years. The percentage continues to increase to around 15%. This suggests

an increasing trend in the use of digital means of payment among the Algerian population, probably due to the expansion of digital infrastructure and a better familiarity with digital transactions.

This concerns the Digital Payments received (% aged 15 and over) in Algeria. In 2014, approximately 20% of people received digital payments. In 2017, the percentage decreased slightly to around 15%, showing a decline in the receipt of digital payments during this period. The percentage rebounded significantly in 2021 to around 25%, indicating strong growth in the receipt of digital payments. The sharp increase in digital payments received between 2017 and 2021 may reflect broader economic or social changes, such as increased trust in digital payment systems, increased e-commerce, government initiatives to promote digital financial inclusion, the effects of the COVID-19 pandemic, which may have accelerated the shift to digital transactions (see Fig. 3).

In 2017, less than 5% of people aged 15 and over made online purchases; in 2021, this percentage reached about 8%, indicating a growing trend towards online shopping. In 2017, around 2% of the population aged 15 and over used online services to pay their bills; in 2021, this doubled to around 4%, reflecting a growing adoption of digital payment methods.

Both graphs show an upward trend in adopting online services (purchases and bill payments) between 2017 and 2021 among Algerians aged 15 and over. This can be attributed to increased in-

FIG. 3. THE ADOPTION OF ONLINE SERVICES (PURCHASES AND BILL PAYMENTS) IN ALGERIA
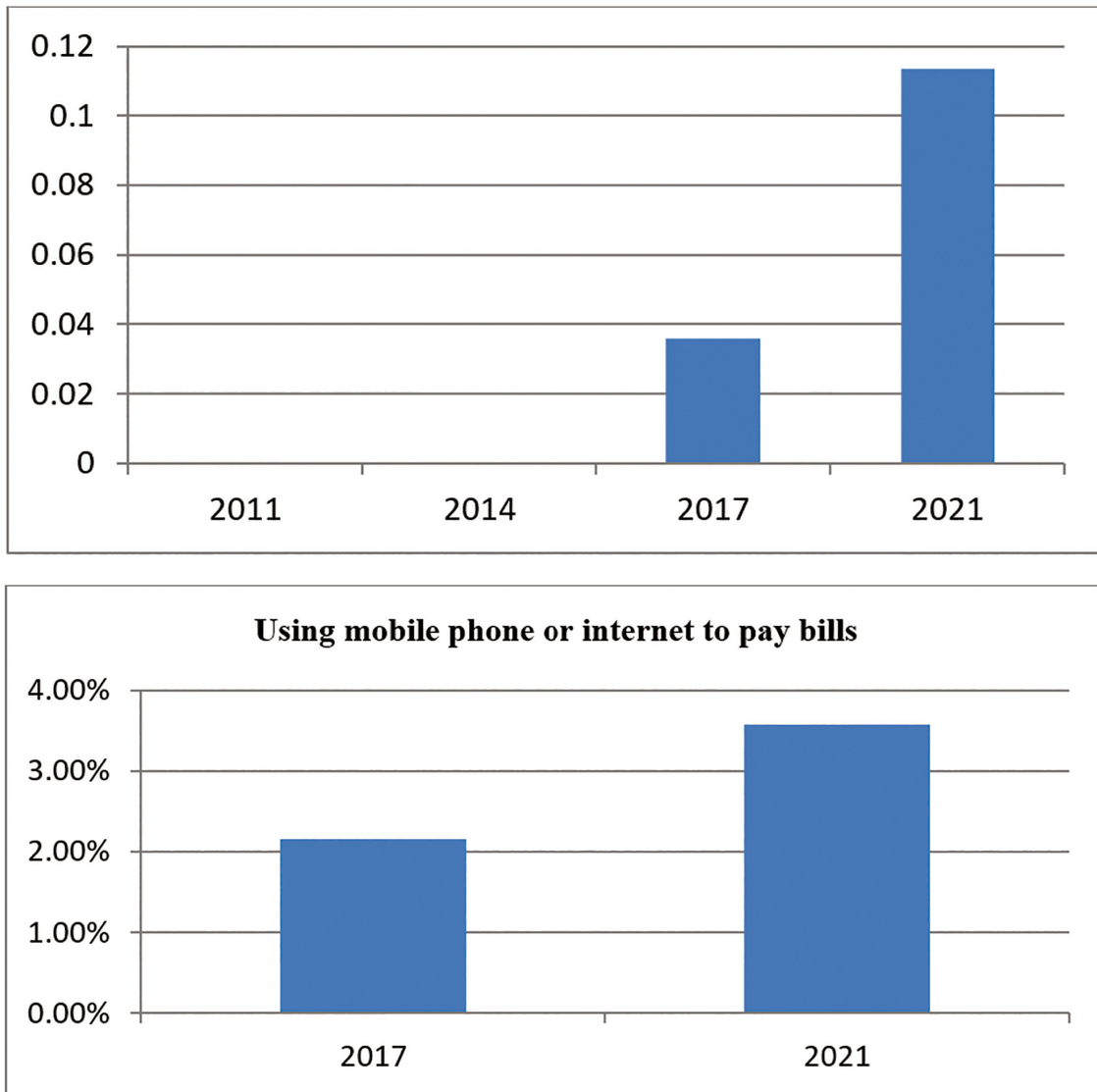
Source: Prepared by researcher based on World Bank data
<https://www.worldbank.org/en/publication/globalfindex/Data>

ternet penetration, better smartphone access, and a shift to digital platforms, potentially accelerated by the COVID-19 pandemic.

The data suggests that Algerians are increasingly embracing digital platforms for shopping and paying bills, reflecting a broader trend toward digital transformation in the country. Increased digital engagement could provide businesses and decision-makers opportunities to develop e-commerce and digital payments infrastructure further.

CONCLUSION

This study has highlighted the significant acceleration of the digital transformation of the banking sector in Algeria, largely due to the COVID-19 pandemic. As the world turned to digital solutions to overcome the restrictions imposed by the health crisis, Algeria also embraced this trend, adopting digital technologies to maintain the continuity of financial services.

The findings show that despite progress, the Algerian banking sector still needs to overcome

several challenges to capitalize on this transformation fully. Issues of security, limited financial inclusion, and still underdeveloped digital infrastructures still need to be addressed. However, the post-pandemic period offers unique opportunities to overcome these challenges, with the rise of digital financial services and the possibility of further innovation to meet the growing needs of consumers.

Ultimately, the ability of the Algerian banking sector to continue evolving and adapting to this new digital era will determine its resilience and future success. Concerted efforts by regulators, financial institutions, and the government must be made to ensure an inclusive, secure, and sustainable digital transition, thereby ensuring that all segments of society can benefit from this transformation.

Authorship of the Work

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

Conflicts of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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17. Lapina, E. N., Orazaliev, A. A., Kalnaya, A., Oseledko, I. V. (2021). Increasing the availability of financial services as a factor in ensuring socio-economic stability in the region. *The Challenge of Sustainability in Agricultural Systems*. <https://doi.org/10.1007/978-3-030-72110-7_78>.

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გლობალური სოციალურ-ეკონომიკური და ბიზნეს გარემოს კვლევა

RESEARCH ON THE GLOBAL SOCIO-ECONOMIC AND BUSINESS ENVIRONMENT

THE BANKING REGULATION'S SHIFTS IN LIGHT OF GLOBALIZATION AND ITS EFFECT ON THE BANKING INDUSTRY'S PERFORMANCE: U.S.A. AS A MODEL

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ABSTRACT. Banking regulation is essential for the efficient functioning of banking activities and the optimal allocation of financial resources. It also plays a critical role in ensuring financial stability and safeguarding depositors by preventing banks from taking excessive risks and ensuring they maintain adequate liquidity to meet their obligations. These measures contribute to the development of the banking sector and enable banks to finance economic growth. This study seeks to examine the transformations in banking regulation over recent decades and their impact on the performance of the banking sector, focusing on the United States as a case study. To achieve this objective, a descriptive method was employed. The study found that banking regulation in the United States has undergone significant transformations, shifting from liberalization to increased restrictions. The global financial crisis of 2008 prompted regulators to tighten their frameworks, which, while initially having a slight negative impact on profitability, ultimately had a significant positive effect on the resilience of banks.

1. Introduction

The global economy had a significant increase in liberalization throughout the last years of the previous century; the surge in banking sector activity and cross-border capital flows is predominantly attributed to the advent of financialization. However, this was paralleled by an increase in the levels of risks faced by the banking system in countries around the world, leading to a series of successive crises.

If a bank fails, it can have far-reaching economic consequences, particularly if the bank is considered to be systemically significant. Deposi-

tors, including individuals and corporations, face the risk of losing their deposited funds, which might potentially lead to a complete cessation of economic activity. This situation necessitates placing the banking sector within a framework that includes a set of rules and regulations to ensure its proper functioning and foster a high level of trust between the banking sector and other sectors. However, these laws and standards frequently make it difficult for the banking industry to grow and restrict high-yield, high-risk banking operations, which has an impact on the industry's overall performance.

The American banking sector is considered one of the most dynamic internationally. For decades, this sector has experienced extensive regulatory activity that alternates between liberalization and restriction, occurring simultaneously with disruptions to the American economy. Banking regulation is now an essential tool for properly supervising this important sector in a manner that protects the interests of the American economy without endangering taxpayer dollars.

Considering the worldwide financial crisis and its substantial impact on the banking sector and the broader economy, there was a clear and important change in banking regulation in the United States, primarily involving an increase in regulatory constraints. This shift led to a divided American society: some supported regulation as necessary for the safety of the banking sector, while others opposed it, arguing that it burdens banks and significantly affects their performance. Therefore, this study aims to present the regulatory reform experience in the United States, the world's leading economy, and highlight its effects on the performance of the American banking sector, with a focus on the period following the 2008 subprime mortgage crisis.

2. FUNDAMENTALS OF BANKING REGULATION
2.1. Concept of Banking Regulation

Financial regulation refers to the set of rules and regulations that control the operations of businesses in the financial industry. Examples of entities include asset managers, banks, credit unions, insurance companies, and financial inter-

mediaries. The Central Bank of Ireland has issued this proclamation, which mandates compliance with certain regulations. However, financial regulation requires ongoing monitoring and enforcement of these rules in addition to the mere implementation of regulations.[1]

Spong defines banking regulation as specifically the body of laws and rules that control how banks conduct business. Banking supervision and banking agencies are distinct from each other. While banking supervision focuses on the enforcement of banking rules and regulations and the monitoring of financial conditions in banks, banking agencies operate under their direction.[2]

Banking regulation, as defined by (Agborya-Echi, 2010),[3] refers to the collection of governmental rules established to supervise and control financial institutions. Banking regulation may be described as: "a collection of laws and regulations that oversee banking activities with the goal of fostering discipline and transparency in banking operations".

2.2. Types of Banking Regulation

There are two broad categories of regulations that affect banks: regulations for the soundness and safety of banks and regulations for consumer protection:[4]

2.2.1. Safety and Soundness Regulation
This kind of oversight makes sure that banks run soundly and safely, not putting taxpayers or

1   Central Bank of Ireland. (2010). What is financial regulation and why does it matter? <https://www.centralbank.ie/consumer-hub/explainers/what-is-financial-regulation-and-why-does-it-matter> [Last Access 20.04.2024].

2   Spong, K. (2000). *Banking regulation: Its purposes, implementation and effects.* Federal Reserve Bank of Kansas City, U.S.A.

3   Agborya-Echi, A. N. (2010). *Financial regulations, risk management and value creation in financial institutions: Evidence from Europe and U.S.A.* (Master's thesis, University of Sussex, UK).

4   Schmidt, J., Willardson, N. (2004, June 1). Banking regulation: The focus returns to the consumer. <https://www.minneapolisfed.org/article/2004/banking-regulation-the-focus-returns-to-the-consumer> [Last Access 20.04.2024].

deposit insurance money at undue risk. Usually, the activities of the bank and the regulatory systems that oversee and examine these activities are the main subjects of these rules.

2.2.2. Consumer Protection Regulation

Protecting consumers' interests when they interact with banks and other financial service providers is the aim of these regulations. This set of legislation covers a wide variety of issues, including prohibiting discrimination in credit transactions, protecting consumers from misleading information, and ensuring that they are properly informed about how credit expenses related to loans and leases are calculated.

2.3. Motivations for and Objectives of Banking Regulation

Banking institutions are regulated for two main reasons:[5]

2.3.1. Consumer Protection

This reason is similar to why public utilities and telecommunications are regulated, which is to provide a framework of rules that can help prevent market mechanisms alone from controlling market excesses and failures.

2.3.2. Achieving Financial Stability

Preserving financial stability is often seen as a crucial public advantage that necessitates the creation of a more extensive system for overseeing and controlling.

The primary goals of banking regulation are as follows:[6]

- Ensuring the security and soundness of banks and other financial institutions is crucial to protect depositors and taxpayers, maintain financial stability, and uphold trust at both the national and global levels. Furthermore, it ensures the optimal utiliza-

tion of the state's finite resources and the central bank's dedication to serving as the ultimate provider of funds for banks during periods of necessity;
- Achieve Monetary Stability and Maintain Efficient Payment System Operations: This includes ensuring that the monetary system is stable and that the payment systems operate efficiently;
- Create an Efficient and Competitive Financial System: This is achieved by preventing the excessive concentration of banking resources, which would otherwise lead to non-competitive conditions;
- Protect Consumers and Customers: This involves safeguarding borrowers against the arbitrary practices of credit-granting institutions by ensuring that consumers have equal opportunities to obtain the required credit.

3. BANKING REGULATION IN THE CONTEXT OF GLOBALIZATION
3.1. Drivers of Banking Regulatory Transformation

There are two components to the historical process of financial globalization. First, there is a rise in the amount of cross-border financial transactions; second, a series of institutional and regulatory reforms have been put in place to liberalize local financial systems and global capital movements.[7]

Throughout the second half of the 20th century, there were numerous changes to banking regulations that affected the global economy. These changes were brought about by a number of interrelated factors, such as the development of various forms of regulatory evasions, such as offshore financial centers and off-balance-sheet financing methods, the rapid advancement of technology, and the declining efficacy of traditional controls as a result of financial innovation. International financial center rivalry, nonbank competition for a range of services (including mortgages, small business loans, and consumer credit), and multi-

5   Quintyn, M. G., Taylor, M. W. (2004). Should financial sector regulators be independent? *Economic Issues*, 32, 2.
6   Mashaie, M. (2013). *Profitability, and lending: An analysis of systemically important banks pre-2007-09 financial crisis* (Master's thesis, University of Ottawa, Department of Economics).
7   Frenkel, R. (2003). Globalization and financial crises in Latin America. *CEPAL Review*, 80, 39–51.

TABLE 1: PARTIAL OR FULL LIBERALIZATION MEASURES IN THE FINANCIAL SECTOR SINCE THE MID-1970S

FIELD	PARTIAL OR COMPLETE LIBERALIZATION
CONTROLS ON INTEREST RATES	Most nations had extensive lending and borrowing restrictions in place up until the early 1970s. Banks controlled credit for preferred borrowers, and both rates were kept below levels of the free market. Only a few nations still had these restrictions in place by 1990.
RESTRICTIONS ON THE TRANSFER OF FUNDS INTERNATIONALLY AND THE EXCHANGE OF CURRENCIES	In many developing countries as well as in OECD countries, the liberalization of capital movement regulations is almost complete. Nonetheless, there are still certain restrictions on long-term capital movements, mainly with regard to foreign direct investment and foreign ownership of real estate.
DISTINCTION BETWEEN INVESTMENT BANKING AND COMMERCIAL BANKING OPERATIONS	While many nations still impose considerable limitations on commercial lines, in many instances these limitations have been significantly reduced or eliminated entirely.
QUANTITATIVE LIMITS ON BANKING INSTITUTIONS' INVESTMENTS	Banks were subject to a variety of investment limitations, such as mandates to hold government securities and guidelines for credit allocation. The early 1990s saw the complete elimination of these restrictions.

Source: Biggar & Heimler, 2005.

lateral accords also played a role in the liberalization of cross-border banking activity.[8]

3.2. Evolution of International Banking Regulation Between Liberalization and Restriction:

The degree of restriction in banking safety standards has changed throughout time. Safety and soundness rules were very strict after the Great Depression, with a focus on keeping commercial and investment banking services separate and forbidding bank-holding corporations from partnering with insurance companies.

Significant limitations on market forces, such as controls over interest rates, caps on the volume of business financial institutions could undertake, barriers to market access, and, in certain situations, restrictions on financing allocation, were features of financial systems in the early 1970s. Governments used these regulatory restrictions to further their social and economic policy objectives. In several post-war nations, direct controls were employed to direct funding toward businesses of choice. Financial stability concerns

contributed to limitations on market access and competition, and safeguarding small savers with little financial literacy was a key goal of bank supervision.

Since the mid-1970s, there has been a significant regulatory reform effort in place in the financial systems of most countries. In this process, there was a shift towards more market-oriented regulatory structures, as the table illustrates (see Table 1).

The above regulatory restraints were gradually lifted, although this did not result in the total emancipation of banking operations. Rather, it led to the implementation of new prudential regulatory instruments that better fit the banking industry's competitive landscape. The first and most notable step in this new regulatory approach is the Basel Agreements. Large multinational banks in a group of twelve countries were required by the Basel I Accord, which was signed in July 1988, to begin achieving an 8% minimum capital adequacy ratio in 1992. Basel III: The subprime mortgage crisis prompted the committee to release its most recent version of its recommendations. After that, the committee made improvements to these plans in response to global economic shocks.

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8   Biggar, D., Heimler, A. (2005). An increasing role for competition in the regulation of banks. *International Competition Network Working Papers*, Germany, 3–4.

FIGURE (01): MECHANISM FOR IMPLEMENTING BANKING REGULATION
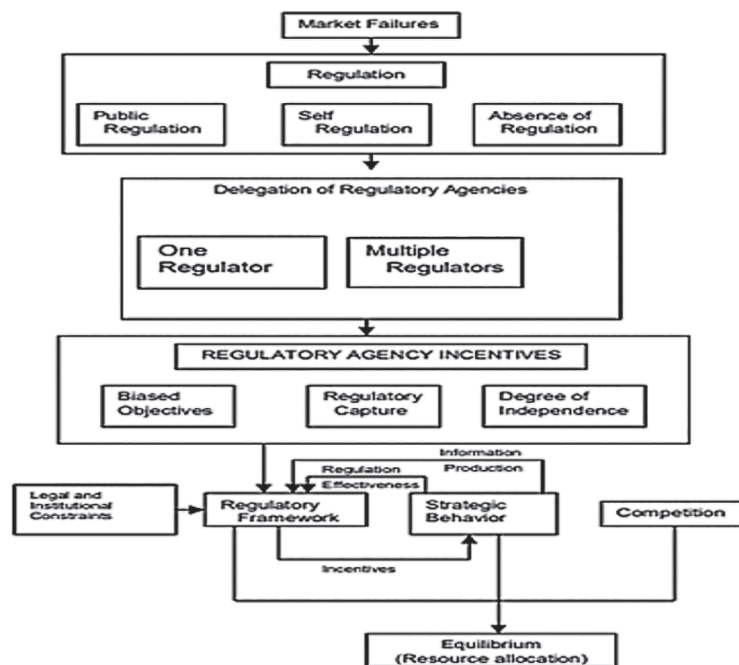
Source: Freixas & Santomero, 2002

4. EFFECTS OF REGULATION ON THE BANKING SECTOR'S PERFORMANCE
4.1. Mechanism for Implementing Banking Regulation

People might make the error of believing that powerful regulatory organizations only act in the public interest and that regulated institutions would abide by laws if they concentrated on the best regulatory method to remedy a specific market failure. In actuality, banking regulation is an economic game in which each player formulates a plan of action based on their personal goals. It is unrealistic to expect regulators to accomplish their objectives in a society where legislative structures limit their authority. It is also important to keep in mind that banks will adapt to regulations by creating new plans, such as offering financial innovations.[9]

The mechanism by which banks interact with banking regulation can be summarized in the figure (see Figure 1):

4.2. Theories on How Banking Regulation Affects Bank Performance

There are two contradictory arguments in the theory of banking regulation and its importance, outlined as follows:[10]

4.2.1. Public Interest Theory
According to this hypothesis, the regulation of banking enhances the overall performance of banks by preventing new competitors from entering the market and thereby decreasing competition. Because there is less competition, banks are compelled to provide more cautious loans, which lowers banking risks. If there is no rivalry in the banking business, banks would only lend to borrowers with excellent credit ratings, but if there is fierce competition, banks may lend to customers with lower credit ratings. Moreover, this theory argues that direct bank supervision and control by government supervisors and regulators might eliminate financial failures entirely. Supporters of this viewpoint include Psillaki

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9   Freixas, X., Santomero, A. (2002). An overall perspective on banking regulation. *Federal Reserve Bank of Philadelphia Working Papers*, No. 01-1, U.S.A., 11.

10   Almaw, S. (2018). The effect of bank regulation on the bank's performance. Paper submitted for the partial fulfillment of the course *Financial Institutions and Capital Market*. Ethiopia: College of Business and Economics, Bahir Dar University, 6.

and Mamatzakis (2017)[11] and Beck et al. (2006).[12]

4.2.2. Private Interest Theory

This financial regulation theory contends that contrary to the public interest view, stringent regulation has a negative impact on bank performance since it raises fee responsibilities. Entry restrictions make it harder for banks to innovate and operate efficiently, which makes them more dependent on more expensive funding sources like equity. As a result, riskier portfolios are chosen to offset high expenses and risk-taking brought on by high capital requirements, which lowers bank performance. According to this theory, stringent banking regulations result in unethical capital allocation, unscrupulous lending practices, and, eventually, poor bank performance, which may lead to bank closures. Supporters of this view include Laeven and Levine (2008)[13] and Pasiouras et al. (2009).[14]

4.3. The Impact of Banking Regulation on Bank Performance

Different conclusions may be drawn from an examination of the research on how regulation affects bank performance. While some studies have demonstrated a beneficial relationship between regulation and bank performance, others have found a somewhat negative relationship.[15] assert that big banks gain from more freedom to raise

the risks in their asset portfolios and that they engage in riskier behaviors more frequently when there is less supervision over them.[16] discovered that financial laws, which limit financial activity, may aid banks in achieving financial stability and help avert systemic issues.

On the other hand, (Jomini, 2011)[17] argues that strict and harsh regulations can lead to high costs and poor performance due to the additional expenses incurred by regulated banks to comply with and manage these regulations. Since extensive regulations reduce competition, they also reduce economies of scale and innovation. Similarly, (Klomp & Haan, 2015)[18] concluded that stricter banking regulation improves bank performance. They explained that restrictive regulations reduce banking risks in large foreign banks, while liquidity constraints affect smaller banks. Additionally, they contended that banking regulation greatly impacts high-risk institutions while having less effect on low-risk banks.

5. UNIQUENESS AND EVOLUTION OF U.S BANKING SECTOR REGULATION
5.1. Uniqueness of U.S. Banking Sector Regulation

The stability of the United States is of paramount importance to the global economy. The banking system is considered one of the most important financial systems globally because of its intricate nature, interconnectivity, and breadth.

Compared to other nations, bank regulation in the US is extremely dispersed. In contrast to most other nations, which only have one bank regulatory agency, the United States has state and federal bank regulations. A financial institution may be governed by several federal and state banking

11   Psikalli, M., Mamatzakis, E. (2017). What drives bank performance in transition economies? The impact of reforms and regulations. *Research in International Business and Finance, 39*, 587–594. <https://doi.org/10.1016/j.ribaf.2016.09.010>.

12   Beck, T. H. K., Demirguc-Kunt, A., Levine, R. (2006). Bank concentration, competition, and crises. *Journal of Banking and Finance, 30*(5), 1581–1603.

13   Laeven, L., Levine, R. (2008). Bank governance, regulation, and risk taking. *NBER Working Papers*, 14113, Cambridge.

14   Pasiouras, F., Tanna, S., Zapounidis, C. (2009). Banking regulations, cost, and profit efficiency: Cross-country evidence. *International Review of Financial Analysis, 18*(5), 294–302. <https://doi.org/10.1016/j.jbankfin.2005.05.010>.

15   Barth, J. M., Caprio, G., Levine, R. (2004). Bank regulation and supervision: What works best? *Journal of Financial Intermediation, 13*(2), 205–248. <https://doi.org/10.1016/j.jfi.2003.06.002>.

16   Fell, J., Schinasi, G. (2005). Assessing financial stability: Exploring the boundaries of analysis. *National Economic Review, 192*(1), 102–117. <https://doi.org/10.1177/0027950105192200110>.

17   Jomini, P. A. (2011, March). Effects of inappropriate financial regulation. *Policy Brief, Sciences Po*, France.

18   Klomp, J., Haan, J. D. (2015). Bank regulation and financial fragility in developing countries: Does bank structure matter? *Review of Development Finance, 5*(2), 82–90. <https://doi.org/10.1016/j.rdf.2015.11.001>.

TABLE (02): REGULATORY BODIES OF THE U.S. BANKING SECTOR

REGULATORY POWER	THE PROVIDED FUNCTION
THE FEDERAL RESERVE BOARD (FRB)	The federal Reserve, in its role as the country's central bank, supervises monetary policy with the aim of sustaining low long-term interest rates, ensuring price stability, and attaining optimal employment levels in the American economy. Furthermore, its primary goal is to improve financial stability and efficiently manage and supervise risks that might impact the entire system.[1]
THE FDIC IS THE FEDERAL DEPOSIT INSURANCE CORPORATION	This independent agency was established by Congress to supervise and examine financial institutions to ensure their safety and soundness, provide deposit insurance, and reassure the public that complex, large-scale financial institutions can be resolved. The major objectives of this institution are to preserve the stability of the nation's financial system and sustain public trust.[2]
THE ENTITY REFERRED TO AS THE OFFICE OF THE COMPTROLLER OF THE CURRENCY (OCC)	Created by the United States Department of the Treasury, the organization is responsible for establishing and enforcing regulations, and overseeing all national banks and federal savings institutions—including foreign bank branches and agencies—is the responsibility of this independent authority. The organization ensures impartial treatment of clients, equal opportunity to obtain financial services, secure and stable bank operations under its oversight, and adherence to all applicable rules and regulations.[3]
THE BUREAU OF CONSUMER FINANCIAL PROTECTION (CFPB)	The objective is to enhance consumer financial markets for the advantage of conscientious providers, consumers, and the overall economy. It protects customers against unjust, exploitative, or deceptive commercial activities and initiates legal proceedings against those who violate the law. Moreover, it provides individuals with the information, tools, and activities necessary to make prudent financial choices.[4]
THE COUNCIL FOR FINANCIAL STABILITY OVERSIGHT (FSOC)	The council is tasked with evaluating the susceptibilities that may impact the stability of the US financial system, strengthening market discipline, and reacting to new dangers to that stability. By imposing risk-based capital requirements and limitations on short-term loans, including procedures for off-balance sheet transactions, it keeps an eye on big financial institutions. The council sets yearly stress tests, restricts leverage between 15% and 1%, and mandates that these businesses submit plans for an orderly resolution in the case of financial difficulties.[5]

Source: Prepared by researchers relying on the official websites of the regulatory authorities and offices.

laws, depending on its size and organizational design.

In addition, the US has federal and state regulating bodies for commodities, insurance, securities and exchange, and banking in addition to the banking industry. This is in contrast to nations like the United Kingdom and Japan, where different domains are unified under a single regulatory agency.

The table below illustrates the regulatory authorities that oversee the banking industry in the United States (see Table 2).

5.2. Evolution of U.S. Banking Sector Regulation

The 1929 stock market crisis caused economic instability and ultimately resulted in the banking system collapsing, which made stricter banking regulations necessary. The Glass-Steagall Act of 1933 was responsible for creating the Federal Deposit Insurance Corporation (FDIC) and requiring the separation of commercial and investment banking operations. The New Deal implemented regulations on deposit interest rates. The 1935 Banking Act enhanced and consolidated the power of the Federal Reserve.

There was some relative banking stability and

economic growth between the New Deal banking reforms and 1980. However, it soon became evident that stringent banking laws limited American banks' ability to innovate and remain competitive. Stricter regulation-bound commercial banks were falling behind more innovative, loosely regulated financial businesses. Consequently, there was an increase in the process of removing regulations over the latter two decades of the 20th century.

The Depository Institutions Deregulation and Monetary Control Act was passed by Congress in 1980; the Federal Reserve was given additional authority to determine monetary policy, and financial institutions that received deposits were liberalized. The Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994 eliminated the prohibitions on bank branch openings that were imposed on a state-by-state basis.

The 1999 Gramm-Leach-Bliley Act eliminated the restrictions set by the Glass-Steagall Act, therefore permitting banks to conduct commercial banking activities, securities, and insurance services all under one organization. Both the number of banking institutions and the volume of financial transactions increased throughout the next few years.[19]

6. CONTEMPORARY BANKING REGULATION IN THE U.S
6.1. U.S. Banking Sector's Response to Basel III Accords

U.S. regulatory authorities have implemented the Basel III accords within the local banking regulations, highlighted by the following:

6.1.1. Capital Adequacy Ratio
The key rules imposed include:[20]
- A bank must maintain a minimum of 4.5% of its capital in Common Equity Tier 1

(CET1). In addition, banks must have a 2.5% buffer for capital conservation on common shares. These laws require banks to maintain a total of 7% CET1 capital by the end of 2019. As a result, banks will need to retain 10.5% capital by the end of 2019 in addition to the 2.5% countercyclical buffer;
- The overall capital requirement for banks using the advanced strategy can be as high as 13%. This comprises the countercyclical buffer and the capital conservation buffer, which started at 0% and has the potential to increase to 2.5% by the end of 2019;
- The start date for compliance with the minimum capital requirement was January 1, 2014, for financial organizations utilizing the sophisticated methodology (generally, people or corporations must have a minimum of $250 billion in total assets or at least $10 billion in on-balance sheet international exposure). The start of 2015 was the compliance start date for other banking institutions;
- In order to circumvent limitations on dividend payouts and discretionary bonuses, advanced approach banks must maintain a combined buffer (capital conservation and countercyclical) of more than 5%. Banks are obliged to maintain a countercyclical buffer.

6.1.2. Liquidity Ratios
September 2014 saw the announcement of the final Liquidity Coverage Ratio (LCR) regulation by U.S. banking authorities, with a few minor deviations. The standards are closely akin to those of Basel III. The proposed liquidity coverage ratio (LCR) applies to both US banking institutions and major non-bank financial firms. Bank-holding organizations with assets over $250 billion must maintain an adequate amount of liquid assets to meet net cash withdrawals within 30 days. For a regional organization with assets ranging from $50 billion to $250 billion, it is necessary for its liquid assets to be enough to cover net cash withdrawals within a 21-day timeframe. Bank holding firms are exempt from the LCR if their assets do not exceed $50 billion.[21]

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19   Johnston, M. (2019, 06 25). A Brief History of U.S. Banking Regulation. <https://www.investopedia.com/articles/investing/011916/brief-history-us-banking-regulation.asp> [Last Access 01.05.2024].

20   Dempsey, M. C. (2017). Basel III Regulation and the Move Toward Uncommitted Lines of Credit. <www.lexology.com/library/detail.aspx> [Last Access 01.05.2024].

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21   Mohanta, A. (2014). Impact of Basel III liquidity re-

The United States has adopted the Net Stable Funding Ratio (NSFR) in line with global standards, and enforcement began in January 2018.

6.1.3. Leverage ratio

One of the largest benefits of the Basel III requirements is the leverage ratio. The Basel Committee revised the methods for determining exposures both on and off the balance sheet in January 2014, and in 2010, it established a leverage ratio of 3%.

The 3% leverage ratio was put into effect by US regulatory bodies in 2013 as part of an examination of capital requirements. Large financial institutions with total consolidated assets of at least $250 billion or foreign exposure on their balance sheet of at least $10 billion are subject to this ratio.

U.S. authorities finalized the new leverage ratio, which was set at 6% for insured depository institutions and globally systemically important banks (G-SIBs). Banking authorities finalized these regulations in April 2014.[22]

6.2. The Dodd-Frank Act: Wall Street Reform and Consumer Protection

The Dodd-Frank Act As a reaction to the global economic recession, the Obama administration implemented the Wall Street Reform and Consumer Protection Act of 2010 as part of a broader legislative effort to overhaul the financial industry. This law's objectives are to safeguard American taxpayers by ending bailouts, enhancing financial system accountability and transparency, dismantling the "too big to fail" theory for major corporations, and protecting customers from deceptive financial services activities.

The following are the main rules and clauses included in the Dodd-Frank Act:[23]

- Greater Quantity and Quality of Capital: The Dodd-Frank Act mandates that banks maintain greater amounts of capital of higher caliber by conforming to the international Basel III standards, which establish minimum risk-weighted capital levels, liquidity requirements, and leverage requirements. Systemically important financial institutions are subject to more stringent requirements;

- Annual Stress Tests: In order to promote market trust and transparency, institutions are put through annual stress tests;

- Government agencies changed the Act to provide more efficient supervision of the financial system as a whole. The Thrift Supervision Office was closed, and the Federal Reserve and the Office of the Comptroller of the Currency (OCC) currently share the responsibilities with the Federal Deposit Insurance Corporation (FDIC). The Federal Reserve acted as the main regulatory body for major financial enterprises. Additionally, the Consumer Financial Protection Bureau (CFPB) of the Federal Reserve and the Financial Stability Oversight Council (FSOC) under the Treasury were formed by Congress;

- Bailouts are specifically terminated by the Dodd-Frank Act, which is paid by taxpayers. According to Section 214, the financial industry is responsible for any losses incurred in the liquidation of any financial institution; taxpayers will not be held liable for such losses;

- Large banks are required to file comprehensive resolution plans;

- The Financial Stability Oversight Council (FSOC) was created with the aim of detecting risks that might potentially affect the whole financial system. It has jurisdiction over both non-bank financial firms and banks;

- Financial institutions that benefit from government deposit guarantees are prohibited from participating in proprietary trading for personal profit or to invest in hedge funds and private equity funds, but they are permitted to contribute up to 3% of their capital to these funds.[24]

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quirements on the payments industry: Liquidity management strategy for banks providing payment services. *CAPGEMINI Consulting Technology Outsourcing*, 6.

22   Getter, D. (2014). U.S. implementation of Basel capital regulatory framework. *Congressional Research Service*, U.S.A.

23   Sims, P. (2013). *The Dodd-Frank Act: Goals and progress*. Hamilton Place Strategies, 2-4. U.S.A.

24   Markovich, S. J. (2013, 12 10). *The Dodd-Frank Act.*

TABLE (03): EVOLUTION OF TIER 1 CAPITAL RATIO FROM 2006 TO 2019

YEAR	2006	2007	2008	2009	2010	2011	2012	2013	2014
TIER 1 CORE CAPITAL	8.33	7.13	6.31	8.67	10.2	10.9	11.6	12.8	13.1
YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023
TIER 1 CORE CAPITAL	13.1	13.2	13.5	13.8	13.7	14.5	14.8	14.5	14.9

Source: International Monetary Fund (IMF), 2020.

7. PERFORMANCE OF THE U.S BANKING SECTOR IN THE LIGHT OF CONTEMPORARY BANKING REGULATION
7.1. Capital Adequacy Ratio in the U.S. Banking Sector

By bringing its banking system into compliance with Basel III requirements, the American banking industry has responded to the many directives and guidelines issued by regulatory bodies. The improvement of the capital adequacy ratio, which offers a capital buffer to absorb losses from unforeseen operational, credit, or market events, has been one of the main results (see Table 3).

The Tier 1 capital ratio, which represents the best quality capital, has significantly improved, as the table demonstrates. The Tier 1 capital ratio decreased to around 6% at the onset of the global financial crisis, down from over 8% in 2006. However, it subsequently increased to 13.1% in 2014. The percentage remained consistently high in the subsequent years, concluding at 13.8% in 2023. This development shows how effective regu-

<https://www.cfr.org/backgrounder/dodd-frank-act> [Last Access 02.05.2024].

lations have been in strengthening the stability of American financial institutions.

Within this particular framework, there was a significant decrease in the quantity of banking institutions with insufficient capitalization subsequent to the worldwide financial crisis, as depicted in the subsequent table (see Table 4):

A notable decrease in the number of financial institutions with inadequate capital is indicated by Table 05. These decreases coincided with the introduction of new regulations meant to raise capital adequacy ratios. By the end of 2011, the percentage of these undercapitalized institutions had dropped from 6.24% at the height of the financial crisis to 4.66%. By the end of 2016, the percentage had dropped below 1.05% in accordance with the Basel implementation plan that was suggested. The percentage of these institutions has decreased to about 0.42% by the middle of the year.

The decline in the proportion of undercapitalized banking institutions is indicative of the effectiveness of banking reforms in this domain and shows how resilient the American banking industry has become in comparison to the years before the financial crisis.

TABLE 4: EVOLUTION OF THE PERCENTAGE OF UNDERCAPITALIZED BANKING INSTITUTIONS IN THE UNITED STATES (2006-2019) (END OF PERIOD)

YEAR	2006	2007	2008	2009	2010	2011	2012
LESS CAPITALIZED INSTITUTIONS/ TOTAL INSTITUTIONS	1.04	1.58	4.36	6.24	5.57	4.66	3.59
YEAR	2013	2014	2015	2016	2017	2018	2019
LESS CAPITALIZED INSTITUTIONS/ TOTAL INSTITUTIONS	2.67	1.8	1.43	1.05	0.83	0.52	0.42

Source: Board of Governors of the Federal Reserve, 2019.

TABLE 5: BOTH RETURN ON EQUITY AND RETURN ON ASSETS IN THE U.S. BANKING SECTOR (2006-2019) (END OF PERIOD)

YEAR	2006	2007	2008	2009	2010	2011	2012	2013	2014
ROA	1.28	0.81	0.04	-0.07	0.65	0.88	1	1.07	1.01
ROE	12.31	7.75	0.36	-0.72	5.87	7.8	8.91	9.54	9.01
YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023
ROA	1.04	1.04	0.97	1.35	1.29	0.72	1.23	1.11	1.1
ROE	9.29	9.29	8.61	11.98	11.38	6.85	12.21	11.82	11.5

Source: Federal Deposit Insurance Corporation (FDIC), 2024.

7.2. Evolution of Profitability Rates in the U.S. Banking Sector

Profitability rates, namely the return on assets and return on equity, serve as indications of banking institutions' capacity to create financial returns. The capital adequacy ratio's development in the US banking industry is displayed in the table (see Table 5).

The table illustrates a significant decrease in both return on equity (ROE) and return on assets (ROA) during the 2008 global financial crisis. In 2006, the return on assets (ROA) was 1.28%; by 2008, it had dropped to 0.04%, while the return on equity (ROE) had risen from 12.31% to – 0.72% in 2009. Even if the US economy is recovering, by the end of 2010, the ROA remained below its pre-crisis level, reaching 0.65% at the end of 2010. It began to rise again in 2012 but remained nearly stable at around 1%. The ROE, although it rebounded after the crisis, never returned to its end-of-2006 level. This decline in profitability is attributed to the stringent capital and liquidity requirements that limited banking activity levels during this period.

7.3. The Volume of Non-Performing Loans in the U.S. Banking Industry

The incidence of non-performing loans in the American banking industry increased before the start of the global financial crisis and reached its peak during the crisis. The table below illustrates the progression of the non-performing loan to total loan ratio in the US banking industry from 2006 to 2019 (see Table 6).

The table indicates a substantial reduction in the non-performing loan ratio. The implementation of strict lending criteria and precise evaluation of borrowers' creditworthiness led to a reduction in non-performing loans. The non-performing loan ratio decreased from 5% in 2009 to 1.9% at the end of 2014. The ratio dropped to 0.8% by the end of 2023, a low point akin to the two years preceding the financial crisis.

7.4. Liquidity of the U.S. Banking Sector

The implementation of the final Basel Accords resulted in a significant rise in the amount

TABLE 6: TRENDS IN THE NON-PERFORMING LOAN RATIO IN THE U.S. BANKING SECTOR (2006-2019)

YEAR	2006	2007	2008	2009	2010	2011	2012	2013	2014
NON-PERFORMING LOANS PERCENTAGE	0.8	1.4	3	5	4.4	3.8	3.3	2.5	1.9
YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023
NON-PERFORMING LOANS PERCENTAGE	1.5	1.3	1.1	0.9	0.9	1.1	0.9	0.7	0.8

Source: International Monetary Fund (IMF), 2024.

TABLE 7: HIGH-LIQUIDITY ASSETS AS A PERCENTAGE OF TOTAL ASSETS IN THE U.S. BANKING SECTOR (2006-2019) (END OF PERIOD)

YEAR	2006	2007	2008	2009	2010	2011	2012	2013	2014
HIGH-QUALITY LIQUID ASSETS / TOTAL ASSETS %	26	12.9	17.3	22.3	22.7	26	27.2	32	38.8
YEAR	2015	2016	2017	2018	2019	2020	2021	2022	2023
HIGH-QUALITY LIQUID ASSETS / TOTAL ASSETS %	30.5	34.5	29.8	27.1	26.5	34	38.3	33	32.7

Source: Board of Governors of The Federal Reserve, 2023.

of highly liquid assets within the banking sector of the United States. The following table displays the evolution of high-liquidity assets, such as cash assets, government securities, and Treasury bonds, as a proportion of all assets held by US commercial banks (see Table 7).

The suggested liquidity coverage ratio by monetary authorities considers the quantity of high liquidity assets held by American banks, and the table illustrates this rapid development. Between the end of 2014 and 2021, the proportion of liquid assets, including cash, agency securities, and Treasury bonds, rose from around 17.28% of the total assets during the global financial crisis to more than 38%. Although there was a small decrease in the proportion of easily convertible assets, it remains higher than the pre-2008 financial crisis levels. This trend highlights the American banks' move towards implementing the liquidity coverage ratio and maintaining larger liquid asset reserves to withstand periods of stress. The increasing levels of liquid assets indicate a greater capacity for banks to handle potential stress scenarios.

CONCLUSION

Due to the global economic crises, there is significant interest in the need to decrease financial deregulation and reorganize the banking sector on a worldwide scale. This aims to regulate various transactions between the banking sector and related parties, ensuring financial consumer protection on the one hand and achieving financial stability on the other. Although there are varying perspectives among theorists and researchers on the influence of banking regulation on banking performance levels, some believe that banking regulation is essential for regulating competition, enhancing banking services, and reducing risk, while others see it as having a negative impact on banking performance.

In this context, the U.S. experience with banking regulation demonstrated the need for stringent application of the legislation during the 2008 global financial crisis, with an emphasis on safeguarding financial customers and enhancing the resilience and safety of systemically significant banking institutions. This had an impact on the banking industry's cost structures, which temporarily reduced bank profitability. However, the banking industry's resilience increased dramatically, as seen by a notable rise in the capital adequacy ratio and liquidity levels.

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IS WINEMAKING CENTRAL TO GEORGIA'S ECONOMY?

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ABSTRACT. Based on the primary data and review of secondary sources, this paper argues that wine is more than a symbol of Georgia; it is a foundation of the country's economy and social life. The article also looks beyond the direct current statistics of the formal economy and considers the indirect economic impact, trends, and potential, an assessment of winemaking and wine-related tourism points to these sectors as a business priority for Georgia and an important economic and social development vehicle. The study also highlights the potential risks associated with climate change, including increased heat stress, drought, altered growing seasons, and other relatively minor obstacles. The paper identifies specific grapevine cultivars that may be particularly vulnerable to these challenges and explores adaptation strategies to mitigate their negative effects. The results of this study offer valuable insights for Georgian winemakers and policymakers to ensure the sustainability of the country's wine industry in the face of a changing climate.

THE CENTRALITY OF WINEMAKING IN GEORGIA'S HISTORY AND CULTURE

Georgia's history and culture are inseparable from winemaking. The 8,000-year-old Qvevri method of using terra cotta urns buried in the ground for fermenting crushed grapes is evidence of Georgia's uniqueness as the birthplace of winemaking. Having originated in 6000 BC, winemaking spread from the Caucasus west to the eastern Mediterranean from 2500 BC and to the north into much of Europe by 400 AD. Regarding the language, the Georgian word *ghvino* (wine) was probably the origin of the Latin term *vino*, considering that Georgia was allied with the Latin Roman Empire from the 1st century BC to the 4th century AD.

On an even deeper level, viticulture and winemaking are integral to the Georgian Orthodox religion, whose major symbol is the "Grapevine Cross". The 6th-century Jvari Monastery in Mtskhe-

GRAPH 1. MAJOR COMMODITY POSITIONS BY EXPORTS, MILLION USD

Graph 1. Major commodity positions by exports, million USD
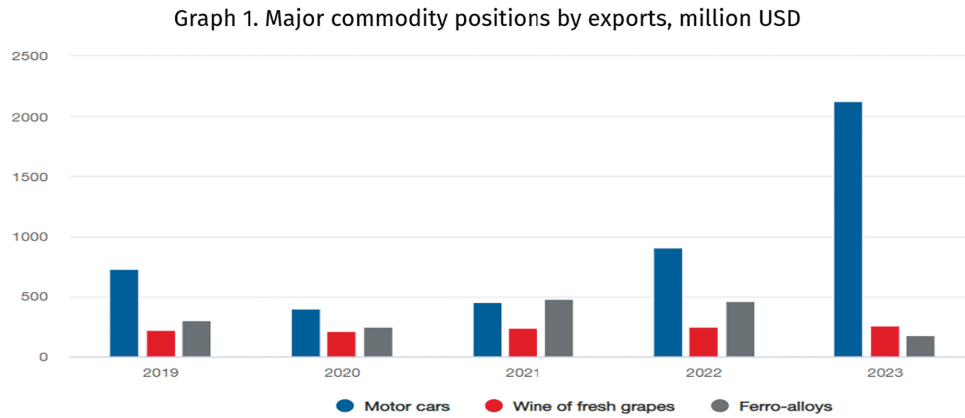
Source: National Statistics Office of Georgia.

ta – the continuous religious center of Georgia – has a painting of the Virgin Mary holding grapes for Christ as a child. The country's church architecture and paintings use the vine leaf as one of the most distinctive motives.

Reinforcing the centrality of winemaking in Georgia's customs, through centuries, wine has had a special meaning as a unifier of people and a source of social cohesion. The traditional *supra* feast has bonded people via collective experiences of toasting, singing, and dancing, while hospitality is part of the national character.[1] De-

spite the greater profitability of other agriproducts (for instance, watermelons), Georgia favors winemaking.

The social, cultural, and religious prominence of winemaking begs the question of whether it is equally central to Georgia's economy. If winemaking is vital for the economy, to what extent is it important for its current condition and further development?

1   Dinello, N. (2022). Centrality of winemaking in Georgia: From prehistoric age to present-day globalization. *Journal of Wine Research.* <https://doi.org/10.1080/09571264.2022.2110050>.

GRAPH 2. SHARE OF MAJOR COMMODITY POSITIONS BY EXPORTS IN JANUARY-JUNE 2024*
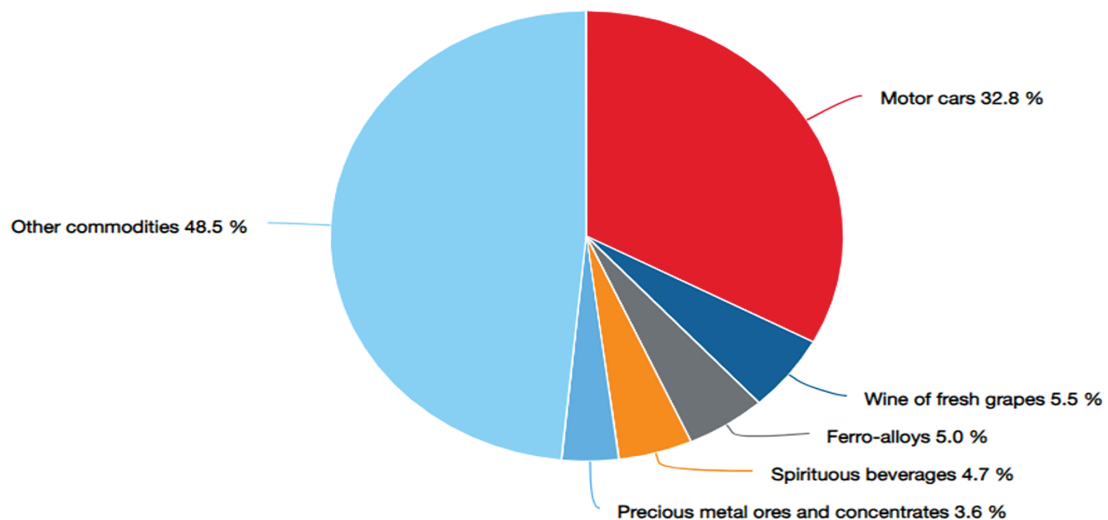
* Revised data will be published on November 15, 2024
Source: National Statistics Office of Georgia.

GRAPH 3. WINE EXPORTS AND GDP, 2015-2023
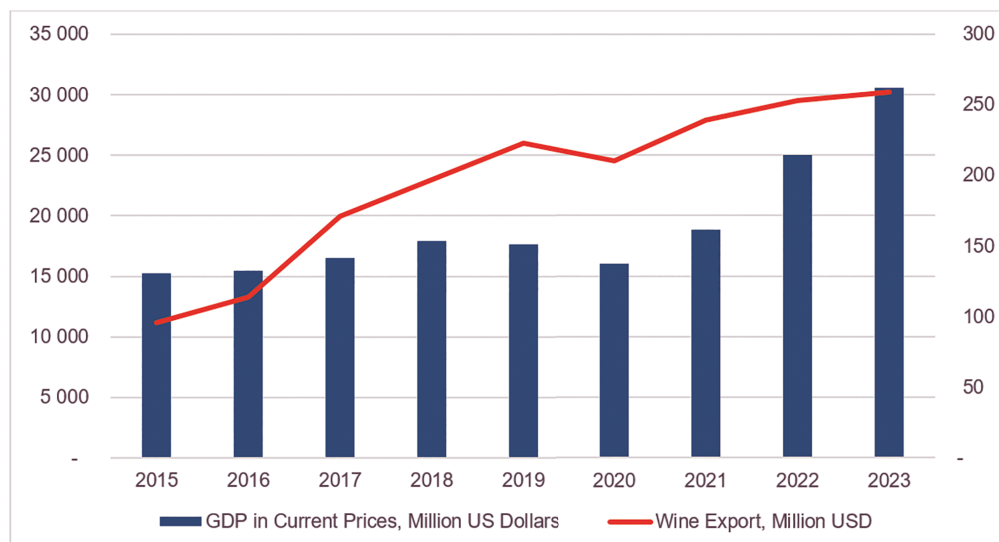
Source: Forbes.

WINE EXPORTS AND GEORGIA'S GROSS DOMESTIC PRODUCT (GDP)

The value of Georgian wine exports was $259 million in 2023, making the industry the second-largest export generator for the country (Graph 1[2]). Adding other alcoholic beverages to "wine of fresh grapes" brought 2023 exports in this combined category to $457 million.[3] In January-June 2024, "wine of fresh grapes" comprised 5.5% of the country's total exports and was the second most exported commodity after motor cars, which accounted for 32.8% of (re)exports. Together with the category of "spirituous beverages", wine and other alcoholic exports amounted to 10.2% of the country's total exports[4] (see Graph 2).

The high rank of wine in Georgia's exports implies its importance, but it is largely due to the country's lack of promising export options and low export diversification. More than 50% of the total exports are made up of only five commodity positions: motor cars, wine of fresh grapes, ferroalloys, spirituous beverages, and precious metal ores and concentrates.

In the first six months of 2024, Georgia export-

ed 54.5 million liters of wine worth $156.7 million to 61 countries. The exports figure meant a 26% increase over the same period of 2023, while revenues increased by 24%.[5]

In Russia's wine imports, Georgian wine amounted in 2022 to 19% in US dollar terms, while its share in top wine importer countries was negligible.[6] The 2024 remarkable upswing in Georgia's wine exports was especially notable in exports to Russia, which increased 74% in the first quarter of the year compared to the same period of 2023, accounting for $65 million in value.[7] Despite serious efforts to diversify exports of wine, Russia remains the main destination of Georgian wine, reaching 65% of the overall 2023 exports in this sector, the highest figure since 2005.[8] Russia ranked second

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2   National Statistics Office of Georgia. (2024a). Exports by commodity groups (HS 2-digit level) in 2015-2024, export. <https://www.geostat.ge/en/modules/categories/637/export> [Last Access 10.10.2024].

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among Georgia's commercial partners in the first quarter of 2024, while Turkey ranked first.[9]

As shown in Graph 3, the share of wine exports in Georgia's GDP has been growing along with the GDP growth in 2015-2021.[10] The country's GDP has continued to increase since 2021. It showed an 11% growth in 2022 and a 7.5% growth in 2023 and reached 80.2 billion GEL (or $30.5 billion) in 2023 (Graph 3). The share of wine exports in the GDP in 2023 equaled 0.85% and was more than 1.50% if spirituous beverages were considered.* Compared to 0.64% in 2015,[11] these figures signal a significant increase over the 8 years (see Graph 3[12]).

Wine is the main source of income for several regions in Georgia. It also enhances the economic and social welfare of local communities. In Kakheti, winemaking is the dominant sector and a crucial source of employment. In 2013, around 65–70% of all vineyards in Georgia were concentrated in the Kakheti region, which has many family-run wine cellars representing small and mid-sized wineries.[13] While 16.4% of the labor force was unemployed in 2023 at the national level, this figure was lower – 12% – in Kakheti.[14]

There are also wineries in many other areas, including Racha, Shida Kartli, Kvemo Kartli, Imereti, Samegrelo, Guria, Samtskhe-Javakheti, and Ajara. Georgia's rugged and mountainous landscape limits the availability of arable acreage, and the overwhelming majority of households own less than two hectares of agricultural land. Only 4.8% of households own two to five hectares of land, and 1.5% own more than five hectares. As over 40% of Georgia's population lives in rural areas, agriculture, including the cultivation of grapevines, offers an important safety net through small-scale village-type farming.[15]

Georgia's formal wine production sector attracted, on average, 0.8% of directly employed people (approximately 5,000 people) from 2011-2019. As for total employment in the sector, it is estimated to be around 100 thousand people. The latter estimate includes self-employed people and those working in the broader winemaking cluster on distribution, sales, trade, mechanization, chemical treatment of vines, transportation, and other auxiliary tasks.

The average monthly remuneration of employees in the winemaking sector amounted to 1,046 GEL (or 371 dollars) in 2019, having increased by about 11.5% annually between 2011 and 2019. It constituted 93% of the country's average salary in 2019.[16] Given Georgia's unemployment rate of 16.4% in 2023,[17] informal or complementary employment in winemaking makes a difference in rural areas. The size of Georgia's informal economy is estimated to be 46.5% of GDP,[18] which represents $40.4 billion at the GDP (PPP) level. While the nominal 2023 GDP of Georgia in current prices was $30.5 billion, it was

10.10.2024].

9   TASS. (2024). Georgian wine exports to Russia rise by 74% in Q1 2024. <https://tass.com/economy/1777963> [Last Access 10.10.2024].

10   Jmukhadze, N. (2022). The Role and Influence of Wine Export on the Economic Growth of Georgia. Forbes. <https://forbes.ge/en/ghvinis-eqsportis-roli-da-gavlena-saqarthvelos-ekonomikur-zrdaze/> [Last Access 10.10.2024].

11   Jmukhadze, N. (2022). The Role and Influence of Wine Export on the Economic Growth of Georgia. Forbes. <https://forbes.ge/en/ghvinis-eqsportis-roli-da-gavlena-saqarthvelos-ekonomikur-zrdaze/> [Last Access 10.10.2024].

*   Calculated by authors from the data of the National Statistics Office of Georgia.

12   National Statistics Office of Georgia. (2024a). Exports by commodity groups (HS 2 digit level) in 2015-2024, export. <https://www.geostat.ge/en/modules/categories/637/export> [Last Access 10.10.2024].

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14   National Statistics Office of Georgia. (2024b). Unemployment, percentage and Labor Force Indicators by Regions. Employment and Unemployment. <https://www.geostat.ge/en/modules/categories/683/Employment-Unemployment> [Last Access 10.10.2024].

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16   Georgia Today. (2021). Wine Production Sector in Georgia. <https://georgiatoday.ge/wine-production-sector-in-georgia/#:~:text=The%20wine%20production%20sector%20in,CAGR%20of%2012.1%25%20was%20reported> [Last Access 10.10.2024].

17   National Statistics Office of Georgia. (2024b). Unemployment, percentage and Labor Force Indicators by Regions. Employment and Unemployment. <https://www.geostat.ge/en/modules/categories/683/Employment-Unemployment> [Last Access 10.10.2024].

18   World Economics. (2024). Georgia's Informal Economy Size. <https://www.worldeconomics.com/Informal-Economy/Georgia.aspx> [Last Access 10.10.2024].

GRAPH 4. GRAPE PRODUCTION AND GOVERNMENT SPENDING ON THE WINE SECTOR
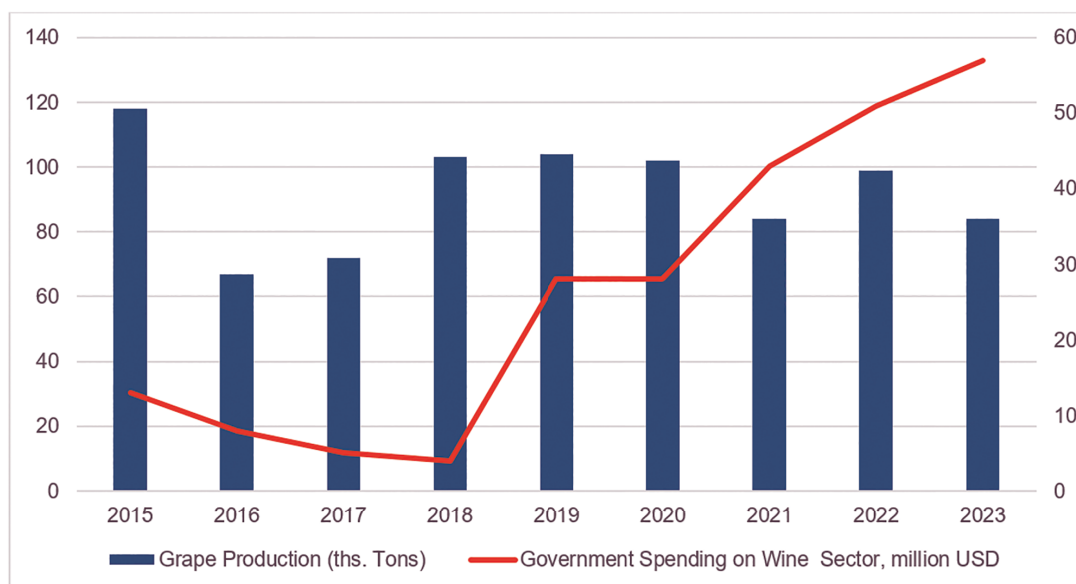
Source: Free Network.

more than double, $86.8 billion, accounting for purchasing power parity (PPP), which makes this indicator comparable across countries.[19]

STATE PROMOTION AND SUBSIDIES OF WINEMAKING

The National Wine Agency (NWA) of Georgia implements an extensive program to promote Georgia's winemaking. The state budget of this program in 2024 was set at 16 million GEL (or almost $6 million), which is 2 million GEL ($740 thousand) higher than the figure for 2023.[20] The NWA does not promote wine exports to Russia, which are already extensive. It prioritizes marketing Georgian wine in the USA, Great Britain, Germany, Poland, the Baltic states, China, South Korea, and Japan. In these countries, the con-

tractor companies of the NWA hold a variety of events to increase the export potential of Georgian wine. Wine exhibitions, festivals, and other events are also held throughout Georgia to raise the potential of the wine industry and wine-related tourism in the domestic and international markets.

Furthermore, the Government of Georgia supports national winemaking through two types of subsidies. Direct subsidies entail cash payments to producers per kilogram of grapes. As for indirect subsidies, they encourage state-owned companies to purchase grapes from farmers. After a temporary decline of the subsidiary scheme in 2017-2019, spending on the wine sector resumed with a new force in 2020 (Graph 4). In 2021, the government's spending on the wine sector increased by 44%, compared to 2020, with the largest share (90%) going to grape subsidies.[21] In 2022, the government continued to subsidize the grape harvest, allocating about 150 million GEL ($54.2 million) for this purpose and emphasizing the purchase and processing of specific grape varieties from the Ka-

19 International Monetary Fund. (2024). Georgia. World Economic Outlook Database. <https://www.imf.org/en/Publications/WEO/weo-database/2024/April/weo-report?c=915,&s=NGDP_RPCH,NGDPD,PPPGD-P,NGDPDPC,PPPPC,PCPIPCH,&sy=2022&ey=2029&ssm=0&scsm=1&scc=0&ssd=1&ssc=0&sic=0&sort=country&ds=.&br=1> [Last Access 10.10.2024].

20 National Wine Agency. (2024). Promotion of Georgian wine on international markets will become more active in 2024. *News*. <https://wine.gov.ge/En/News/37081> [Last Access 10.10.2024].

21 Gelashvili, S., Deisadze S., Seturidze E. (2022). An Overview of the Georgian Wine Sector: Policy Brief, *Free Network*. <https://freepolicybriefs.org/2022/11/21/overview-georgia-wine-sector/> [Last Access 10.10.2024].

kheti region (see Graph 4).[22,23]

Some analysts question the effectiveness of direct subsidies to producers of grapes. The significance of the promotion of Georgian wine exports suggests the need to prioritize subsidizing the marketing of wine in foreign markets to help winemakers enter international trade networks, especially in European and other strategic countries.[24] Other proposals for useful government interventions include ensuring producers' adherence to food safety standards to improve the quality of grapes and wine and providing high-quality extension services, including advice and technical support, to benefit the sustainable, long-term growth of the wine sector.[25]

FOOD AND WINE TOURISM

Wine-related tourism is not a modern phenomenon. There is evidence of wine tourism in ancient Egypt, Greece, and China going back to the Tang dynasty (618-907 AD) (This Day in Wine History, 2022).[26] The modern wine tourism industry is believed to have been born in California in the 1970s. Mondavi Winery was one of the first wineries to welcome guests for tastings, launching the popularity of winery tours in the USA. In the 1980s, wine tourism spread outside the Americas to become common in Italy, France, South Africa, and other countries.

The United Nations World Tourism Organization (UNWTO) held its 1st Global Conference on Wine Tourism in Kakheti, Georgia, in September 2016. This inaugural event attracted more than 200 participants from almost 50 countries.[27] The latest, 7th UNWTO Global Conference on Wine Tourism took place in November 2023 in Spain's winemaking region La Rioja under the theme of "Inclusive, sustainable and digital wine tourism: Building stronger territorial cohesion". The conference aimed to identify ways to make wine tourism an enabler of a more sustainable, inclusive, and resilient future for communities.[28]

The section on wine and food of the 2018 strategy of the Georgian National Tourism Administration blended the themes of the country's cultural heritage and unique wine and cuisine. It called for the promotion of Georgia as "the Cradle of Wine", identification of wine routes/trails in the Kakheti and Imereti regions, and the development of wine – and food-related services and festivities. To differentiate Georgia from competitor destinations, the strategy proposed aspiring for an "emotional connection" with the country's visitors/tourists around authentic, engaging, and unique experiences.[29]

Following the inevitable decline of Georgia's tourism industry as well as the entire economy during the COVID-19 pandemic,[30] also known as the coronomic crisis,[31] the years 2022 and 2023

22   Georgia.to. (2024). Government Policy in the Georgian Wine Sector. <https://georgia.to/government-policy-in-georgian-wine-sector/> [Last Access 10.10.2024].

23   Gelashvili, S., Deisadze S., Seturidze E. (2022). An Overview of the Georgian Wine Sector: Policy Brief, *Free Network*. <https://freepolicybriefs.org/2022/11/21/overview-georgia-wine-sector/> [Last Access 10.10.2024].

24   Jmukhadze, N. (2022). The Role and Influence of Wine Export on the Economic Growth of Georgia. *Forbes.* <https://forbes.ge/en/ghvinis-eqsportis-roli-da-gavlena-saqarthvelos-ekonomikur-zrdaze/> [Last Access 10.10.2024].

25   Deisadze, S., Gelashvili S., Katsia I. (2020). To Subsidize or Not to Subsidize Georgia's Wine Sector? *ISET Economist Blog.* To Subsidize or Not to Subsidize Georgia's Wine Sector? (iset-pi.ge) [Last Access 10.10.2024].

26   This Day in Wine History. (2022). History of Wine Tourism in the Ancient World. <https://thisdayinwinehistory.com/history-of-wine-tourism-in-the-ancient-world/> [Last Access 10.10.2024].

27   UN Tourism. (2016). 1st UNWTO Global Conference on Wine Tourism. <https://www.unwto.org/archive/global/event/1st-unwto-global-conference-wine-tourism> [Last Access 10.10.2024].

28   UN Tourism. (2023). 7th UNWTO Global Conference on Wine Tourism. <https://www.unwto.org/7-UNWTO-Global-Conference-Wine-Tourism> [Last Access 10.10.2024].

29   Municipal Development Fund of Georgia. (2018). *Marketing, branding, and promotional strategy for Georgia, Part II – Strategy* (pp. 31-72). RFP No.: IBRD/IDA/RDPII/CS/QCBS/03-2017.

30   Charaia, V., Lashkhi, M. (2022). Foreign direct investments during the coronomic crisis and armed conflict in the neighbourhood, Case of Georgia. *Globalization and Business*, 7(13), pp. 51-56. <https://eugb.ge/index.php/111/article/view/17> [Last Access 10.10.2024].

31   Papava, V., Charaia, V. (2020). The coronomic crisis and some challenges for the Georgian econo-

GRAPH 5. DISTRIBUTION OF THE NUMBER OF VISITS MADE BY INBOUND VISITORS BY THE COUNTRY OF CITIZENSHIP
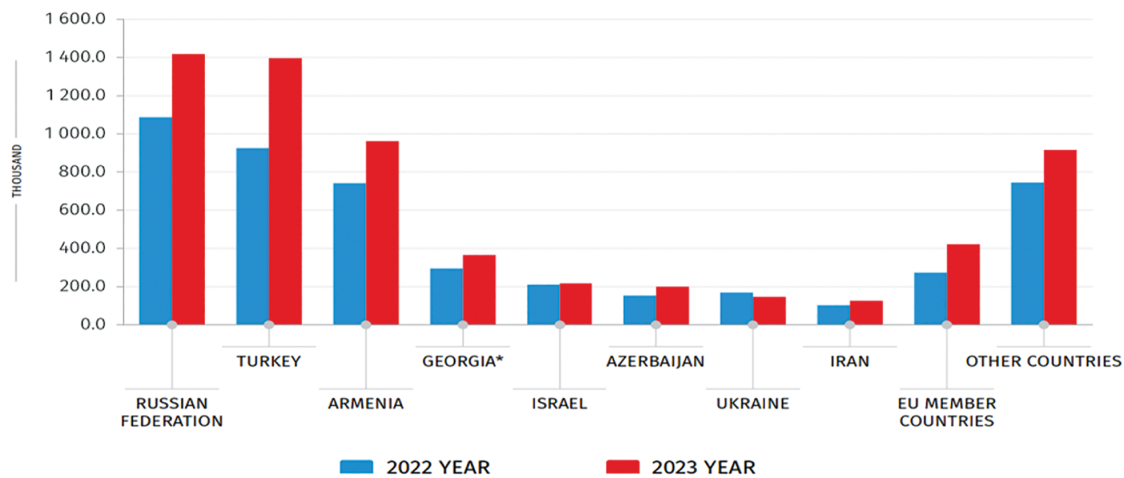
*Georgian citizens who remain the residents of other country

Source: National Statistics Office of Georgia.

saw an impressive recovery. In 2023, revenues from international tourism exceeded the 2019 level by 26.2% or $856.7 million and the 2022 data by 17.3% or $608.7 million. In 2023, 7.1 million international travelers visited Georgia, which amounted to a 75.6% recovery in numbers from the pre-pandemic period. As a result, the country received a record $4.1 billion in tourism revenue.[32]

The largest number of visitors (1.2 million) in 2023 was from Russia, amounting to 23.2% of the total number of visitors, followed by Turkey (21.4%) and Armenia (13.5%). Correspondingly, the citizens of Russia, Turkey, and Armenia made the most visits (Graph 5).[33,34]

The expenditures during the 2023 visits were 20.5% higher compared to the previous year's record.[35] For this paper, it is important to highlight the share of food and drinks in the overall expenditures. In 2022, the largest share of visitors' expenditures was registered on served food and drinks (33.2% of total expenses) and accommodation (31% of total expenses).[36] "Tasting local cuisine and wine" was one of the most popular tourist activities – the second only after shopping – in 2022 (Graph 6[37]). In 2023, the share of food and drinks decreased to 21.6%, while accommodation and shopping were the main expenditure categories (Graph 7[38]).

my. *GFSIS, Expert Opinion*, (136). <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3572124> [Last Access 10.10.2024].

32   Georgia National Tourism Administration. (2024*). Record $4.1 billion in tourism revenue and 7.1 million international travelers – 2023 statistics. <https://gnta.ge/ge/2023-statistics-info/?fbclid=IwAR3xD0boFcMaTR_L3jKrhwz_WQOGN_Eb-4zOBaB0gQ6wMdePxx648hU2GFa4> [Last Access 10.10.2024].

33   National Statistics Office of Georgia. (2024c). *Inbound Tourism Statistics in Georgia* (pp. 4-9). <https://www.geostat.ge/media/59934/Inbound-Tourism-Statistics---%282023-year%29.pdf> [Last Access 10.10.2024].

34   National Statistics Office of Georgia. (2024c). *Inbound Tourism Statistics in Georgia* (pp. 4-9).

<https://www.geostat.ge/media/59934/Inbound-Tourism-Statistics---%282023-year%29.pdf> [Last Access 10.10.2024].

35   Ibid.

36   Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-content/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

37   Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-content/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

38   National Statistics Office of Georgia. (2024c). *Inbound Tourism Statistics in Georgia* (pp. 4-9). <https://www.geostat.ge/media/59934/In-

GRAPH 6. POPULAR TOURIST ACTIVITIES
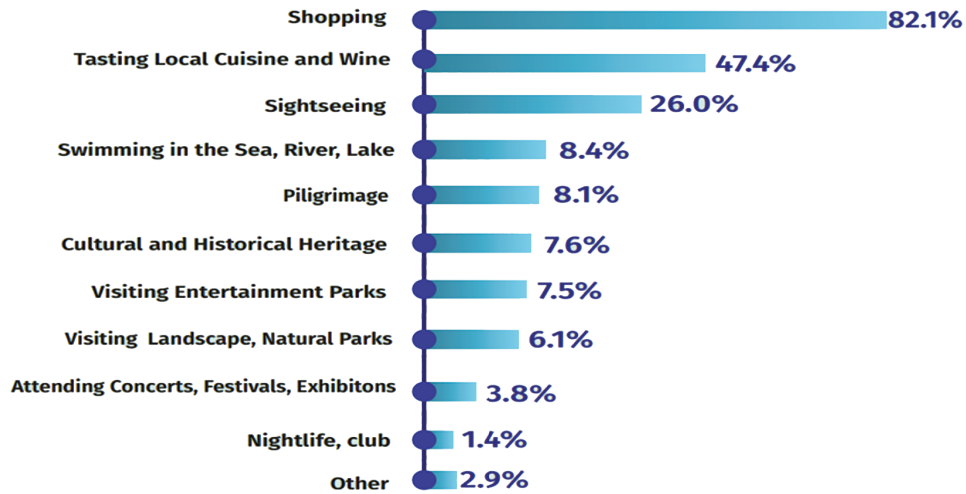
Source: Georgian National Tourism Administration.

How important is the tourism sector for the economy? Worldwide, in 2022, the Travel and Tourism sector contributed 7.6% to global GDP, constituting an increase of 22% from 2021, though 23% below the 2019 pre-pandemic level.[39] In the same year in Georgia, the added value of tourism-related industries as a share of GDP increased from 6.7% to 7.2%. More than 20% of this value was driven by food and beverage services.[40] In 2023, the world's Travel and Tourism sector contributed 9.1% to the global GDP and added 27 million new jobs.[41]

bound-Tourism-Statistics---%282023-year%29. pdf> [Last Access 10.10.2024].

39 World Travel and Tourism Council. (2023). Global Travel & Tourism Catapults into 2023 Says WTTC, *Economic Impact Research.* <https://wttc.org/ news-article/global-travel-and-tourism-cata-pults-into-2023-says-wttc#:~:text=A%20look%20 back%20on%20last%20year&text=This%20re-covery%20represented%207.6%25%20of,GDP%20 contribution%20of%20%247.7TN> [Last Access

10.10.2024].

40 Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-con-tent/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

41 World Travel and Tourism Council. (2023). Global

GRAPH 7. DISTRIBUTION OF THE EXPENDITURE SPENT BY INBOUND VISITORS BY EXPENDITURE CATEGORIES IN 2023*

	EXPENDITURE (MILLION USD)	%	AVERAGE EXPENDITURE PER VISIT (USD)
ACCOMMODATION	1793	36.4	291
SHOPPING	1152	23.4	186
FOODS AND DRINKS	1065	21.3	172
HOLIDAY, LEISURE, RECREATION, CULTURE AND SPORTING ACTIVITIES	495	10	80
LOCAL TRANSPORT	359	7.3	58
OTHER EXPENDITURES	62	1.3	10
TOTAL EXPENDITURE	4945	100	797

Source: National Statistics Office of Georgia.

*Official average exchange rate for 2023 was taken at 1$ = 2.6279 GEL

Wine-related tourism is essential for the development of winemaking regions of Georgia to support well-established and also startup companies as well as households. In 2023, the visits to the wine-making regions of Kakheti, Imereti, Samtske-Javakheti, and Kvemo Kartli comprised 20% of the total visits to Georgia.[42] The ability to sell wine directly to consumers in wineries plays a critical role in the growth and development of Georgia's beverage industry as well as the advancement of local communities. Many rural producers in Georgia do not have distribution contracts enabling them to retail their wine. Therefore, the openness of their establishments for visitation, which typically includes tours, tastings, and opportunities to purchase beverages, is indispensable.[43]

Given a dramatic increase in the number of wineries registering for commercial production – from 80 in 2006 to an estimated 2,400 in 2023[44] – these wineries can serve as the lifeblood of regional tourism and the rural economy. Close to one-half of the Georgian population is still employed in agriculture, while this sector accounted for 7-8% of GDP in 2014-2023,[45] and 98% of farm

workers are considered self-employed practicing subsistence agriculture.[46] Since human capital in the rural economy remains largely untapped, it can be mobilized to participate in both winemaking and wine and food tourism offerings.

OVERALL IMPACT OF WINEMAKING AND WINE TOURISM

If we consider only direct statistics on Georgia's winemaking, the impact of this sector appears moderate, if not small. Because mountains occupy 65% of Georgia's territory,[47] opportunities for large-scale agriculture are limited, and small-scale village-type farming and winemaking are predominant. Even though wine exports in Georgia have been growing, they comprised only 5.5% of the country's total exports in January–June 2024.[48] They also do not contribute much to the country's GDP: 0.85% or about 1.50%, if considering spirituous beverages, according to the 2023 statistics.** "Agriculture, forestry, and fishing" – a category that includes vine-growing – added only 6.9% to the GDP (Graph 8[49]), and winemaking is subsidized by the government.

However, it is important to look beyond current data about the formal economy and focus on trends and potential, also with the help of mod-

Travel & Tourism Catapults into 2023 Says WTTC, *Economic Impact Research*. <https://wttc.org/news-article/global-travel-and-tourism-catapults-into-2023-says-wttc#:~:text=A%20look%20back%20on%20last%20year&text=This%20recovery%20represented%207.6%25%20of,GDP%20contribution%20of%20%247.7TN> [Last Access 10.10.2024].

42 National Statistics Office of Georgia. (2024c). *Inbound Tourism Statistics in Georgia* (pp. 4-9). <https://www.geostat.ge/media/59934/Inbound-Tourism-Statistics---%282023-year%29.pdf> [Last Access 10.10.2024].

43 University of Georgia Extension. (2024). *Georgia's Alcoholic Beverage Industry 2024 Outlook*. <https://extension.uga.edu/publications/detail.html?number=AP130-2-15&title=georgias-alcoholic-beverage-industry-2024-outlook> [Last Access 10.10.2024].

44 Tsereteli, M. (2024). Georgian Wine and its Narrative Drive Development. *The Central Asia – Uncorking Georgia's Wine Boom: A Statistical Deep Dive and Exploring Key Regions.* 8Wines. <https://www.cacianalyst.org/publications/analytical-articles/item/13548-georgian-wine-and-> [Last Access 10.10.2024].

45 International Trade Administration. (2023). Agricultural Sector. *Georgia – Country Commercial*

Guide. <https://www.trade.gov/country-commercial-guides/georgia-agricultural-sector> [Last Access 10.10.2024].

46 FAO. (2024). *Georgia at a Glance*. FAO in Georgia, Food and Agriculture Organization of the United Nations. <https://www.fao.org/georgia/programmes-and-projects/georgia-at-a-glance/en/> [Last Access 10.10.2024].

47 UN. (2020). Building the resilience of mountain communities in the face of crisis. *United Nations: Georgia*. <https://georgia.un.org/en/104787-building-resilience-mountain-communities-face-crisis> [Last Access 10.10.2024].

48 National Statistics Office of Georgia. (2024a). *Exports by commodity groups (HS 2 digit level) in 2015-2024, export*. <https://www.geostat.ge/en/modules/categories/637/export> [Last Access 10.10.2024].

49 National Statistics Office of Georgia. (2024d). GDP at current prices, billion GEL. *Gross Domestic Product (GDP)*. <https://www.geostat.ge/en/modules/categories/23/gross-domestic-product-gdp> [Last Access 10.10.2024].

GRAPH 8. GDP STRUCTURE 2023, %

Wholesale and retail trade; repair of motor vehicles and motorcycles 15.6 %

Real estate activities 10.2 %

Manufacturing 9.5 %

Construction 7.9 %

Agriculture, forestry and fishing 6.9 %

Public administration and defence; compulsory social security 6.9 %

Transportation and storage 6.2 %

Information and communication 5.9 %

Other sectors 30.7 %
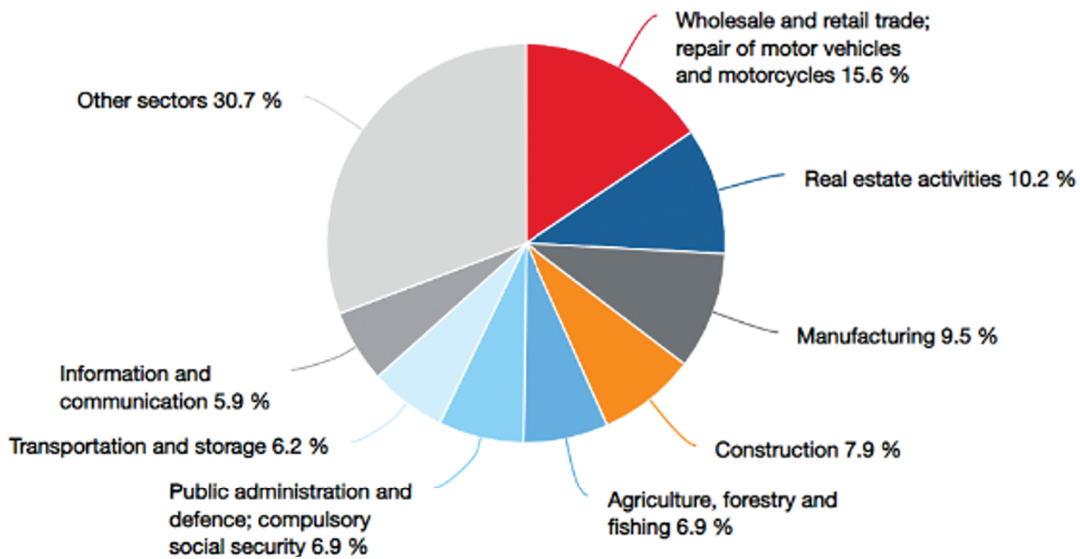
Source: National Statistics Office of Georgia.

ern financial technologies.[50, 51] Wine was the second most exported commodity in Georgia in both 2023 and the first half of 2024.[52] The rank of wine in Georgia's exports had increased compared to 2018 when the wine industry was the fifth-largest export generator for the country.[53] The share of wine exports in Georgia's GDP has been growing along with the GDP growth,[54] and it is increasingly important for regional development in terms of both economic growth and employment. It is also notable that detailed statistics on GDP reflect the formal economy, whereas data on the informal economy is scarce, thus underrepresenting trends in village-type winemaking.

Compared to other major commodity positions, such as "motor cars" and "ferroalloys", winemaking has greater potential. Georgia does not produce cars but rather reexports them,[55] the country's mining industry has been in decline since Georgia's independence from the Soviet Union, and the ferroalloys market has experienced a crisis.[56] Wine is a more promising export option than the alternatives, considering the country's

50   Lashkhi, M., Charaia, V., Boyarchuk, A., Ebralidze, L. (2022). The Impact of Fintech on Financial Institutions: The Case of Georgia. *TalTech Journal of European Studies*, *12*(2), pp. 20-42. <https://intapi.sciendo.com/pdf/10.2478/bjes-2022-0010> [Last Access 10.10.2024].

51   Lashkhi, M., Ogbaidze, S., Lashkhi, M., Charaia, V. (2022). Startup access to finance in Georgia and international experience. <https://ekonomisti.tsu.ge/?cat=nomer&leng=eng&adgi=692> [Last Access 10.10.2024].

52   National Statistics Office of Georgia. (2024a). Exports by commodity groups (HS 2 digit level) in 2015-2024, Export. <https://www.geostat.ge/en/modules/categories/637/export> [Last Access 10.10.2024].

**   Calculated by authors from the data of the National Statistics Office of Georgia.

53   Tsereteli, M. (2024). Georgian Wine and its Narrative Drive Development. *The Central Asia – Uncorking Georgia's Wine Boom: A Statistical Deep Dive and Exploring Key Regions*. 8Wines. <https://www.cacianalyst.org/publications/analytical-articles/item/13548-georgian-wine-and-> [Last Access 10.10.2024].

54   Jmukhadze, N. (2022). The Role and Influence of Wine Export on the Economic Growth of Georgia. *Forbes*. <https://forbes.ge/en/ghvinis-eqsportis-roli-da-gavlena-saqarthvelos-ekonomikur-zrdaze/> [Last Access 10.10.2024].

55   Market Entry Georgia. (2024). Automotive – Market Research. *Tbilisi*. <https://www.marketentry.ge/automotive#:~:text=In%20Georgia%20cars%20are%20mostly,is%20not%20producing%20cars%20itself> [Last Access 10.10.2024].

56   Gabritchidze, N. (2023). Georgian miners strike as company cites global market crisis. *Eurasianet*. <https://eurasianet.org/georgian-miners-strike-as-company-cites-global-market-crisis> [Last Access 10.10.2024].

EXHIBIT 1. WHAT'S WINE WORTH? 2022 CALIFORNIA ECONOMIC IMPACT STUDY

WINE PRODUCERS	JOBS	ANNUAL WAGES (BLN $)	TOURISM VISITS	TOURIST EXPENDITURES (BLN $)	TOTAL TAXES (BLN $)	FEDERAL TAXES (BLN $)	STATE AND LOCAL TAXES (BLN $)
4 795	513 738	32.05	25 215 863	8.56	8.45	5.42	3.03
Total Impact – 88.12 billion USD							

Source: The National Association of American Wineries.

climate, terrain, and soil; culture and long history of winemaking; and economic performance and prospects. Moreover, past manufacturing and mining showed negative environmental impacts that would contradict interest in marketing Georgia as a beautiful place and a "Cradle of Wine".

Learning from the world's top winemaking regions, the wine industry not only contributes significantly to the export and GDP but also provides a multiplier effect on the economy. This point can be proven by the example of California, which is known as "the world's great wine state", accounts for 87% of US wine production and, if it were an independent nation, would be the world's fourth wine-producing country behind Italy, France, and Spain.[57] California's wine industry generates close to $88.12 billion in total economic activity that embraces farming, banking, accounting, manufacturing, packaging, transportation, printing, and advertising. It directly employs as many as 256 thousand people; creates an additional 116 thousand jobs in supplier and ancillary industries; and produces $8.45 billion in tax revenues on the local, state, and national levels (Exhibit 1).[58,59]

The 2022 economic impact study of California's wine industry also corroborates a strong linkage between winemaking and tourism. California's "wine country" generates more than 25 million tourist visits and $8.56 billion in annual tourism expenditures, benefiting local economies and tax bases.[60] This evidence brings us to a brief discussion of the overall impact of Georgia's tourism sector.

As noted above, in 2022, Georgia received $3.5 billion from incoming tourism, and the share of tourism in Georgia's GDP was 7.2% – almost on par with the worldwide 7.6% contribution of the Travel and Tourism sector to the global GDP.[61] In 2023, revenue from tourism increased to $4.1 billion,[62] which amounted to 13.4% of the $30.5 billion GDP.[63] The 13.4% figure was higher than the 9.1% contribution of the world's Travel and Tourism sector to the global GDP in 2023.[64] Before the COVID-19 pandemic in 2019, the Georgian travel and tourism industry represented 25% of the total GDP, and this industry supported 482 thousand jobs (equivalent to more than one in every four jobs).[65] The com-

57   Hellibrand GORI. (2024). California – Vineyard of the Americas. *About-California.com*, Explore the World's Top Wine Regions. <https://about-california.com/wines.htm#:~:text=California%20%2D%20Vineyard%20of%20the%20Americas,87%25%20of%20US%20wine%20production> [Last Access 10.10.2024].

58   The National Association of American Wineries. (2023). *California Economic Impact Study 2022*. <https://wineamerica.org/economic-impact-study/california-wine-industry/#:~:text=2022,the%20American%20economy%20in%202022> [Last Access 10.10.2024].

59   Ibid.

60   Ibid.

61   Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-content/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

62   Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-content/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

63   National Statistics Office of Georgia. (2024d). GDP at current prices, billion GEL. *Gross Domestic Product (GDP)*. <https://www.geostat.ge/en/modules/categories/23/gross-domestic-product-gdp> [Last Access 10.10.2024].

64   World Travel and Tourism Council. (2024). *World Economic Impact Report*. <https://researchhub.wttc.org/product/world-economic-impact-report> [Last Access 10.10.2024].

65   Tourism Economics. (2021). Data and Digital Platforms: Driving the Tourism Recovery in Georgia, an Oxford Economics Company. <https://s3.amazonaws.com/tourism-economics/craft/Google_

parison of the 2023 and 2019 data suggests that Georgia's tourism has not yet fully recovered from the economic crisis caused by a health emergency and that the upward trend in the advancement of this sector is likely to continue.

Considering 7.1 million visitors to Georgia in 2023,[66] the average country's revenue per visitor in the same year was $577.[67] For comparison, in France, the country with the highest number of international tourist arrivals worldwide, the average revenue per visitor in 2023[68] – the year that saw a record number of arrivals at 100 million[69] and a record revenue of €69 billion or $75 billion – was $750.*** Thus, even though Georgia is a much less known tourist destination than France, the country's capacity to generate revenue from tourism is substantial in relative terms.

While the added value of Georgia's tourism as a share of GDP increased in 2022 compared to 2021, more than 20% of this value was driven by food and beverage services.[70] Although the share of food and drinks decreased to third place in the visitors' expenditures in 2023, compared to 2022,

when this share occupied the top position, "tasting local cuisine and wine" remains one of the most popular tourist activities. This reveals the cross-fertilization of winemaking and food and wine tourism, which especially benefits winemaking regions of Georgia, increases awareness of the country across the world and boosts its economic and social development.

In the international context, as well as in Georgia, winemaking can generate secondary economic activity. Winemaking is closely linked with major sectors of the economy: agriculture (grape growing), wine production (grape processing into wine and other alcoholic drinks), transportation (of grapes and wine), marketing of wine, and businesses associated with wine and food tourism (hotels, restaurants, events planning, supermarkets, and shops). Reversely, tourism affects and bolsters other sectors of the economy. In 2018, before the COVID-19 pandemic, 31.3% of Georgia's GDP depended on the travel and tourism industry, including parks and transportation.[71]

Investment in winemaking and food and wine tourism can thus stimulate most of the Georgian economy – both urban and rural. As labor-intensive sectors, these sectors generate jobs, revenue, and taxes directly, as well as through ancillary industries and services. Georgia's strong economic performance in 2021 and 2022, which the International Monetary Fund attributed to tourism revenues and a surge in war-related immigration and financial inflows, suggests sound business and investment conditions, favorably comparing the country to its regional peers Georgia's investment attractiveness,[72] the high rank of wine in exports, and the closeness of tourism-related indicators to global averages reinforce the centrality of winemaking and wine tourism in the country's economy.

Georgia_Final.pdf> [Last Access 10.10.2024].

66 Georgia National Tourism Administration. (2024). Record $4.1 billion in tourism revenue and 7.1 million international travelers – 2023 statistics. <https://gnta.ge/ge/2023-statistics-info/?fbclid=IwAR3xD0boFcMaTR_L3jKrhwz_WQOGN_Eb-4zOBaB0gQ6wMdePxx648hU2GFa4> [Last Access 10.10.2024].

67 Ibid.

68 Statista. (2024). Number of international tourist arrivals in France from 2010 to 2023. <https://www.statista.com/statistics/436543/number-of-inbound-overnight-visits-france/#:~:text=The%20number%20of%20international%20tourist,-by%20the%20destination%20to%20date> [Last Access 10.10.2024].

69 UN Tourism. (2024). *World Tourism Barometer.* <https://pre-webunwto.s3.eu-west-1.amazonaws.com/s3fs-public/2024-06/Barom_PPT_May_2024.pdf?VersionId=U7O62HatlG4eNAj.wcmuQG1PMCjK.Yss> [Last Access 10.10.2024].

*** Calculated by authors using the average exchange rate in 2023 of Euro to USD of 1.0824 USD. ExchangeRates.org.UK. Euro to US Dollar Spot Exchange Rates for 2023 [Last Access 26.07.2024].

70 Georgian National Tourism Administration. (2023). *Georgian Tourism in Figures: Structure and Industry Data 2022* (pp. 8-23). <https://gnta.ge/wp-content/uploads/2023/09/2022-eng-1.pdf> [Last Access 10.10.2024].

71 Quinn, C. (2020). The Tourism Industry Is in Trouble. These Countries Will Suffer the Most. *Foreign Policy.* <https://foreignpolicy.com/2020/04/01/coronavirus-tourism-industry-worst-hit-countries-infographic/> [Last Access 10.10.2024].

72 Charaia, V., Chochia, A., & Lashkhi, M. (2020). The impact of FDI on economic development: The Case of Georgia. *TalTech Journal of European Studies*, 10(2), pp. 96-116. <https://intapi.sciendo.com/pdf/10.1515/bjes-2020-0017> [Last Access 10.10.2024].

Given Georgia's 8,000-year history of wine-making, the existence of more than 500 varieties of indigenous grapes, and distinctive traditional methods of wine production, the potential of the country's wine industry is above the global average. Similarly, the potential of Georgia's wine tourism is way above average. Wine tasting can be effectively combined with learning about the unique Georgian culture of hospitality and enjoying a rich and diverse natural landscape, as the country is blessed with majestic mountains, exceptional valleys, and a remarkable seaside.

Furthermore, there are indications that wine-making can be more profitable in Georgia relative to other sectors of the economy and international competitors. A TBC Capital survey of large – to medium-size Georgian wineries revealed high financial returns—about twice the average for Georgian businesses in general.[73] According to EBIT Group, a financial consulting company, both net profit margin and return on equity are significantly higher for Georgian wine-producing companies compared to US winemakers.[74] Highlighting the reality and the potential of winemaking in Georgia, these assessments suggest its business priority for the country and its role as the engine of economic growth.

The ancient Georgian deity of wine, Aguna, is the god of vineyard fertility and crop prosperity.[75] Amplified by a quintessentially Georgian attitude that "every guest is a gift from God", a blend of winemaking and wine tourism offers the country a promise of economic prosperity, even though much is still to be done to gain Georgia's recognition as a producer of the world's best wines and a top tourist destination.

CONCLUSION

Winemaking is central to Georgia's cultural identity and social life, but its direct economic contribution appears moderate: wine exports account for a small percentage of GDP, and the formal wine industry employs a relatively small portion of the workforce. However, considering indirect impacts and future potential, wine is a significant driver of the national economy and regional development:

- Importance beyond statistics: wine production is crucial for rural communities, offering employment and income security; the informal wine economy is substantial.
- Growth potential: wine exports are increasing, and Georgia has a competitive advantage due to its unique grape varieties, climate, and winemaking traditions.
- Multiplier effect: winemaking is linked to other sectors like agriculture, tourism, and transportation, stimulating overall economic activity.
- Tourism synergy: wine tourism is a major driver for regional economies, attracting visitors and boosting revenue from food and beverage services.

Georgia's future economic development can significantly benefit from investing in and promoting both winemaking and wine tourism. By leveraging its unique heritage and fostering a thriving wine industry, Georgia can attract investment, create jobs, and enhance its reputation as a global tourist destination, similar to the case of US wine industry centers.

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THE IMPACT OF INDUSTRY 4.0 IN THE CONDITIONS OF GLOBALIZATION: AN OVERVIEW OF LOGISTICS COMPANIES ORIGINATING FROM TURKIYE

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ABSTRACT. The main purpose of this study is to investigate the impact of Industry 4.0 technologies on the survival and competitiveness of logistics companies based in Turkiye, a developing country, within the global landscape. From a qualitative study perspective, it aims to elucidate the positive and negative effects of Industry 4.0 applications on the logistics sector while also discussing recommendations to mitigate or eliminate these negative impacts. Based on the results of the semi-structured interview analysis, it can be asserted that the positive impacts of Industry 4.0 applications increase proportionally with the scale of a firm. Besides, if the R&D investments are enhanced in the logistics industry operating in Turkiye, it is expected that the negative effects will be more likely to be mitigated. According to findings from interviews, the preliminary anticipated effect of Industry 4.0 applications on the logistics sector is improved efficiency, while the primary barrier to its adoption is identified as the inadequacy of infrastructure and education.

Introduction

The advent of the fourth industrial revolution, also called Industry 4.0, characterized by the integration of advanced technologies such as the Internet of Things (IoT), artificial intelligence (AI), robotics, and big data analytics, has significantly transformed various sectors worldwide.[1] Particularly, one of these sectors, logistics, has experienced profound changes as Industry 4.0 offers potential benefits such as increased operational efficiency, improved supply chain management, and increased global competitiveness. In an era of globalization, where economies are increasingly interconnected, these technological advancements are essential for maintaining competitive advantage.[2]

As an important developing country, Turkiye, with a strategic geographical location, plays a crucial role in international logistics and trade. The country's logistics sector serves as a vital bridge between Europe, Asia, and the Middle East, making it a key player in global supply chains.

Nonetheless, the adoption of Industry 4.0 technologies in logistics companies originating from Turkiye brings with it both significant opportunities and significant challenges.[3]

This study aims to investigate the impact of Industry 4.0 on Turkish logistics companies. Using a qualitative research approach, specifically through semi-structured interviews with key industry stakeholders, this research aims to provide a comprehensive understanding of how technological developments associated with Industry 4.0 are impacting the industry. The study will examine both the positive and negative effects of Industry 4.0 applications, highlighting the factors that facilitate or impede their adoption.[4]

Similar to the literature, findings suggest that larger firms tend to benefit more from Industry 4.0 applications due to their greater resources and scalability.[5] Conversely, smaller firms may face significant barriers, including inadequate infrastructure and a lack of specialized education and training.[6] Additionally, increased investments in research and development (R&D) in the logistics sector are expected to alleviate some of the negative impacts and create a more conducive environment for technology adoption.[7] So, this study aims to provide valuable insights and recommendations for logistics companies in Turkiye, helping them navigate the complexities of Industry 4.0 and enhance their global competitiveness. Through a detailed analysis of the current state of the industry and the challenges faced, this research will contribute to a broader understanding of the impact of Industry 4.0 on logistics in developing countries.[8]

LITERATURE REVIEW

The concept of "Industry 4.0" originated from the 2011 Hannover Fair in Germany and represents the fourth industrial revolution characterized by the integration of advanced digital technologies into manufacturing and service industries.[9] The revolution paradigm aims to provide uninterrupted connection and automation in processes with

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mainly the principles of Cyber-Physical Systems (CPS), Internet of Things (IoT), and Smart Factory principles.[10]

The key components of Industry 4.0 include horizontal integration across value chains, vertical integration within production systems, and end-to-end digital integration of engineering processes.[11] These dimensions enable real-time data exchange, predictive maintenance, and agile manufacturing capabilities.[12]

Despite its existing and potential benefits, such as improved efficiency, personalization, and sustainability, the adoption of Industry 4.0 is not without its challenges. The high cost of technology implementation, the need for a skilled workforce, and cybersecurity-related concerns are being struggled, especially by small and medium-sized enterprises (SMEs). The literature emphasizes the significance of interoperability, scalability, and adaptive organizational structures as critical factors for successful deployment.[13]

In the logistics sector, Industry 4.0 technologies play a crucial role in enhancing operational efficiency and competitiveness in a global area. Especially the integration of IoT, Artificial Intelligence (AI), and big data analytics in logistics processes enables real-time tracking, improved inventory management, and optimized supply chain operations.[14] Various studies in the literature have shown that these advancements are particularly beneficial in developing countries like Turkiye, where strategic geographical positioning facilitates global trade connectivity.[15] However, the adoption of Industry 4.0 in the logistics sector also faces significant challenges. Infrastructure limitations, lack of technological awareness, and insufficient workforce skills are the main challenges and obstacles, especially for small-scale logistics companies. To overcome these obstacles and take full advantage of the benefits of Industry 4.0, it is crucial to invest in research and development (R&D) and targeted training programs.[16]

The relationship between globalization and Industry 4.0 is also a critical area of study. Industry 4.0 technologies improve global supply chain integration and facilitate more efficient international trade by reducing costs and improving responsiveness to market demands.[17] This is particularly significant for countries like Turkiye, where logistics plays a vital role in connecting Europe, Asia, and the Middle East.

While Industry 4.0 promises transformative advances in manufacturing and service sectors worldwide, ongoing research efforts are crucial to overcome implementation challenges, optimize technological integration, and foster inclusive economic growth in the age of digital transformation.

METHODOLOGY

The study explores the impact of Industry 4.0 technologies on the survival and competitiveness of logistics companies originating from Turkiye within the context of globalization. The research questions are:
- What are the primary impacts of Industry 4.0 technologies on the operational efficiency and competitiveness of logistics companies originating from Turkiye?

10 Rüßmann, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Harnisch, M. (2015). Industry 4.0: *The Future of Productivity and Growth in Manufacturing Industries*, 3.

11 Hermann, M., Pentek, T., Otto, B. (2016). Design Principles for Industrie 4.0 Scenarios. 2016 49th *Hawaii International Conference on System Sciences (HICSS)*, 3930.

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17 Strange, R., Zucchella, A. (2017). Industry 4.0, global value chains and international business. *Multinational Business Review*, 25(3), 178.

- What are the key challenges and barriers faced by Turkish logistics companies in adopting Industry 4.0 technologies?
- What strategies can be recommended to enhance the adoption and integration of Industry 4.0 technologies in the Turkish logistics sector?

A semi-structured interview method was used for the qualitative design approach. The primary data were collected through interview questions with key stakeholders in the Turkish logistics industry. These stakeholders included executives and managers from a range of logistics companies and industry experts familiar with Industry 4.0 applications.

A purposive sampling technique was employed to determine 20 interviewees who have at least 5 years of experience in the logistics sector. Participants were selected to represent companies of a wide range of sizes, from small and medium-sized businesses (SMEs) to large-scale corporations.

Interviews were conducted via online platforms depending on the availability and time preference of the participants. Each interview lasted between 35 and 50 minutes and was recorded audio and video with the consent of the participants.

DATA ANALYSIS

A thematic analysis procedure was used to analyze the interview data, complete with key tables summarizing the findings. This approach was chosen for its effectiveness in identifying, analyzing, and reporting patterns/themes in qualitative data. The stages of the thematic analysis procedure are as follows:
- Transcription: To ensure accuracy, all interviews were transcribed verbatim.
- Familiarity: The researcher became famil-

iar with the data by reading the transcripts multiple times.
- Coding: Initial codes were created by identifying important expressions and concepts related to the research questions.
- Theme Development: Codes were grouped into broader themes that formed the core of the data. Themes were reviewed and refined multiple times to ensure they accurately reflected the data.
- Interpretation: The themes created were interpreted in the context of the research questions and existing literature to draw meaningful conclusions.

FINDINGS

As a result of the thematic analysis of the interview data, several important findings emerged regarding the impact of Industry 4.0 technological transformation on Turkish logistics companies. These findings are summarized below and supported by relevant tables.

POSITIVE IMPACTS OF INDUSTRY 4.0

Industry 4.0 technologies have created many positive changes in the logistics sector in Turkiye, mainly increasing operational efficiency and competitiveness. The main positive effects identified, their descriptions from interviews, and their frequencies are shown in Table 1.

BARRIERS TO ADOPTION OF INDUSTRY 4.0

Despite the many benefits it provides, it has been determined that there are various ob-

TABLE 1. POSITIVE IMPACTS OF INDUSTRY 4.0

IMPACT	DESCRIPTION	FREQUENCY OF MENTION
REAL-TIME TRACKING	Providing advanced real-time tracking of shipments and assets	18
INVENTORY MANAGEMENT	Increasing accuracy and efficiency in managing inventory levels	15
SUPPLY CHAIN OPTIMIZATION	Improving coordination and optimization of supply chain operations	14
COST REDUCTION	Reducing operational costs due to automation and efficiency improvements	12

TABLE 2. BARRIERS TO THE ADOPTION OF INDUSTRY 4.0

BARRIER	DESCRIPTION	FREQUENCY OF MENTION
INADEQUATE INFRASTRUCTURE	Lack of technological infrastructure required	17
WORKFORCE AND TRAINING	Lack of skilled workforce and training programs	14
HIGH INITIAL INVESTMENT COSTS	Significant amount of capital required for initial implementation	12
CYBERSECURITY CONCERNS	Risks related to data security and privacy	11

stacles to the adoption of Industry 4.0 technologies, especially for small companies. The main barriers to adoption, their descriptions from interviews, and frequencies are shown in Table 2.

DIFFERENCES BASED ON COMPANY SCALE

The impact of Industry 4.0 digital transformation and technologies varies significantly between large companies and SMEs. While larger companies benefit more from these technologies due to greater resource allocation and scalability, SMEs face more significant challenges. The frequencies of positive impacts and barriers that large companies and SMEs mentioned in the interviews are shown in Table 3.

THE ROLE OF R&D INVESTMENTS

Increasing investments in research and development (R&D) were found to play an important role in reducing the negative effects and barriers

of Industry 4.0 technologies. R&D investments foster innovation and better integration and help create a more conducive environment for technology adoption. The main aspects highlight the role of research and development investments in the successful adoption and implementation of Industry 4.0 technologies in the Turkish logistics sector, their descriptions from interviews and frequencies are shown in Table 4.

DISCUSSION

The integration of Industry 4.0 technologies into Turkish logistics companies presents a complex scenario affected by various opportunities and challenges. Based on semi-structured interviews with various industry experts and company representatives, various important information has been revealed that sheds light on the current status and future potential of Industry 4.0 in the Turkish logistics sector.[18]

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18   Hofmann, E., Rüsch, M. (2017). Industry 4.0 and the

TABLE 3. DIFFERENCES BASED ON COMPANY SCALE

COMPANY SIZE	POSITIVE IMPACTS (FREQUENCY)	BARRIERS (FREQUENCY)
LARGE FIRMS	23	9
SME'S	14	17

TABLE 4. THE ROLE OF R&D INVESTMENTS

ASPECT	DESCRIPTION	FREQUENCY OF MENTION
INNOVATION	Encouraging the development of new technologies and solutions	14
INTEGRATION	Improving existing operations and make more efficient	11
MITIGATION OF NEGATIVE IMPACTS AND BARRIERS	Helping reduce the negative impacts of technology adoption	9

One of the key drivers of the adoption of Industry 4.0 technologies and an important finding of this study is the increase in strategic and operational efficiency offered by this digital transformation. Various technological applications based on Industry 4.0, such as IoT, artificial intelligence, and big data analytics, enable real-time tracking of shipments and improved inventory management. These technologies also optimize supply chain operations.

In this way, operations become easier, and costs are significantly reduced by minimizing manual interventions and errors. While large companies are motivated by strategic advantages such as improved decision-making capabilities, increased efficiency, and increased customer satisfaction, operational benefits such as reduced costs, increased productivity, and better resource management are of particular interest to SMEs.[19] These motivations are consistent with findings in the literature highlighting the various benefits of Industry 4.0 for different types of organizations.

Despite these many potential benefits, numerous challenges may prevent the widespread adoption of Industry 4.0 technologies.[20] In the study, a lack of technical skills and expertise was identified as one of the main obstacles. This issue is well documented in the literature, where the lack of skilled labour is often cited as a significant barrier to digital transformation. The relatively slow adaptation of the education system in Turkiye to the demands of Industry 4.0 further aggravates this problem and results in the workforce not being sufficiently prepared for the complexity of new technologies.

Financial constraints create a significant challenge, especially for SMEs.[21] The high initial costs of purchasing Industry 4.0 technologies can be a prohibitive constraint, and uncertainty about return on investment can further discourage companies from making these investments. This financial hesitation creates a common theme in the literature that emphasizes the need for significant capital and the risks associated with uncertain outcomes.

Organizational resistance to change is another significant barrier to adoption. Many companies have already established traditional ways of working and are resistant to adopting new technologies. This resistance is mostly due to the lack of understanding of the benefits of Industry 4.0 and the fear of being laid off due to the automation to be installed.[22] To overcome this resistance, companies need to create effective change management strategies and clear communication about the long-term benefits of digital transformation.

The interviews also reveal the critical role of government support and policy frameworks in facilitating the adoption of Industry 4.0. In countries with well-developed Industry 4.0 systems, government policies are effective in providing the necessary infrastructure, financial incentives, and training programs to support digital transformation. In Turkiye, stronger government intervention is needed to address gaps in infrastructure, provide financial support to SMEs, and support training initiatives focused on Industry 4.0 skills.

Intercompany collaboration and information sharing emerged as another important factor. Industry 4.0 transformation is not an isolated effort but a collaborative process involving multiple stakeholders, including technology providers, educational institutions, and industry consortiums.[23] Knowledge exchange and partnership platforms can help companies overcome the challenges of

current status as well as future prospects on logistics. *Computers in Industry*, 89, 25.

19   Vogel-Heuser, B., Hess, D. (2016). Guest editorial industry 4.0–Prerequisites and visions. *IEEE Transactions on Automation Science and Engineering*, 13(2). 412.

20   Liao, Y., Deschamps, F., Loures, E. de F. R., Ramos, L. F. P. (2017). Past, present and future of Industry 4.0 — A systematic literature review and research agenda proposal. *International Journal of Production Research*, 55(12), 3612.

21   Phuyal, S., Bista, D., Bista, R. (2020). Challenges, opportunities and future directions of smart manufacturing: A state of the art review. Sustainable Futures, 2, 100023, 8.

22   Rüßmann, M., Lorenz, M., Gerbert, P., Waldner, M., Justus, J., Engel, P., & Harnisch, M. (2015). Industry 4.0: The future of productivity and growth in manufacturing industries. *Boston consulting group*, 9(1), 62.

23   Bag, S., Telukdarie, A., Pretorius, J. C., & Gupta, S. (2021). Industry 4.0 and supply chain sustainability: framework and future research directions. *Benchmarking: An International Journal*, 28(5), 1430.

digital transformation.[24]

These findings from our semi-structured interviews are consistent with the broader literature on Industry 4.0, which highlights the interaction between technological, financial, and organizational factors in shaping the adoption environment. For instance, Sony and Naik (2020) identified the increasing complexity of production and logistics networks as a major hurdle that requires advanced data analytics and process integration technologies.

Briefly, while Industry 4.0 offers significant opportunities for Turkish logistics companies, realizing its full potential requires overcoming many fundamental challenges. A multifaceted approach that includes investment in skills development, financial support mechanisms, organizational change management, and improved collaboration among stakeholders is essential. By overcoming these challenges and barriers, Turkish logistics companies can benefit from Industry 4.0 technologies to achieve sustainable competitive advantage and operational excellence.

CONCLUSION AND IMPLICATIONS

The transition to Industry 4.0 presents a dual spectrum of opportunities and challenges that impact its adoption in different types of organizations. This research focused on the specific conditions of Turkish logistics companies, revealing critical insights into the factors driving and inhibiting the adoption of Industry 4.0 technologies.

For large companies, strategic opportunities such as increased efficiency, increased competitiveness, and innovation potential encourage adoption. SMEs, on the other hand, are motivated by operational benefits such as reducing costs and increasing efficiency. The main challenge hindering the adoption of Industry 4.0 is the lack of technical skills and expertise, which are vital for the successful implementation and management of new technologies. Financial constraints, such

as high initial investment costs and uncertainty regarding returns, further complicate the adoption process. Organizational resistance to change due to traditional working methods and fear of dismissal also poses a significant obstacle.

Overcoming these challenges requires a multifaceted approach. For large companies, it is important to continually invest in employee training to develop the necessary technical expertise. SMEs will be able to benefit from government support through financial incentives and grants to reduce initial investment pressure. It will be very beneficial for companies if policymakers focus on developing comprehensive digital strategies that support the adoption of Industry 4.0, including clear guidelines and frameworks.

It is crucial to promote a culture of innovation and digital literacy in organizations. This includes technical training and raising awareness about the strategic importance of digital transformation. Collaboration and information sharing between companies can also help overcome the challenges of digital transformation.

While Industry 4.0 offers significant opportunities to Turkish logistics companies, realizing its full potential requires overcoming many fundamental barriers. A comprehensive approach that includes investment in skills development, financial support mechanisms, organizational change management, and improved collaboration between stakeholders is essential. By overcoming these problems, Turkish logistics companies can benefit from Industry 4.0 technologies to achieve sustainable competitive advantage and operational excellence.

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24   Kamble, S. S., Gunasekaran, A., & Gawankar, S. A. (2018). Sustainable Industry 4.0 framework: A systematic literature review identifying the current trends and future perspectives. *Process safety and environmental protection*, 117, 412.

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FORMS OF STATE INTERVENTION IN THE HEALTH SECTOR

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ABSTRACT. Any economic activity is rarely free from state intervention. State interventions mainly cover the following aspects: supply, distribution, and regulation of goods or services. State interventions in the health sector cover the same aspects. The state regulates the medical market to prevent market defects. It affects the distribution of resources by developing special rules and instructions. Antimonopoly legislation is such a mechanism of regulation. The paper discusses various mechanisms of state intervention in the health sector, including taxes and subsidies, public health care, transfer programs, and regulation. Their goal is to influence the distribution of resources and revenues in the health sector. Much of the government intervention in the health sector is aimed at reducing costs in the industry. These regulations restrict entry into the medical market, limit the industry's inappropriate expansion, and control prices. Some regulations also try to improve the quality of treatment. Licensing of medical personnel is the best example of quality control and improvement.

INTRODUCTION

The state provides a significant portion of health care services through state hospitals (or other state health care providers) and programs. The provision of health services and social insurance programs are important means of redistributing income from high-income groups to low-income ones or from the healthy to the elderly. The regulatory role of the state is carried out through various government agencies that affect almost all sectors of the economy and individual employees. The state can use various mechanisms to influence the distribution of resources and income. The main instruments in the health sector are taxes and subsidies, public health provision, transfer programs, and regulation.

The paper discusses various mechanisms of state intervention in the health sector, including taxes and subsidies, public health care, transfer programs, and regulation. Their goal is to influence the distribution of resources and revenues in the health sector.

TAXES AND SUBSIDIES

When positive externalities arise as a result of the consumption of goods, the competitive market is inefficient. For example, the use of vaccines against infectious diseases causes beneficial external effects for society.

If the good or service has significant external benefits, a subsidy can be used to increase the efficiency of market outcomes. At this point, it doesn't matter whether the producers are subsidized or the consumers. In either case, a consumer or producer subsidy lowers the market price and increases consumption.

In the US, the government provides tax subsidies (benefits) when employers purchase private insurance for their employees, which promotes greater coverage of the insured population.[1]

When a product generates external costs, a tax can be imposed to reduce the consumption of that product. For example, the consumption of goods such as tobacco and alcohol causes harmful (negative) externalities, the marginal external cost must be added to the marginal private cost to determine effective solutions.[2] To reduce the consumption of such goods, it is recommended to increase the price.

The tax or subsidy problem is related to determining the appropriate rate. Changing tax or subsidy rates is not a simple political process, and the market cannot always indicate the appropriate rate.

PUBLIC PROVISION

Public supply of a product is another approach to market failure. Public provision of health care is a complex process that requires answering three main economic questions (what? how? and for whom?). The question "what" is related to the types of health services, their quantity, and quality. The question "how?" It is related to how the state provides health services, whether the state can provide the services itself or contract with the private sector to solve the problem. The question "Who?" Regarding the financing and distribution of the service: will the program be of universal use, or will it be targeted only at certain groups? The financing mechanism has a significant impact on the resources raised in health care and the likely distribution – from rich to poor and from young to old.[3]

Public provision is particularly useful for pure public goods. When there are significant externalities, and it is difficult or inefficient to exclude certain potential customers, public provision may be the best answer. Even if private firms can profitably produce a product demanded by consumers, the use of prices for such products is undesirable. For example, private research firms can profitably conduct certain public health research by disseminating the results only to organizations that pay for access to it. However, this approach is ineffective because very few people will gain access to the research. The value of research is not diminished if it is shared more widely.

State provision does not necessarily mean state production. For example, medical research has many characteristics of public goods. Medical research is carried out by both government employees and independent scientists, private researchers employed by government-funded research foundations. Another example of state provision is medical assistance for the poor, which aims to improve the health of low-income citizens. Both state and private hospitals and clinics, which are financed by state programs, provide medical services to them.

TRANSFER PROGRAMS

Cash transfer programs are usually intended to achieve social equity by redistributing income

1   Weinmeyer, R. M., McHugh, M., Coates, E., Bassett, S., & O'Dwyer, L. C. (2022). Employer-led strategies to improve the value of health spending: A systematic review. *Journal of Occupational and Environmental Medicine, 64*(3), 218-225. <https://doi.org/10.1097/JOM.0000000000002395>.

2   Griffith, R., O'Connell, M., & Smith, K. (2022). Price floors and externality correction. *The Economic Journal, 132*(646), 2273–2289. <https://doi.org/10.1093/ej/ueac011>.

3   Tandon, A., Reddy, K. S. (2021). Redistribution and the health financing transition. *Journal of Global Health, 11*, 16002. <https://doi.org/10.7189/jogh.11.16001>.

in such a way that recipients are free to choose how to spend their income.[4] Social protection for the elderly, the poor, and the disabled is an example of this. Cash transfers for the poor include temporary assistance to needy families.

In-kind transfers are also a redistribution of income, the main purpose of which is to increase the consumption of specific goods or services by the recipient. Important types of transfers include food assistance programs and housing.

REGULATION

The state regulates the medical market to prevent market defects. It affects the distribution of resources by developing special rules and instructions. Antimonopoly legislation is such a mechanism of regulation.

Regulation of the healthcare market by the state may take many forms: licensing laws, restrictions on entering the medical market, and regulation of the price, quality, and volume of medical services.

In special cases, the state can completely prohibit the production of any goods or any activity. For example, the production and consumption of drugs (narcotics) in an illegal way.[5] In general, the state regulates the form of goods and determines the terms of production and consumption of goods.

LICENSING

Licensing is seen as protecting citizens from fraudulent or unsafe healthcare providers. Licensing has a "good side" (improving quality) and a "bad side" (limiting market entry and competition). Licensing usually refers to the labor resources needed to provide health care and the medical organizations themselves that provide health care services.

Licensing covers healthcare professionals. In the regular market, farmers are not licensed, although the food they produce is crucial to human life. People who manufacture cars are not licensed either. However, airline pilots and taxi drivers are required to be licensed.

Licensing is considered a safety and quality improvement regulation mechanism and includes the following conditions:

- • The quality of individual resources (e.g., doctors and nurses) varies significantly;
- • Low-quality resources lead to poor results;
- • Enterprises that produce goods or services cannot or do not want to measure the quality of their labor resources (firms are liable for damages caused by their employees);
- • The customer does not have complete information about the quality of goods or services;
- • Because medical care is tailored to the patient, it is difficult to exchange it. However, the use of defective goods or services may endanger the consumer.

In the medical market, it is difficult for consumers to assess the quality of the service provided because the results of the treatment performed with each patient are different.[6] Sometimes, people's health can improve even with minimal or unsatisfactory medical care. However, not infrequently, people's health can deteriorate or become fatal even with the best medical care. Different professional qualifications of different doctors should also be taken into account.

The user tries to find out if the doctor is "good", but the conclusion is problematic. Does a "good" health result guarantee that the doctor is "good"? (No, the doctor may just be lucky.) Does a "bad" health outcome guarantee that the doctor is "bad"? (No; maybe it was a fluke of nature, despite the best service.). Sometimes, the user tries to extract information from a very limited number of events or may have no information at all. From a statistical point of view, the problem is that when

4   Della Guardia, A., Lake, M., Schnitzer, P. (2022). Selective inclusion in cash transfer programs: Unintended consequences for social cohesion. *World Development, 157*, 105922 <https://doi.org/10.1016/j.worlddev.2022.105922>.

5   Paley, D. (2017). State power and the enforcement of prohibition in Mexico. *Mexican Law Review, 10*(1), 3-20.

6   Sixma, H. J., Kerssens, J. J., Campen, C. V., & Peters, L. (1998). Quality of care from the patients' perspective: From theoretical concept to a new measuring instrument. *Health Expectations, 1*(2), 82-95. <https://doi.org/10.1046/j.1369-6513.1998.00004.x>.

one is trying to judge whether a doctor is "good" or "bad," random information can override existing opinion. This explains why some doctors who lose their licenses can compile a list of patients who attest to their good professional qualities, even in the process of revoking their licenses.

Through licensing, we can obtain two types of quality information. First of all, we get information about the level of education of the licensed person. For example, it can also test the surgeon's knowledge of the indications and proper procedures for surgery. On the other hand, licensing authorities can collect information about poor treatment outcomes of individual doctors. By doing so, licensing authorities have a much greater ability to evaluate medical personnel, allowing for a much faster identification of a physician's competency than any patient or physician.

VOLUNTARY QUALITY CERTIFICATION

Medical service quality certification is also carried out by private organizations. These organizations perform two functions. Firstly, they have certain training programs in their specialties, and secondly, they conduct special examinations to obtain a quality certificate. Typically, before being eligible to take the exam, a physician must complete a certified training program, namely a residency in an appropriate medical specialty (e.g., surgery, cardiology, family medicine) conducted at university hospitals. Some of these narrow specialty programs require additional specialized training beyond residency. For example, you can become licensed as a pediatrician after a three-year residency, but a narrow specialty in neonatology requires an additional three years of training.

Voluntary quality certification has certain advantages over mandatory licensing. First, the voluntary "Council" is more in line with the principles of competition, as it lacks state coercion. Second, councils have created different levels of quality indicators that provide the market with more quality information than a single quality license can provide.[7]

Voluntary certification, like mandatory licensing, has its problems. The first question that arises is related to the quality of the certifier. That is, it may be difficult for individual patients to understand the essence and meaning of certification.

The second question that arises is the ability of the certification body to restrict entry into the specialty. An organization that achieves a very strong position in the market in terms of quality certification can acquire the ability to restrict market entry. Also, some medical specialty boards may limit the number of approved residencies statewide, which may limit the number of practitioners in a given specialty.

In addition to the quality certification of doctors, dentists, nurses, and other medical personnel, it is important to certify medical organizations that cover a wide range of their activities. As a result of the certification of medical organizations, specific reports are developed, where specific notes are mentioned.

Another important issue arises when considering quality certification in healthcare markets. How does certification affect consumers' incentives to seek out providers that provide services at a relatively low cost? In many markets, low price means low quality, which is often true. When quality is inherently difficult to measure, sellers may misrepresent "high quality" to inflate prices. Evaluation of the quality of the activity of the medical service provider promotes competition in the medical field.[8] In the medical market, which is essentially monopolistic competition, customer search is important.[9] However, when consumers cannot judge quality, searching for a lower-cost provider is a challenge. Thus, quality assessment through licensing and certification can promote competition.

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7   Shaw, C. D., Groene, O., Botje, D., Sunol, R., Kutryba, B., Klazinga, N., Bruneau, C., Hammer, A., Wang, A.,

     Arah, O. A., Wagner, C., DUQuE Project Consortium. (2014). The effect of certification and accreditation on quality management in four clinical services in 73 European hospitals. *International Journal for Quality in Health Care, 26*(Suppl 1), 100-107. <https://doi.org/10.1093/intqhc/mzu023>.

8   Rivers, P. A., Glover, S. H. (2008). Health care competition, strategic mission, and patient satisfaction: Research model and propositions. *Journal of Health Organization and Management, 22*(6), 627-641. <https://doi.org/10.1108/14777260810916597>

9   Mwachofi, A., & Al-Assaf, A. F. (2011). Health care market deviations from the ideal market. *Sultan Qaboos University Medical Journal, 11*(3), 328-337.

Consumers use quality information to select providers. There are three types of quality data in the healthcare market: provider competency certification (licensing), compliance with desired protocols (e.g., adherence to the vaccination schedule, percentage of patients vaccinated against influenza), and actual outcome information (e.g., patient mortality following complicated surgery).

Regulation mainly involves licensing. The latter two are usually provided to the public by some organization or agency, and the user is then free to react to such information.

It is convenient for patients to use such indicators of quality assessment, which evaluate the results of treatment. For example, patients are known to choose cardiac surgeons with low mortality rates. Unfortunately, as with any type of information, mortality rates are difficult to collect and analyze. The greatest difficulty is associated with comorbidities treated by different providers. Physicians and reputable hospitals (e.g., academic medical centers) may attract—by direct patient selection or referral from their primary care physician—patients with high rates of comorbidity. It is expected that such patients may develop a higher mortality rate as a result of surgery than in less complicated patients. As a result, in the field of surgery, along with the general indicators of mortality, other indicators that take into account the patient's risk are used.[10, 11]

Many countries operate national "rating agencies" that provide quality scores for hospitals and nursing homes.[12] Nursing homes can be evaluated by indicators such as fractures, frequency of bedsores, etc.

Hospital quality measurement tools are much more complex due to patient heterogeneity and varying rates of comorbidities. The following indicators are used to measure outcomes: 1. Direct outcome indicators, which include mortality rates and hospital readmission rates within 30 days; 2. Measurable indicators of the process, for example, taking the necessary medicines at the appropriate time; (3) patient satisfaction survey; (4) frequency of use of imaging, aimed at limiting the overuse of imaging studies.

Quality assessment of nursing homes primarily involves measuring immediate outcomes (e.g., bedridden rates, rates of malnutrition or dehydration, rates of falls and fractures, etc.).

CERTIFICATE OF NEED

U.S. healthcare markets have been subject to a completely different type of regulation for decades – namely, restrictions on the construction of new facilities to prevent hospital overuse. These regulations restrict the construction of new hospital beds (or the purchase of expensive hospital equipment) without prior approval from the state. The makers of such laws try to determine how many hospital beds (and perhaps how many magnetic resonance imaging (MRI) units, etc.) are needed in a given geographic area. Only after that, they will issue a construction permit for a new facility. Because of this basic logic, these rules are called Certificate of Need.

In the US, until 1974, the Certificate of Need had an advisory purpose. In 1974, the National Health Planning and Resource Development Act was passed. In 1986, President Ronald Reagan repealed the 1974 law that required states to use certificates of need. Since then, about a quarter of states have completely repealed their certificate of need laws, although about three-quarters still retain them in some form. States that continue to use a certificate of need focus more on outpatient facilities than hospitals.

The Certificate of Need rules attempt to assess the need for medical facilities and control entry into the medical market to eliminate excess capital investment and thereby make the industry work more efficiently. The area of greatest focus

10   Vaid, S., Bell, T., Grim, R., Ahuja, V. (2012). Predicting risk of death in general surgery patients on the basis of preoperative variables using American College of Surgeons National Surgical Quality Improvement Program data. *Perm Journal, 16*(4), 10-17. <https://doi.org/10.7812/TPP/12-019>

11   Chand, M., Armstrong, T., Britton, G., Nash, G. F. (2007). How and why do we measure surgical risk? *Journal of the Royal Society of Medicine, 100*(11), 508-512. <https://doi.org/10.1177/014107680710001113>.

12   Tai, T. W. C., Mattie, A., Miller, S. M., Yawson, R. M. (2023). An examination of Leapfrog safety measures and Magnet designation. *Journal of Healthcare Risk Management, 42*(3-4), 21-29. <https://doi.org/10.1002/jhrm.21533>.

of the Certificate of Need laws is nursing homes, in which all states have a significant financial interest in the states' share of the costs of the Medicaid program.[13]

The purpose of regulating the certificate of need is to prevent "excessive entry" into the medical market and to reduce production costs. However, the analysis of the effect of the certificate of need is not so simple. If the certificate of need rules limit the capital investment of a hospital that wants to provide more services than the number of resources allows, the hospital has the option to use the same capital investment for other resources (e.g., intensive nursing services to treat more patients).

Consequently, the ultimate effect of the Certificate of Need Act is mixed. In an environment

of monopolistic competition, entry restrictions have the potential to reduce the average cost of production in an industry. However, defects in the manufacturing process increase production costs. Studies have shown that the certificate of need limits the increase of beds.

CONCLUSION

Much of the government intervention in the health sector is aimed at reducing costs in the industry. These regulations restrict entry into the medical market and limit the inappropriate expansion of the industry, as well as control prices. Some regulations also try to improve the quality of treatment. Licensing of medical personnel is the best example of quality control and improvement. Considering the above, it is necessary to expand the research on the economic analysis of regulation in the health sector.

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13 Rahman, M., Galarraga, O., Zinn, J. S., Grabowski, D. C., Mor, V. (2016). The impact of certificate-of-need laws on nursing home and home health care expenditures. *Medical Care Research and Review, 73*(1), 85-105. <https://doi.org/10.1177/1077558715597161>.

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2. Della Guardia, A., Lake, M., Schnitzer, P. (2022). Selective inclusion in cash transfer programs: Unintended consequences for social cohesion. *World Development, 157*, 105922. <https://doi.org/10.1016/j.worlddev.2022.105922>;

3. Griffith, R., O'Connell, M., Smith, K. (2022). Price floors and externality correction. *The Economic Journal, 132*(646). <https://doi.org/10.1093/ej/ueac011>;

4. Mwachofi, A., & Al-Assaf, A. F. (2011). Health care market deviations from the ideal market. *Sultan Qaboos University Medical Journal, 11*(3);

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6. Rahman, M., Galarraga, O., Zinn, J. S., Grabowski, D. C., Mor, V. (2016). The impact of certificate-of-need laws on nursing home and home health care expenditures. *Medical Care Research and Review, 73*(1). <https://doi.org/10.1177/1077558715597161>;

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ეკონომიკური გლობალიზაციის თანმდევი შედეგები: მიგრაცია, დემოგრაფიული ცვლილებები და სხვა პრობლემატიკა

CONSEQUENCES OF ECONOMIC GLOBALIZATION: MIGRATION, DEMOGRAPHIC CHANGES AND RELATED ISSUES

BAYESIAN NETWORKS FOR MIGRATION, INTERNATIONAL REMITTANCES, TRADE, FOREIGN DIRECT INVESTMENTS, INFLATION, REAL INTEREST RATE AND EMPLOYMENT IN GEORGIA

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ABSTRACT. Migration has long been a topic of interest in Georgia, given its small economy, population, and unique history and culture. The main objective of this study is to examine the factors affecting emigration and immigration in Georgia and identify the dependencies among various macroeconomic variables, such as international remittances, trade, foreign direct investment (FDI), inflation, real interest rates, and employment. Using data spanning from 2002 to 2023, the study applies a machine learning technique, specifically Bayesian Networks, to analyze these relationships. The findings are discussed, and conclusions are drawn, along with recommendations for both the government and researchers for further exploration. To our knowledge, this is the first study to apply the Bayesian Network algorithm to investigate these dynamics in Georgia, filling an important research gap.

The results indicate that both immigration and emigration are affected by remittances paid, with emigration also being dependent on employment. It was found that remittances received and exports are directly influenced by remittances paid, while imports are affected by both exports and employment. Additionally, remittances received are directly dependent on imports, and the real interest rate is influenced by both imports and inflation (CPI). FDI is shown to be dependent on inflation, imports, and remittances received. Furthermore, both emigration and immigration are dependent on exports, imports, and remittances received, with immigration also exhibiting a dependency on FDI.

1. INTRODUCTION

Migration has been a long-standing topic for Georgia. As a small country with a limited population and economy, the country faces challenges due to emigration, particularly the brain drain – the loss of skilled workers and professionals – which hinders its development. On the other hand, immigration, particularly of skilled workers, is beneficial for the country and, therefore, also a subject of interest.

Machine learning is evolving quickly and has become a crucial component in diverse fields such as economics, medicine, and business. Virtually every sector now depends on data, and harnessing it effectively holds the potential to address a wide range of challenges across these domains. However, research applying data science techniques in economics and business remains limited for Georgia.

Importantly, no studies currently employ machine learning techniques, such as Bayesian Networks, to examine the potential causes of migration and explore the relationships between macroeconomic variables like FDI, international trade, remittances, inflation, interest rates, and employment in Georgia. Therefore, another central aim of this research is to create a base for future research for Georgia and inspire others to apply various data science techniques in investigating different economic topics.

Georgia is a developing country with a GDP per capita (PPP) of $22,247 and a population of 3.7 million as of 2023.[1] Given its relatively small population compared to many other countries, migration has long been a topic of interest in Georgia. As shown in Graph 1, both emigration (the number of people leaving the country) and immigration (the number of people arriving in Georgia) have had an increasing trend since 2002, with a notable increase in both trends in 2022. In 2023, the number of emigrants comprised 245,064, while the number of immigrants was 205,857 (see Graph 1).

Analyzing migration by citizenship is also a valuable approach. As shown in Graph 2, the majority of migrants are Georgian citizens, followed by individuals from Russia, Turkey, Ukraine, India, and Azerbaijan.

The largest group of migrants falls within the age range of 15-64, followed by those in the 0-14

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[1] The World Bank. <https://data.worldbank.org/> [Last Access: 11.29.2024].

GRAPH 1. EMIGRATION (EMI) AND IMMIGRATION (IMM) IN GEORGIA (2002-2023)
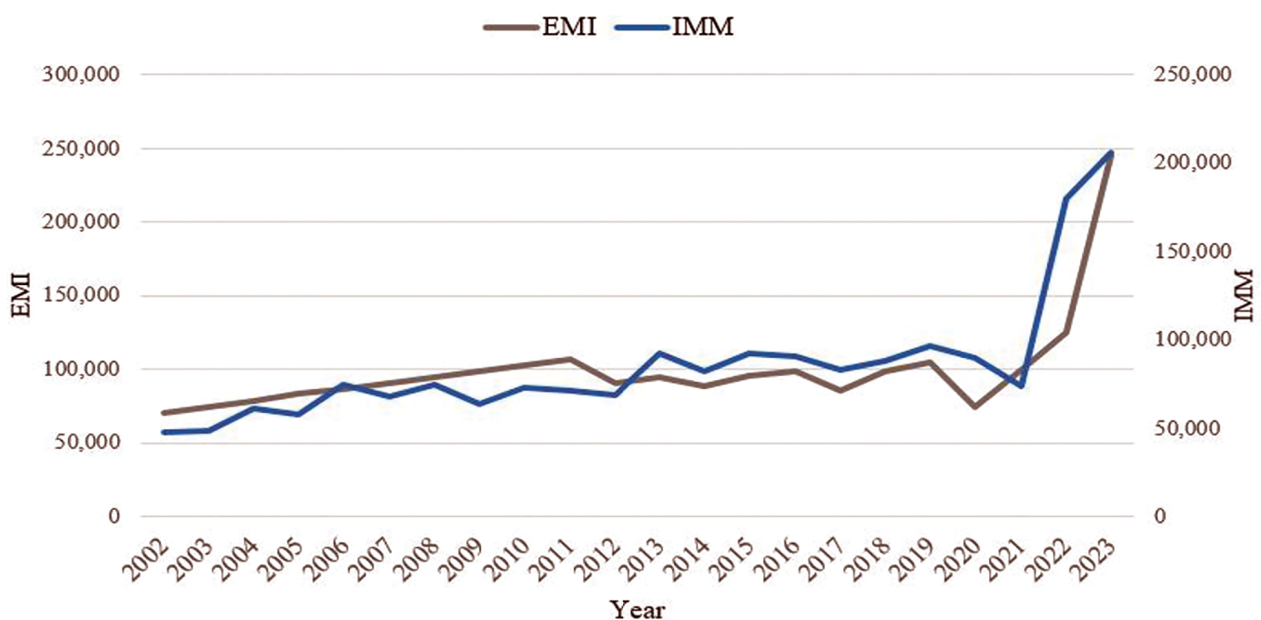
Source: The National Statistics Office of Georgia <www.geostat.ge>

GRAPH 2. EMIGRANTS (EMI) AND IMMIGRANTS (IMM) BY CITIZENSHIP (2023)
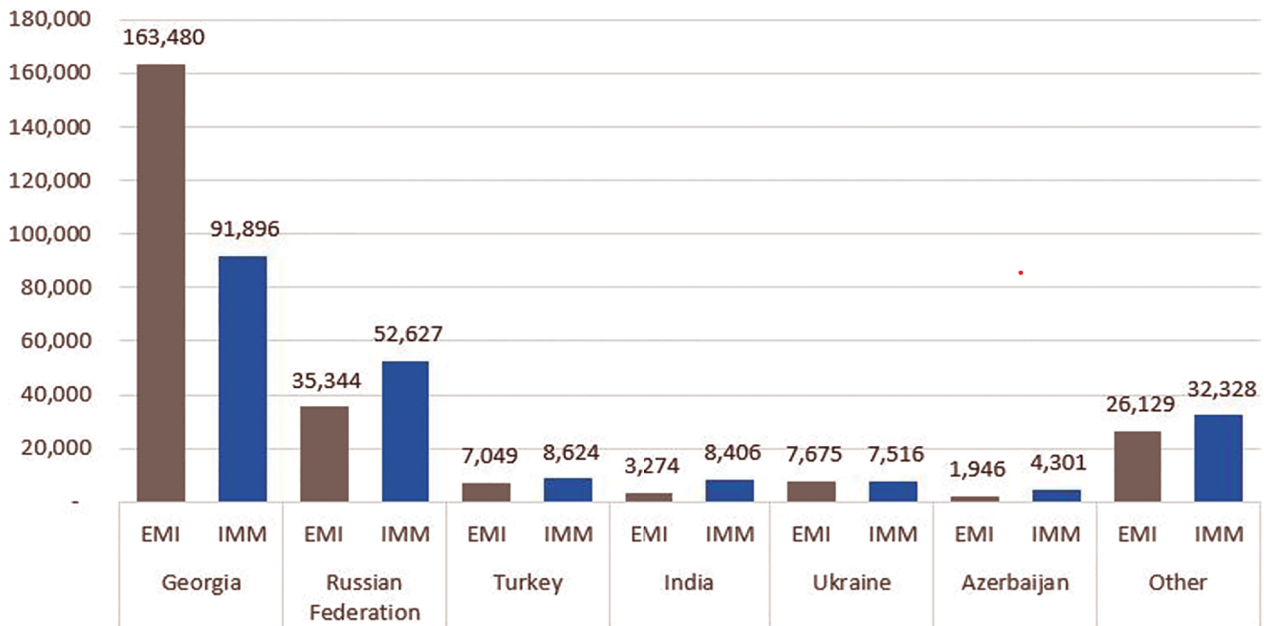
Source: The National Statistics Office of Georgia <www.geostat.ge>

and 65+ age groups.[2] Thus, the largest group of migrants is the working-age population (see Graph 2).

As previously noted, Georgia is a developing country with relatively low productivity, making the size of its workforce and the level of economic activity crucial factors for growth.

This research aims to identify the potential causes of migration and explore the relationships among various macroeconomic variables. Specifically, the objective of this study is to examine the dependence between migration and other macroeconomic factors, including international remittances, trade, foreign direct investment (FDI), inflation, real interest rates, and employment, as well as to investigate the interdependencies among these variables. To achieve this, the study applies the machine learning algorithm, specifically Bayesian Networks, which are probabilistic graphical models, to detect complex relationships between the variables.

The first task was to select relevant variables, followed by building appropriate models and ultimately analyzing and interpreting the results.

The structure of the study includes a literature review, an overview of the data, methodology, and a presentation of the results for emigration and immigration separately. The study concludes with a discussion of the findings and provides recommendations for both the government and future researchers. The research is done in R programming language.

2. LITERATURE REVIEW

While numerous studies have examined migration in Georgia, most focus on emigration, with only a few exploring the underlying causes of migration. Even fewer studies have utilized statistical analysis, and almost none have employed machine learning approaches.

Kharaishvili, E. et al. (2017) investigated the causes of labor and educational migration, as well as challenges related to youth unemployment by age and gender, particularly in Georgia's agricultural sector. The study identified high poverty levels, underdeveloped infrastructure, and limited access to healthcare and other public services as the primary drivers of migration. It suggested that the government should develop policies to create employment opportunities for youth, especially in rural areas.[3]

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2   The National Statistics Office of Georgia. <www.geostat.ge> [Last Access: 11.29.2024].

3   Kharaishvili, E., Chavleishvili, M., Lobzhanidze, M., Damenia, N., Sagareishvili, N. (2017). Problems of

Zangurashvili, M. (2020) explored the causes of youth emigration from Georgia, concluding that the key factors affecting it were distrust of state institutions, the lack of an employment policy for new job seekers, an unpromising labor market, nepotism, and low wages in an unfair work environment.[4]

Mihi-Ramirez, A. et al. (2020) examined the relationship between emigration, immigration, foreign direct investment (FDI), international remittances, and trade in Spain, using a Mixed Linear Model (MLM) for the period from 1998 to 2016. Their findings revealed that the effects of imports, exports, and FDI on migration were significant. They also found that remittances sent had a significant effect on immigration, while both remittances sent and received impacted emigration.[5]

Tchanidze, K. et al. (2021) analyzed the impact of migration on Georgia's labor market. Their findings indicated that young people often emigrate in search of better living conditions. Many from rural areas leave the country illegally, bypassing efforts

to settle in urban centers. To address this, the study recommended that the government should create job opportunities for both highly educated individuals and those without higher education.[6]

Karkashadze, N. et al. (2021) examined migration causes in Georgia and concluded that limited employment opportunities and low wages were the main reasons for emigration. The study also highlighted that many people emigrate abroad to pursue education. Additionally, the COVID-19 pandemic significantly affected migration patterns, with many leaving the country afterward. The study suggested that to reduce emigration, the government should increase investment, enhance public spending to create jobs, and ensure that social insurance programs are effectively integrated into the labor market.[7]

3. DATA OVERVIEW

The data presented in this study are 10 macroeconomic variables for Georgia for 22 years between 2002-2023. The data doesn't have missing values, and the sources of the data are the National Statistics Office of Georgia and The World Bank's Data – The World's Development Indica-

youth employment in agricultural sector of Georgia and causes of migration. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 11(10), 2116-2121.

4   Zangurashvili, M. (2020). *The main reasons for migration of young educated people from Georgia* (Doctoral dissertation, Masarykova Univerzita).

5   Mihi-Ramirez, A., Sobieraj, J., Garcia-Rodriguez, Y. (2020). Interaction of Foreign Direct Investment, International Trade and Remittances with Emigration and Immigration. *Transformations in Business & Economics*, 19(2A), 42-59.

6   Tchanidze, K., Katsadze, I. (2021). The Study of Migration Influence on the Labor Market Structure and Employment in Georgia. *Georgian Maritime Scientific Journal,* 1(1), 87-96.

7   Karkashadze, N., Ukleba, S. (2021). Unemployment and Migration in Georgia at the Modern Stage. *FBIM Transactions,* 9(2).

TABLE 1: MACROECONOMIC VARIABLES INCLUDED IN THE MODEL

IMM	Immigration to Georgia. Source: The National Statistics Office of Georgia
EMI	Emigration from Georgia. Source: The National Statistics Office of Georgia
FDI	Foreign Direct Investment net inflow current (current US$) – BOP. Source: The World Bank
REMR	Personal remittances, received (current US$). Source: The World Bank
REMP	Personal remittances, paid (current US$). Source: The World Bank
IMP	Imports of goods and services (current US$). Source: The World Bank
EXP	Exports of goods and services (current US$). Source: The World Bank
CPI	Inflation, consumer prices (annual %). Source: The World Bank
EMPL	Employment to population ratio, 15+, total (%) (modeled ILO estimate). Source: The World Bank
RIR	Real interest rate (%). Source: The World Bank

Source: The National Statistics Office of Georgia <www.geostat.ge>

The World Bank <https://data.worldbank.org/>

GRAPH 3. TIME SERIES OF THE VARIABLES (2002-2023)
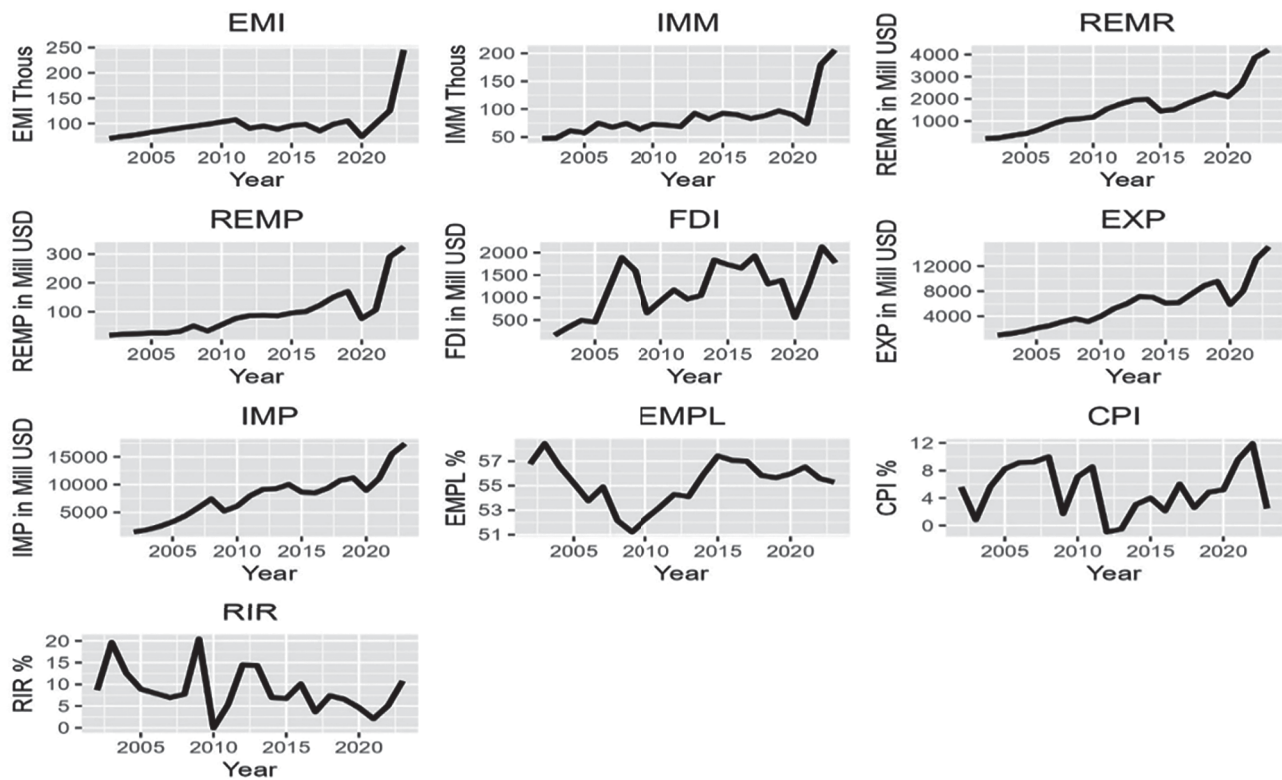
Source: The National Statistics Office of Georgia <www.geostat.ge>
The World Bank <https://data.worldbank.org/>

tors. Detailed information about the data is presented in Table 1.

Over the past 22 years, Georgia has experienced several significant economic and political events. These include the Rose Revolution in 2003 when the "National Movement" came to power; the Russian-Georgian war in 2008; a change in government in 2012, when the "Georgian Dream" party assumed office; the Russian economic crisis in 2015, which also impacted Georgia's economy; the onset of the COVID-19 pandemic in 2020; and the Russia-Ukraine war which started in 2022.

Graph 3 presents the time series of Georgia's macroeconomic variables from 2002 to 2023. The trends in emigration (EMI) and immigration (IMM) were relatively stable over the years. However, both variables saw a significant surge in 2022, with even greater increases observed in 2023 (see Graph 3).

Remittances received (REMR) experienced a significant decline in 2015, primarily due to the economic crisis in Russia at that time. Since the majority of remittances to Georgia originated from Russia, the downturn in Russia's economic activity had a direct impact on remittances received in Georgia (Blouchoutzi, A. et al., 2023).[8]

Remittances paid (REMP) followed an upward trend over the years but saw a notable decrease in 2009, following the Russia-Georgia war, and again in 2020 during the COVID-19 pandemic.

Foreign Direct Investment (FDI) showed some fluctuations over the years but generally followed an upward trajectory. Exports (EXP) and imports (IMP) also exhibited an increasing trend, though both experienced a sharp decline in 2009 after the Russia-Georgia war, in 2015-2016 during Russia's economic crisis, and in 2022 when the Russia-Ukraine war began.

The employment-to-population ratio (EMPL) fluctuated over the years, with a significant decline in 2009 following the Russia-Georgia conflict.

Inflation (CPI) and the real interest rate (RIR) both exhibited fluctuations throughout the period. While CPI had a constant trend across the years, RIR showed a downward trend.

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8   Blouchoutzi, A., Pedi, R. (2023). In-betweenness and Migration Interdependence: Lessons from Georgia, Moldova, and Ukraine. *Studia Europejskie-Studies in European Affairs*, *27*(1), 127-148.

4. METHODOLOGY
4.1. The Bayesian Networks

Bayesian networks are graphical models that represent the joint probability distribution of a set of variables and detect dependence between them. In the networks, nodes correspond to the variables, while arrows indicate probabilistic dependencies between them. The structure of the network is a **directed acyclic graph** (DAG), meaning there are no cycles or circular dependencies between variables. The DAG facilitates the factorization of the global probability distribution into local distributions through the **Markov property** (Scutari, M. 2009).[9]

More specifically:
- For discrete variables:

$$P = (X_1, \dots X_k) = \prod_{i=1}^{k} P(X_i | \Pi_{X_i})$$

- For continuous variables:

$$f = (X_1, \dots X_k) = \prod_{i=1}^{k} f(X_i | \Pi_{X_i})$$

The term refers to the parents of the random variable – , which depends on their respective parents. Bayesian networks utilize a two-step process: first, the algorithm learns the structure of the DAG, and then it estimates the local distributions of the random variables, conditioned on their parent variables (Scutari, M. 2009). There are three main types of Bayesian networks: Discrete, where all variables are discrete; Continuous, where all variables are continuous; and Mixed, which involves both continuous and discrete variables.

4.2 The Structure Learning Algorithms, Blacklist and Whitelist

When the structure of a Directed Acyclic Graph (DAG) is unknown, it can be determined using two main types of algorithms: constraint-based and score-based algorithms.
- Constraint-based algorithms use conditional independence tests to evaluate the probabilistic relationships between variables and construct the DAG. These algorithms detect conditional dependencies among variables, are more effective with large datasets, and are computationally more efficient. Some common functions within constraint-based algorithms include Grow-Shrink (GS), Incremental Association (IAMB), Fast Incremental Association (Fast.IAMB), Interleaved Incremental Association (Inter.IAMB), and Max-Min Parents and Children (MMPC). Each of these methods employs slightly different techniques to identify conditional dependencies between variables (Scutari, M. 2009).
- Score-based algorithms, on the other hand, assess the fit of the DAG by assigning a score to each network structure and optimizing it using algorithms such as hill-climbing or tabu search. (Scutari, M. 2009). By maximizing the score, these algorithms aim to identify the best network structure. While score-based methods can perform better with smaller datasets, they tend to be more computationally expensive due to the large search space.

Given that the dataset in this study is relatively small, first, a score-based algorithm, specifically hill-climbing (HC), was applied. However, the Bayesian networks did not fully capture the dependencies among several variables. To address this, the conditional independence test was used to assess the conditional dependencies of these variables, particularly using the ci.test function. When the data is categorical, in the ci.test, the mutual information test is applied for ordered factors, the Jonckheere-Terpstra test, and for continuous variables, the linear correlation. Since the data in this study is continuous, in the ci.test, the linear correlation test was applied. In the context of the ci.test, the null hypothesis () asserts that the variables are conditionally independent. If the p-value is less than the significance level, the null hypothesis is rejected in favor of the alternative hypothesis (, which states that there is conditional dependence between the variables.

If there is prior knowledge regarding relationships between variables, this can be incorporated into the Bayesian Network through whitelist or blacklist arguments. Relationships that are wh-

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9   Scutari, M. (2009). Learning Bayesian networks with the bnlearn R package. *arXiv preprint arXiv:0908.3817.*

itelisted will be included in the model, while relationships marked as blacklisted will be excluded. If a relationship is both whitelisted and blacklisted, it will be treated as whitelisted and will not be counted as blacklisted (Scutari, M. 2009). This study only blacklisted the arc and did not whitelist it to avoid excessive intervention and artificial results.

5. RESULTS
5.1. Emigration and All Other Macroeconomic Variables

In the first scenario, the primary objective was to identify the variables that influence emigration and, after that, the relationships among all other variables, such as remittances, trade, interest rate, inflation, FDI, and employment. Since emigration is the key variable, the arc from emigration to trade, employment, interest rate, inflation, FDI, and remittances was blacklisted to prevent any direct arrows from emigration to these variables.

Graph 4 illustrates the results from the Directed Acyclic Graph (DAG), highlighting the relationships among the macroeconomic variables. As shown in Graph 6, remittances received are directly influenced by remittances paid. Emigration is affected by both remittances paid and employment. Exports are directly dependent on remittances paid, while imports are influenced by exports. FDI depends on remittances received, imports, and inflation (CPI). Additionally, FDI indirectly depends on remittances paid and exports through imports. Finally, the real interest rate is influenced by both imports and inflation (CPI) (see Graph 4).

GRAPH 4. DAG FOR EMIGRATION AND ALL OTHER MACROECONOMIC VARIABLES
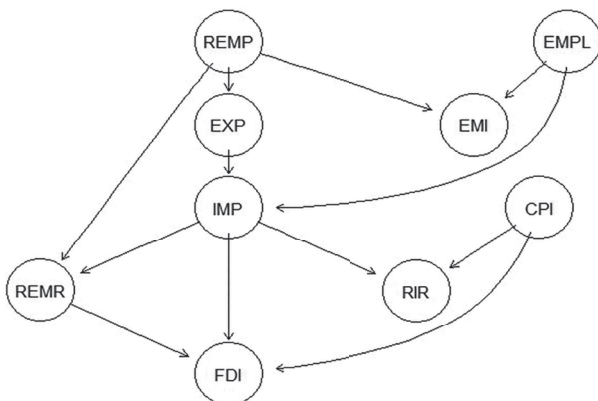
Source: Author's research in R-studio

The DAG did not capture the dependency between emigration and other macroeconomic variables, apart from remittances paid and employment. Therefore, the missing relationships were examined using the conditional independence (CI) test. As shown in Table 2, emigration and imports are dependent, as the p-value is less than 0.05 at the 95% significance level.

TABLE 2. CI TEST FOR EMIGRATION AND IMPORT

```
        Pearson's Correlation
data:  EMI ~ IMP
cor = 0.7056, df = 20, p-value = 0.000244
alternative hypothesis: true value is not equal to 0
```

Source: Author's research in R-studio

Table 3 presents the results of the conditional independence test for emigration and exports. The findings indicate that emigration and exports are dependent, as the p-value is less than 0.05.

TABLE 3. CI TEST FOR EMIGRATION AND EXPORT

```
        Pearson's Correlation
data:  EMI ~ EXP
cor = 0.73621, df = 20, p-value = 0.00009381
alternative hypothesis: true value is not equal to 0
```

Source: Author's research in R-studio

The test results also revealed that emigration and remittances received are dependent, with a p-value of 0.0001. The was not rejected for the other variables. The p-values for emigration and variables such as FDI, CPI, and RIR ranged between 0.05 and 0.9, indicating that no significant relationships were detected between them.
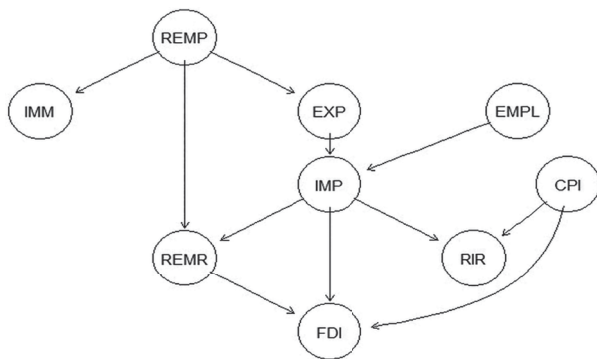
5.2. Immigration and All Other Macroeconomic Variables

In the second scenario, the primary variable is immigration, and the objective is to identify the factors that influence immigration and explore how other macroeconomic variables, such as remittances, trade, interest rates, inflation, FDI, and employment, interact with each other. As in the

first scenario, the arc from immigration to the other variables was excluded to prevent any direct arrows from immigration to these variables since the focus is on the variables that affect immigration.

Graph 5 illustrates the Directed Acyclic Graph (DAG), which shows the dependencies between the variables. As depicted in Graph 5, immigration directly depends on remittances paid, which is the only variable in the DAG influencing immigration. The relationships between the other variables in this scenario are consistent with those in the first scenario. Specifically, remittances received and exports are directly dependent on remittances paid. Imports depend on exports and employment, while remittances received are directly dependent on imports. Finally, FDI is influenced by remittances received, imports, and inflation (CPI), and the real interest rate is dependent on both imports and inflation (CPI).

GRAPH 5. DAG FOR IMMIGRATION AND ALL OTHER MACROECONOMIC VARIABLES

Source: Author's research results in R-studio

Similar to the first scenario, the DAG did not capture the dependency between immigration and all other macroeconomic variables, except for remittances paid. Therefore, the missing relationships were examined using the conditional independence (CI) test. As shown in Table 4, immigration and imports are dependent, as the p-value is less than the significance level of 0.05.

TABLE 4. CI TEST FOR IMMIGRATION AND IMPORT

```
        Pearson's Correlation

data:  IMM ~ IMP
cor = 0.85887, df = 20, p-value = 0.0000003119
alternative hypothesis: true value is not equal to 0
```

Source: Author's research results in R-studio

Table 5 presents the results of the conditional independence test for immigration and FDI. The findings show that immigration and FDI are dependent, as the p-value is below the significance level of 0.05.

TABLE 5. CI TEST FOR IMMIGRATION AND FDI

```
        Pearson's Correlation

data:  IMM ~ FDI
cor = 0.58823, df = 20, p-value = 0.003983
alternative hypothesis: true value is not equal to 0
```

Source: Author's research results in R-studio

The test results also indicated that immigration and exports, as well as immigration and remittances received, are dependent, with p-values of 2.55E-08 and 0.0039, respectively. The hypothesis was not rejected for the other variables. Specifically, the p-values for immigration and other variables, such as CPI and RIR, ranged from 0.5 to 0.8, indicating that no significant relationships were identified between them.

6. DISCUSSION OF RESULTS

Bayesian networks show the dependencies between variables but do not necessarily indicate causation. Identifying cause-and-effect relationships requires further investigation; however, this section will still discuss the associations and potential cause-and-effect relationships that may exist between these variables.

Both immigration and emigration are dependent on remittances paid. Remittances paid can affect immigration by providing financial incentives in the recipient country. If remittances paid from a particular country are high, it may make that country more attractive to foreigners, encouraging them to migrate there. The relationship between remittances paid and emigration should be more indirect. A decline in remittances sent

abroad could be a result of an economic downturn, which, in turn, may push people to leave the country in search of better opportunities elsewhere.

Emigration is closely linked to employment in Georgia, where limited employment opportunities are one of the primary reasons for emigration to another country.

For both scenarios, the relationships between the macroeconomic variables are largely consistent. In both cases, remittances received are directly dependent on remittances paid. During an economic downturn, people may reduce the amount they remit while simultaneously asking for financial support from abroad, which can lead to an increase in remittances received.

Exports are directly dependent on remittances paid. This relationship is more complex, as an increase in remittances paid can stimulate the economy in the recipient country, boosting consumption. This, in turn, can lead to higher demand for imports, thereby increasing exports from the sending country.

Imports are directly related to exports, as the revenue generated from exports typically funds the imports. Imports are also directly dependent on employment since higher employment can lead to greater income and consumption, which usually increases imports.

Remittances received are directly dependent on imports, though the relationship can be more indirect and complex. Imports can affect economic conditions, employment, consumption patterns, and inflation, all of which can influence the need for financial support from abroad. If imports cause higher living costs, they may indirectly lead to an increase in remittances received. This relationship is complex and can be shaped by factors such as wage disparities, economic policies, and migration patterns.

FDI and remittances received are dependent, as remittances can help stimulate the economy in the recipient country, making it a more attractive destination for foreign direct investment.

The real interest rate and imports are also dependent, albeit indirectly. Imports can affect the real interest rate through various channels, such as inflation, economic growth, and exchange rates. If an increase in imports leads to higher inflation,

the central bank may raise nominal interest rates, which in turn would raise the real interest rate.

The real interest rate and CPI (consumer price index) are also directly dependent, as inflation is a key factor in determining real interest rates. Since real interest rates are calculated by subtracting inflation from nominal interest rates, the relationship is clear.

Finally, FDI directly depends on inflation. High inflation can create uncertainty in the economy, discouraging foreign investment. Generally, there is a negative relationship between FDI and CPI, as higher inflation tends to deter investment.

CONCLUSION

This study explored the relationships among migration, international remittances, trade, foreign direct investment (FDI), inflation, interest rates, and employment by employing the machine learning technique of Bayesian Networks. The primary focus was on emigration and immigration and the factors influencing these phenomena. The Bayesian Network models were constructed with emigration and immigration as the key variables of interest, starting with emigration as the primary variable and then addressing immigration.

The results indicated that both immigration and emigration are dependent on remittances paid, with emigration also being dependent on employment. Remittances received were found to be directly influenced by remittances paid, exports were dependent on remittances paid, and imports were influenced by both exports and employment. Additionally, remittances received were found to be directly dependent on imports, while the real interest rate was influenced by both imports and inflation (CPI). FDI was found to be dependent on inflation (CPI). Moreover, both emigration and immigration were dependent on exports, imports, and remittances received, with immigration also showing a dependency on FDI.

These findings align with previous research on the relationships between migration, imports, exports, FDI, and remittances. Additionally, they support the notion that employment-related issues are a significant driver of emigration, as highlighted by numerous studies. Georgia's small

economy and limited labor market diversity contribute to the lack of job opportunities, especially for younger workers. Furthermore, low remuneration in nearly all sectors exacerbates the problem. To address these issues, the government should focus on attracting more international companies and FDI in the country, improving the education system, and enhancing skills development to meet labor market demands. Employment is a multifaceted issue influenced by factors such as economic growth, political stability, and overall economic stability – areas that require significant improvement in Georgia.

While this study tried to explore the associations and potential cause-and-effect relationships between the variables, Bayesian Networks primarily highlight dependencies but not necessarily causal links. Therefore, further research is needed to clarify causation. Specifically, the interesting findings from this study – such as the dependencies between remittances received and imports, FDI and remittances received, and the real interest rate and imports—warrant further investigation. Additionally, the relationship between migration, exports, imports, and FDI should be explored further to better understand cause-and-effect relationships and provide more comprehensive explanations.

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განათლება და ცოდნის ეკონომიკა თანამედროვე ტექნოლოგიური რევოლუციის პირობებში

EDUCATION AND THE KNOWLEDGE ECONOMY IN THE CONTEXT OF THE MODERN TECHNOLOGICAL REVOLUTION

DETERMINANTS OF E-LEARNING ADOPTION BY THE STUDENT IN ALGERIA:
A Structural Equation Modelling Approach

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ABSTRACT. Although previous studies have confirmed the importance of e-learning systems for both students and teachers, the level of adoption of such systems in Algeria is still low. This paper aims to determine the factors influencing the adoption and use of e-learning by Algerian students. A theoretical model was proposed based on the Unified Theory of Acceptance and Use of Technology and the Technology Acceptance Model. To assess the proposed model, a survey was conducted on 300 students in Algeria, and the data were analyzed using structural equation modeling. In the end, the findings indicate that perceived usefulness and perceived ease of use significantly positively influence behavioral intention. In turn, behavioral intention influences e-learning adoption. The results also emphasize how facilitating conditions have a strong and significant impact on the adoption of e-learning. Overall, the findings shed light on the factors that influence Algerian students' adoption of e-learning, providing clear benefits to universities in their efforts to improve their e-learning systems and student satisfaction.

KEYWORDS: E-LEARNING, TECHNOLOGY ACCEPTANCE MODEL, STRUCTURAL EQUATION MODELING, STUDENT, ALGERIA

INTRODUCTION

The rapid growth of information technology (IT) and the usage of innovative technologies has resulted in new modes of learning and teaching. E-learning is becoming common in today's classrooms. According to El-Hussein and Cronje,[1] e-learning is the application of wireless technology and portable mobile devices' ubiquitous communication capabilities and user-friendly interfaces in formal learning processes.

E-learning offers various benefits for the student; it enables students to continue their academic activities and obtain crucial information

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1   El-Hussein, M. O. M., Cronje, J. C. (2010). Defining mobile learning in the higher education landscape. *Journal of educational technology & society*, 13(3), 13.

without being constrained by space or time.[2] Moreover, the e-learning system is important in educational places for distance education; students can retain the educational information and materials well while saving a lot of time compared to traditional face-to-face learning.[3]

Despite its potential benefits, e-learning is still a major challenge since technology for learning may be badly embraced, terminated, or refused by learners.[4] Thus, the adoption of e-learning remains an interesting topic for researchers.[5]

In Algeria, the country worked to digitize the higher education sector by providing educational digital platforms and platforms such as the Moodle platform and the Progress platform to keep pace with global trends and improve the educational process. However, despite the advantages offered by the distance education process to students, Algerian e-learning adoption is still in its early stages. Therefore, it would seem beneficial to comprehend the key elements affecting students' adoption and utilization of online learning.

Many researchers attempted to determine the factors affecting e-learning adoption and use based on theories and models of technology acceptance, such as the unified theory of acceptance and use of technology (UTAUT) and the technology acceptance model (TAM). Their findings demonstrate various factors explaining the higher rate of e-learning adoption, including facilitating conditions,[6] perceived ease of use, and

perceived usefulness.[7] However, there is no universal agreement on the factors that influence e-learning adoption, and the findings differ depending on context, place, and time. Furthermore, the question has not been extensively examined in the context of Algeria. Thus, this paper aims to investigate the crucial factors affecting e-learning adoption by students in Algeria.

For this paper, the following research question was addressed:

What are the factors influencing the adoption of e-learning by students in Algeria?

The remainder of this paper is presented as follows: Section one presents the literature review. Section two proposes the conceptual framework. Section three explains the research methodology of the study. Section four presents the results. Section five discusses the results and provides the academic and managerial Implications. Finally, section six concludes our work.

LITERATURE REVIEW

E-learning, additionally referred to as electronic learning or online learning, is the utilization of electronic technology as well as digital media to enhance education and learning. It includes the sharing of educational content, resources, and interactive activities through various digital platforms, such as computers, mobile devices, and the Internet. In e-learning, learners can access educational materials, participate in online courses, interact with instructors and peers, complete assessments, and receive feedback using digital tools and technologies. E-learning provides flexibility in terms of time and location, allowing learners to engage in educational activities at their own pace and from anywhere with an internet connection.[8]

2   Hunde, M. K., Demsash, A. W., Walle, A. D. (2023). Behavioral intention to use e-learning and its associated factors among health science students in Mettu University, southwest Ethiopia: Using modified UTAUT model. *Informatics in Medicine Unlocked*, 36, 105.

3   Alassafi, M. O. (2022). E-learning intention material using TAM: A case study. *Materials Today: Proceedings*, 61, 875.

4   Mehta, A., Morris, N. P., Swinnerton, B., Homer, M. (2019). The influence of values on E-learning adoption. *Computers & Education*, 141, 113.

5   Zhu, M., Sari, A., Lee, M. M. (2018). A systematic review of research methods and topics of the empirical MOOC literature (2014–2016). *The Internet and Higher Education*, 37, 35.

6   Alfalah, A. A. (2023). Factors influencing students' adoption and use of mobile learning management systems (m-LMSs): A quantitative study of Saudi Arabia. *International Journal of Information Management Data Insights*, 3(1), 120.

7   Alassafi, M. O. (2022). E-learning intention material using TAM: A case study. Materials Today: *Proceedings,* 61, 875.

8   Dinh, L. P., Nguyen, T. T. (2023). Convenient and comfortable, yet limited in many ways: advantages and disadvantages of online learning during the COVID-19 pandemic from perspectives of social work students in Vietnam. *Asia Pacific Journal of Social Work and Development*, 33(3), 196.

The concept of e-learning encompasses a wide range of approaches and technologies, including online courses, virtual classrooms, educational apps, multimedia resources, simulations, gamified learning experiences, and learning management systems (LMS) that facilitate course administration and delivery.[9]

E-learning offers several advantages, such as accessibility, convenience, self-paced learning, personalized instruction, and the ability to reach a global audience. It is used in various educational settings, including schools, universities, professional training programs, and lifelong learning initiatives. In addition, e-learning platforms often facilitate communication and collaboration among learners. Discussion forums, chat features, and collaborative tools enable learners to connect with peers, engage in group projects, and share knowledge and experiences. This fosters a sense of community and encourages peer learning.[10]

Based on the technology acceptance theories, several researchers have tried to examine the factors affecting the adoption and use of e-learning, in the first study, Abdullah and Ward[11] investigated the effect of TAM variables in the context of the adoption of e-learning and performed a quantitative meta-analysis of 107 papers. The findings indicated that computer anxiety, self-efficacy, and experience are the most important factors affecting perceived ease of use and perceived usefulness of e-learning adoption. In the second study, Jameel et al.[12] examine the factors that affect the

intention to use e-learning in Iraq based on the UTAUT. The data of 187 responses were analyzed using the structural equation modeling. The results found that performance expectancy, effort expectancy, and facilitating conditions raised the willingness to use e-learning and had a significant and positive effect on the intention to use e-learning. In another study, Twum et al.[13] explored the factors that influence the intention to use E-learning during the COVID-19 pandemic using the unified theory of acceptance and use of technology 2. The data were collected from 617 university students and were analyzed using partial least squares structural equation modeling. The results indicated that personal innovativeness, perceived financial cost, performance expectancy, and hedonic motivation have a significant impact on behavioral intention to use E-learning. Finally, Hunde et al.[14] examined the factors affecting students' behavioral intention to use e-learning in Ethiopia. Structural equation modeling analyses were used on 637 responses from health science students to test the hypotheses. The findings showed that effort expectancy and facilitating conditions have a significant impact on the behavioral intention to use e-learning by the student.

In the end, and even if these studies provide some understanding of the interactions that can occur between students and their e-learning acceptance and use, there is still some knowledge gap in developing countries, and it seems essential to conduct more studies. Indeed, little research exists regarding the adoption of e-learning in North African or Middle Eastern nations, including Algeria.

9   Zhuang, Y., Ma, H., Xie, H., Leung, A. C. M., Hancke, G. P., Wang, F. L. (2017). When innovation meets evolution: An extensive study of emerging e-learning technologies for higher education in Hong Kong. *In Emerging Technologies for Education: First International Symposium, SETE 2016, Held in Conjunction with ICWL 2016, Rome, Italy, October 26-29, 2016, Revised Selected Papers 1*, Springer International Publishing, 579.

10   Tayebinik, M., Puteh, M. (2013). Blended Learning or E-learning? *arXiv preprint arXiv*, 1310.

11   Abdullah, F., Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analyzing commonly used external factors. *Computers in human behavior*, 56, 238-256.

12   Jameel, A. S., Karem, M. A., Ahmad, A. R. (2022). Behavioral intention to use e-learning among academic staff during the COVID-19 pandemic based on the UTAUT model. *In Proceedings of International-*

al Conference on Emerging Technologies and Intelligent Systems: ICETIS 2021. Springer International Publishing, 1, 187-196.

13   Twum, K. K., Ofori, D., Keney, G., Korang-Yeboah, B. (2022). Using the UTAUT, personal innovativeness and perceived financial cost to examine student's intention to use E-learning. *Journal of Science and Technology Policy Management*, 13(3), 713-737.

14   Hunde, M. K., Demsash, A. W., Walle, A. D. (2023). Behavioral intention to use e-learning and its associated factors among health science students in Mettu University, southwest Ethiopia: Using modified UTAUT model. *Informatics in Medicine Unlocked*, 36, 101154.

FIGURE 1. RESEARCH MODEL
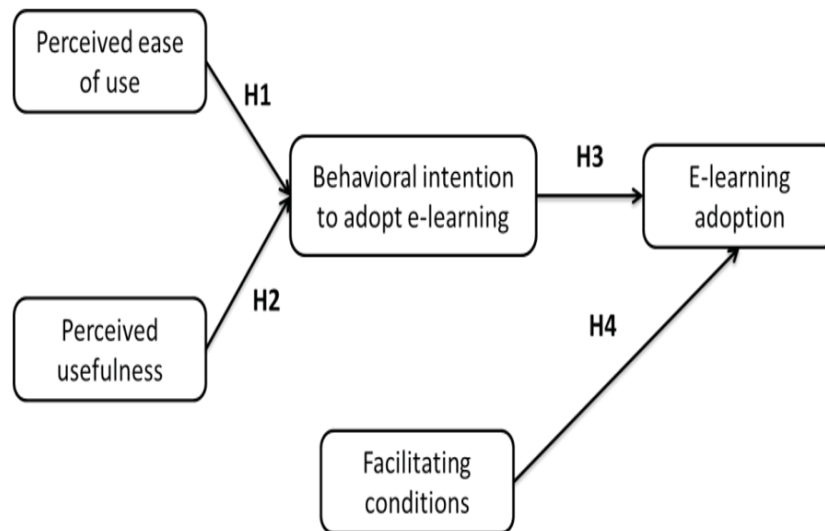
CONCEPTUAL MODEL

To determine the factors that influence Algerian students' acceptance of e-learning, an integrated conceptual model based on the TAM and the UTAUT was constructed (see Figure 1).

Over the past two decades, the TAM was most commonly utilized by information technology researchers and had accumulated large empirical support.[15] Therefore, the research model proposed in this study contains all factors adopted by TAM. Nevertheless, this model ignores several crucial theoretical constructs, and it does not reflect the variety of user constraints.[16] Then, we based on UTAUT in addition to the TAM, Therefore, we adopt the facilitating conditions from the UTAUT.

Perceived Ease of Use

Perceived Ease of Use (PEOU): The extent to which an individual perceives that using technology is easy and needs the least effort.[17] In the con-

text of e-learning, perceived ease of use relates to how learners believe the user interface and overall usability of e-learning platforms.[18] previous studies have found that perceived ease of use has a significant effect on consumers' intention to use and adopt e-learning.[19] Consequently, the first hypothesis is as follows:

H1: Perceived ease of use positively influences behavioral intention to adopt e-learning.

Perceived Usefulness:

Perceived Usefulness (PU) is the level to which a person believes that utilizing new technology would improve their efficiency and performance.[20] In the e-learning area, PU describes how learners believe e-learning resources and platforms can contribute to their learning outcomes, such as improving knowledge acquisition or skills development. Several studies[21] indicated that PU posi-

15 Abdullah, F., Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analyzing commonly used external factors. *Computers in human behavior*, 56, 248.

16 Olushola, T., Abiola, J. O. (2017). The efficacy of technology acceptance model: A review of applicable theoretical models in information technology researches. *Journal of research in business and management*, 4(11), 76.

17 Davis, F. D. (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science, 984, 995.

18 Bailey, D. R., Almusharraf, N., Almusharraf, A. (2022). Video conferencing in the e-learning context: explaining learning outcome with the technology acceptance model. *Education and Information Technologies*, 27(6), 7685.

19 Humida, T., Al Mamun, M. H., Keikhosrokiani, P. (2022). Predicting behavioral intention to use e-learning system: A case study in Begum Rokeya University, Rangpur, Bangladesh. *Education and information technologies*, 27(2), 2256.

20 Davis, F. D. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35 (8), 996.

21 Revythi, A., Tselios, N. (2019). Extension of technology acceptance model by using system usability scale

TABLE 1. MEASUREMENT SCALES

FACTOR	NUMBER OF QUESTIONS
E-learning adoption	3 items
Behavioural intention to adopt e-learning	3 items
Perceived ease of use	4 items
Perceived usefulness	3 items
Facilitating conditions	3 items

tively affects behavior intention to use e-learning. Thus, the second hypothesis is:

H2: Perceived usefulness positively influences behavioral intention to adopt e-learning.

Behavioural Intention to Adopt e-learning:

According to Davis et al.[22], behavioral intention (BI) is a measure of a person's readiness to adopt new technologies. Theories and models of technology acceptance found that intention is the most powerful influencing factor in the adoption of technology.[23] E-learning prior studies cite behavioral intention as a key factor influencing the adoption of e-learning. As a result, this research puts forth the following hypothesis:

H3. The behavioral intention will positively influence students' adoption of e-learning.

Facilitating Conditions:

Facilitating Conditions (FC) represents a measure of which individuals think that the required resources, support, and infrastructure are available to enable the use of technology.[24] According to prior studies, FC provides an important influence in the adoption of e-learning.[25] Therefore,

the fourth hypothesis is formulated as follows:

H4. Facilitating conditions will positively influence students' e-learning adoption.

Methods and Materials

The empirical study was conducted on a sample of the students in Algeria. The survey method was used to test the hypotheses because it is the most common method of collecting data on constructs connected with behavioral theories.

Regarding the measurement, as shown in Table 1, the instruments (items) were derived from previous research,[26] and their reliability and validity have been proven. Items in this paper were rated using a 5-point Likert scale. (1=strongly disagreed; 5=strongly agreed) (see Table 1).

This study's hypotheses were investigated using Covariance-Based Structural Equation Modelling (CB-SEM). The data analysis was completed in two stages. The first stage entailed conducting a reliability and validity analysis with SPSS (version 22) to determine the stability and consistency of the assessed items. The second phase was testing the study assumptions using AMOS (version 22).

Sample Characteristics

A total of Three hundred (300) valid questionnaires were collected. Table 2 shows that respondents consisted of 174 males (58%) and 126 females (42%). Their age ranged from 19 to more than 29 years, with 55.3% being 19-24 years and 42% being 25-29 years (see Table 2).

to assess behavioral intention to use e-learning. *Education and Information Technologies*, 24, 2351.

22 Davis, F. D. (1989). User acceptance of computer technology: A comparison of two theoretical models. *Management Science*, 35 (8), 990.

23 Venkatesh, V., Morris, M. G., Davis, G. B., Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 433.

24 Ali, M., Raza, S. A., Qazi, W., Puah, C. H. (2018). Assessing e-learning system in higher education institutes: Evidence from structural equation modeling. *Interactive Technology and Smart Education*, 15(1), 67.

25 Alblooshi, S., Abdul Hamid, N. A. B. (2021). The role of the unified theory of acceptance and use of

technology in e-learning adoption in higher education institutions in the UAE. *IBIMA Business Review*, 1(26), 13.

26 Venkatesh, V., Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision sciences*, 39(2), 314.

TABLE 2. DEMOGRAPHIC ANALYSIS

VARIABLE	RESPONSE'S CHOICE	FREQUENCY	PER CENT
Gender	Male	174	58%
	Female	126	42%
Age	19-24 years	166	55.3%
	25-29 years	126	42%
	25+ years	8	2.7%

RESULTS
The Measurement Model

To examine the reliability and validity of the items, the constructs were assessed using Cronbach's alpha. According to Table 3's findings, all of the variables have values higher than the 0.70 cut-off point.[27] This shows a sufficient level of internal consistency in the measurement model.

We conducted a confirmatory factor analysis (CFA) to ensure sufficient levels of construct validity, reliability, and model fitness. Table 3 illustrates that all factor loading values (λ), which ranged from 071 to 0.97, are significant and above the suggested criterion of 0.50.[28]

Structural Model
Goodness-Of-Fit Indicators

The values of the goodness of fit indices in Table 4 appeared that the structural model is an excellent fit for the data (Hair et al. 2010, 96) [35].

TABLE 3. RELIABILITY AND VALIDITY TEST

VARIABLE	NOTATION	ITEMS	λI	(A) CRONBACH
e-learning adoption	Adoption	A1 A2 A3	0.92 0.95 0.84	0.938
Behavioural intention	BI	BI1 BI2 BI3	0.96 0.97 0.84	0.944
Perceived ease of use	PEU	PEU1 PEU2 PEU3 PEU4	0.71 0.77 0.90 0.77	0.863

Perceived usefulness	PU	PU1 PU2 PU3	0.85 0.88 0.91	0.910
Facilitating conditions	FC	FC1 FC2 FC3	0.83 0.89 0.84	0.891

Source: Prepared by researcher based on the outputs of AMOS and SPSS

Table 4. Goodness-of-Fit Indicators

INDICATOR	VALUE
RMSEA	0.07
IFI	0.94
RFI	0.91
CFI	0.94
TLI	0.92
NFI	0.92
CMIN/DF	2.15

Source: Prepared by researcher based on the outputs of AMOS

Coefficient of Determination (R2):

The research yielded highly satisfactory R2 values for the endogenous components. To be precise, Table 5 estimates this coefficient as follows: 42.3% for e-learning adoption and 40.5% for behavioral intention.

TABLE 5. COEFFICIENT OF DETERMINATION (R2)

CONSTRUCT	R SQUARE
Adoption	0.405
BI	0.423

Source: Prepared by researcher based on the outputs of AMOS

Hypothesis Test:

Figure 2 and Table 6 indicate the findings of the structural equation analysis. The results validate the positive impact of perceived usefulness and perceived ease of use on behavioral intention to use and adopt e-learning (β=0.0.326, p<0.001; β=0.538, p<0.001). Therefore, H1 and H2 are supported. In addition, behavioral intentions (β=0.481,

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27   Kline, R. B. (2023). *Principles and practice of structural equation modeling.* Guilford publications, 105.

28   Black, W. C., Babin, B. J., Anderson, R. E. (2010). *Multivariate data analysis: A global perspective.* Pearson, 115.

p<0.001) and facilitating conditions (β=0.373, p<0.001) have both a significant and positive influence on the adoption of e-learning. Therefore, H3 and H4 are supported.

TABLE 6. STRUCTURAL MODEL RESULTS AND HYPOTHESIS TESTING

HYPOTHESIS	ESTIMATE	SE	CR	INFERENCE
H1: PEU → BI	0.326***	0.073	4.461	Supported
H2: PU → BI	0.538***	0.085	6.295	Supported
H3: BI → Adoption	0.481***	0.051	9.359	Supported
H4: FC → Adoption	0.373***	0.051	7.365	Supported
***p < 0.001				

Source: Prepared by researcher based on the outputs of AMOS

See Figure 2.

DISCUSSION

To identify the factors affecting students' use and adoption of e-learning in Algeria, we suggested a research framework that combined TAM components (PEOU, PU, and BI) with FC from the UTAUT element. Four hypotheses were addressed by this model. We used the questionnaire-based survey approach and the CB-SEM method of data analysis to test the suggested model and hypotheses.

First, the study's findings provide strong support for our hypothesis; the R square of 40.5% was higher than the suggested threshold of 40%.[29] This indicates that the model has a high predictive value and considerable explanatory power. We have been able to improve the TAM model's prediction capacity by using FC. According to a study by Mubuke et al.,[30] 48.6% of the variation in the use of e-learning was explained by conducive conditions.

Second, the results also indicate that PU and PEOU are positively associated with behavioral intention to adopt e-learning. Thus, as long as

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29   Straub, D., Boudreau, M. C., Gefen, D. (2004). Validation guidelines for IS positivist research. *Communications of the Association for Information Systems*, 13(1), 36.

30   Mubuke, F., Kutosi Masaba, A., Ogenmungu, C., Mayoka Kituyi, G. (2017). Examining the Effect of Facilitating Conditions as an imperative input in enhancing the intention to use Mobile Learning systems in Universities, 341.

FIGURE 2. STRUCTURAL MODEL
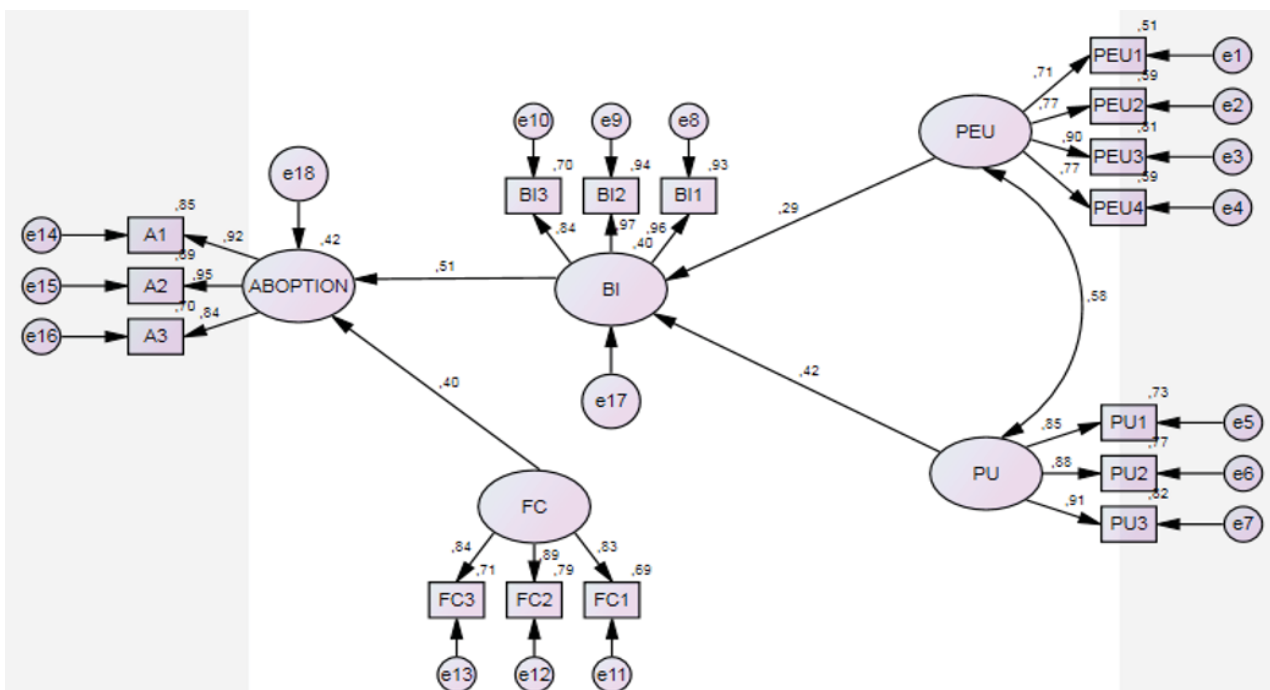
individuals perceive that the use of e-learning platforms is free of effort and facilitates their studies, their intention to use and adopt e-learning is increased. Therefore, the findings validated our original relationship with the TAM. This is consistent with the literature regarding e-learning adoption.[31, 32]

Finally, the findings found that behavioral intention and facilitating conditions determine the adoption of e-learning. This suggests that students will use and adopt e-learning if they desire to use these technologies and believe that the resources and support services are available. These findings are consistent with the overall literature on technology adoption,[33] in which behavioral intention and conducive conditions have always been important determinants in the acceptance of technological advancements. The findings are also consistent with earlier e-learning research.[34]

Academic Implications

This study makes significant scholarly contributions to the body of knowledge regarding the acceptance and use of technology. First, it examined the factors that influence e-learning in Algeria using the TAM and UTAUT models, which were established in Western culture, to explain a similar behavior in a non-western (Arabic) culture and confirm and extend the results of Mailizar et al.[35] to the case of e-learning. As a result, the

study adds to the contextual implications of the TAM and UTAUT models used in Algeria, a developing country case study. In the Algerian context, there are a limited number of e-learning adoption studies. The findings of this study will contribute to a general understanding of the factors that affect the adoption and use of e-learning in Algeria. Second, the study used the models and theories, which were created in an organizational context, to study an individual user behavior type (e-learning).

Managerial Implications

This study presents several managerial implications for fostering a stronger relationship between universities and e-learning users. One key finding is the exploration of students' adoption of e-learning. Understanding their behavior toward e-learning use can assist universities in crafting strategies that encourage engagement with these platforms. Specifically, Algerian universities can leverage these insights to enhance the promotion of e-learning initiatives. The study highlights that perceived ease of use and perceived usefulness are critical factors influencing e-learning adoption in Algeria. To increase adoption rates, universities should design user-friendly e-learning platforms and provide clear instructions for their use. Moreover, creating compelling promotional campaigns that emphasize the benefits and opportunities offered by e-learning can motivate students to explore these platforms further. Additionally, the research reveals that facilitating conditions significantly impact e-learning adoption, underscoring the need for robust support resources and accessible services. Therefore, improving the infrastructure, such as enhancing internet access and ensuring smooth connectivity, is essential for Algerian universities aiming to attract more students to e-learning platforms.

CONCLUSION

This study examines the key factors influencing students' adoption and use of e-learning in Algeria. A research model was created by integrating

31   Revythi, A., Tselios, N. (2019). Extension of technology acceptance model by using system usability scale to assess behavioral intention to use e-learning. *Education and Information Technologies*, 24, 2350.

32   Bailey, D. R., Almusharraf, N., Almusharraf, A. (2022). Video conferencing in the e-learning context: explaining learning outcome with the technology acceptance model. *Education and Information Technologies*, 27(6), 7690.

33   Venkatesh, V., Morris, M. G., Davis, G. B., Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly,* 460.

34   Alblooshi, S., Abdul Hamid, N. A. B. (2021). The role of the unified theory of acceptance and use of technology in e-learning adoption in higher education institutions in the UAE. *IBIMA Business Review*, 1(26), 12.

35   Mailizar, M., Burg, D., Maulina, S. (2021). Examining university students' behavioral intention to use e-learning during the COVID-19 pandemic: An

extended TAM model. *Education and information technologies*, 26(6), 7057-7077.

elements from both the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT). To test the proposed hypotheses, a survey involving 300 Algerian students was conducted, and the data were analyzed using structural equation modeling. The results showed that students' behavioral intention to adopt e-learning is significantly and positively influenced by perceived usefulness and ease of use. Additionally, both behavioral intention and facilitating conditions play a crucial role in shaping e-learning adoption and usage.

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ტურიზმის გლობალური პროცესების მიმდინარეობა მსოფლიოში და მისი განვითარების ტენდენციები

THE PROGRESS OF GLOBAL TOURISM PROCESSES WORLDWIDE AND THEIR DEVELOPMENT TRENDS

ENHANCING TOURISM IN THE SOUTH CAUCASUS THROUGH COOPETITION

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ABSTRACT. This article explores the concept of "coopetition" as a strategic approach for enhancing tourism development in the South Caucasus region, comprising Armenia, Azerbaijan, and Georgia. The region holds significant tourism potential but faces infrastructure gaps, limited awareness, safety standards, and accessibility. Additionally, political instability, including the Armenia-Azerbaijan conflict and the ongoing occupation of Georgian territories by Russia, has hindered growth. Fortunately, recent peace efforts between Azerbaijan and Armenia offer opportunities for collaborative tourism initiatives, potentially boosting economic stability.

Through an assessment of tourism intelligence, competitiveness, and regional dynamics, the study identifies key areas where these countries can both compete and cooperate to attract high-value tourists. Coopetition offers a strategy for enhancing the region's competitiveness through joint marketing, shared tourist routes, and improved cross-border infrastructure while also allowing each country to utilize its unique strengths in niche tourism products. At the same time, coopetition also poses risks, such as unequal benefit distribution and coordination challenges in aligning policies, among other issues. The analysis concludes that by balancing competition with strategic cooperation, the South Caucasus countries can boost regional tourism, attract high-value visitor segments, strengthen their global market position, and contribute to lasting peace in the region.

KEYWORDS: TOURISM POLICY, COOPETITION, SOUTH CAUCASUS REGION

INTRODUCTION

The Caucasus region, often hailed as the cradle of European civilization, stands at the crossroads of Europe and Asia, serving as a vital cultural and geographical corridor. This unique positioning has profoundly influenced the societies within the South Caucasus—comprising Georgia, Armenia, and Azerbaijan—leading to a rich fusion of European and Asian cultural elements. Renowned for its natural beauty and cultural heritage, the South Caucasus offers an array of diverse tourism products that attract anyone in the world.

The historical development of tourism in the region reflects its strategic geopolitical location and abundant resources. Early tourism initiatives were influenced by foreign expertise, particularly from Europe, which provided crucial recommendations on safety standards and infrastructure development. Although technological advancements

have reshaped the tourism landscape, many of the challenges from the early tourism period, such as inadequate safety standards, poor infrastructure, limited advertising, and restricted accessibility, persist today, continuing to hamper the region's full tourism potential.[1] Addressing these challenges through collaborative efforts among the three countries, with support from European partners, could enhance the region's tourism potential and facilitate sustainable growth.

A 2017 study examining the relationship between tourism competitiveness factors and performance in Azerbaijan, Georgia, and Armenia from 2007 to 2015 found that Azerbaijan led in tourism performance, primarily due to its oil and gas revenues. Furthermore, the study identified the Human, Cultural, Natural Resources Index as the most significant contributor to competitiveness, highlighting the need for enhanced regional cooperation and sectoral development to strengthen tourism in the South Caucasus.[2]

The instability and conflicts have significantly undermined tourism development in the region. Georgia continues to grapple with the effects of its two conflict zones occupied by Russia, while the dispute between Armenia and Azerbaijan over the Karabakh region has severely impacted tourism flows. Additionally, the Russia-Ukraine conflict, despite being geographically distant, has further harmed the region's image among long-haul tourists unfamiliar with the Caucasus region.[3] Recent developments, such as conflict resolution efforts between Armenia and Azerbaijan, suggest a more favorable environment for collaborative initiatives. Tourism, with its potential to boost employment, balance of payments, reduce poverty, and many other economic variables, could also serve as a tool for peacebuilding, helping to address political and economic challenges and fostering

long-term stability in the South Caucasus.

Environmental risks also pose a significant threat. The mountainous terrain, while a tourist attraction, exposes the region to natural disasters, necessitating advanced disaster management strategies. In Georgia, where 54% of the land is mountainous, natural processes have caused extensive damage to the tourism sector and related industries.[4] Natural disasters can also be linked to global warming. The country's geographic and climatic traits make it susceptible to various calamities, such as floods, droughts, storms, landslides, mudslides, and avalanches.[5] Collaboration between countries on disaster management and climate adaptation strategies is essential, as limited resources make regional cooperation crucial for enhancing the safety of both residents and tourists.

Despite these obstacles, the governments of Georgia, Armenia, and Azerbaijan recognize tourism as a critical driver of economic development. They are increasingly focusing on promoting their unique attractions, including wine regions, mountain landscapes, ancient monasteries, and cultural heritage, to attract high-value visitors from Europe, the U.S., and other global markets. However, the region remains heavily reliant on tourists from the post-Soviet states. Barriers to reaching high-value markets include limited financial resources, low international visibility, and the economic and political limitations of the region's small nations.

This paper examines the concept of 'coopetition'—a blend of competition and cooperation—as a potential strategy to enhance the region's appeal, focusing on perspectives such as the motives of coopetition and its determinants, as well as its potential positive and negative outcomes for the three tourism destinations.

Previous research indicates that tourism destinations with high market commonality tend to form stronger business associations, fostering robust coopetition networks, while those with low

1   Tamarashvili, T. (2023). Aspects of tourism development in the South Caucasus: Past and present. *Iakob Gogebashvili State University*, 480-487. <https://doi.org/10.52340/idw.2023.7>.

2   Kantarci, K., Başaran, M. A., Özyurt, P. M. (2017). A comparative research on South Caucasus countries' tourism performances and competitiveness factors. *In Proceedings of the International Scientific Conference*, 303-313.

3   Bregadze, G. (2023). Assessing the value chain impacts of the Ukraine war on the tourism industry of Georgia. *Globalization and Business*, 8(15), 65–75.

4   Davituliani, T., Azmaiparashvili, M. (2023). Ecological safety of Georgian tourism. *Globalization and Business*, 16, 69–70. <https://doi.org/10.35945/gb.2023.16.007>.

5   Bregadze, G. (2023). Climate change impacts on the tourism industry in Georgia. *Globalization and Business*, 8(16), 60.

commonality rely more on long-term firm strategies.[6] Destinations also tend to benefit from factors like interdependence, complementarity, shared goals, and geographical proximity, which make coopetition relationships more viable.[7]

A long-term vision for tourism, along with strengthened associations or other collaborative frameworks among Azerbaijan, Armenia, and Georgia, could enable these countries to effectively use coopetition for mutual benefits. Given their shared tourism products, including cultural heritage and natural landscapes, such collaboration could significantly boost their competitive advantage in the global tourism market.

The study will analyze the tourism product commonalities, target markets, and long-term visions of the three South Caucasus countries by assessing policy documents, national statistics, UNWTO data, and the World Economic Forum's Travel and Tourism Competitiveness Index. Finally, it will identify areas where cooperation can maximize benefits and mitigate potential risks associated with coopetition.

TOURISM POLICY AND PRODUCT COMMONALITIES IN THE SOUTH CAUCASUS REGION

Attracting both high-value and responsible tourists in the region requires effective policy and strategic planning, which are essential but proved to be insufficient. Policymakers, planning officials, and stakeholders of the three countries must recognize emerging trends and implement coordinated measures that promote sustainable growth and high-quality tourism offerings, benefiting both visitors and local communities.

Tourism policy in this study is broadly defined to encompass marketing, planning, and sustainability. It refers to a framework of actions, guide-

lines, directives, and principles that guide the development of tourism within an ethical context.[8] These policies, whether legislative, administrative, or judicial, shape the growth and development of the tourism sector. They are often embedded in official documents, reflecting a nation's vision for tourism planning, product development, marketing, and sustainable practices.[9] This chapter analyzes the strategic documents of Georgia, Armenia, and Azerbaijan to gain insights into each country's tourism policy, highlighting the potential for regional collaboration.

Georgia is currently transitioning from its 2015-2025 Tourism Strategy to a new plan that is expected to extend until 2035. This new strategy aims to integrate tourism and marketing strategies into a single, comprehensive document—moving away from the previous approach where strategic and marketing goals were addressed separately. The 2015-2025 strategy, developed with World Bank support, emphasized balanced growth through aligning resources and stakeholder needs, with a strong focus on attracting high-value tourists. Specifically, the 2025 Strategy vision positioned Georgia as a year-round, high-quality tourist destination renowned for its cultural and natural heritage, exceptional hospitality, and world-class services. Key investments targeted infrastructure, education, and the promotion of unique Georgian experiences, aiming to enhance global competitiveness.[10]

To complement the strategic approach, Georgia's marketing strategy identified three core tourism products: wine and gastronomy, nature and adventure, and cultural heritage. These focus areas were selected based on competitive analysis and emerging global trends, which highlighted demand for these experiences. Other segments such as health and wellness, city breaks, MICE tourism, and coastal tourism also play a signifi-

6   Chim-Miki, A. F., da Costa, R. A., Okumus, F. (2024). Investigating the strategic role of business associations in willingness toward tourism coopetition. *Current Issues in Tourism*, 1–18. <https://doi.org/10.1080/13683500.2024.2333910>.

7   Della Corte, V., Sciarelli, M. (2012). Can coopetition be source of competitive advantage for strategic networks? *Corporate Ownership & Control,* 9(3), 355. <https://doi.org/10.22495/cocv9i3c3art5>.

8   Edgell, D. L., Sr., Swanson, J. R. (2019). *Tourism policy and planning: Yesterday, today, and tomorrow* (3rd ed., 12). Routledge.

9   Gee, C. Y., Fayos-Solá, E., World Tourism Organization, WTO Education Network. (1997). *International tourism: A global perspective* (1st ed.). World Tourism Organization, 305.

10   World Bank. (2015). *Tourism strategy 2015-2025: Sustainable tourism development plan.* World Bank Group, 4-26.

cant role, ensuring diverse offerings for identified target markets.[11]

Armenia's tourism policy, outlined in the "Tourism Doing Business – Investing in Armenia" publication, emphasizes the country's appeal through its cultural heritage, scenic landscapes, and niche tourism offerings like cultural, adventure, and gastronomy tourism. The document highlights the government's pro-investment stance, underscored by infrastructure upgrades and the influx of international hotel chains. It argues that the Government Programme 2021-2026 in Armenia aims to attract 2.5 million international visitors through increased direct flights, enhanced visa regulations, and improved global visibility. On the other hand, the Tourism Committee's 2025-2029 Strategy focuses on balanced regional growth, improved service quality, and developing Destination Management Organizations (DMOs) to diversify tourism products, including agritourism and specialized gastronomy tourism. Furthermore, Armenia promotes underdeveloped regions like Syunik, Vayots Dzor, Gyumri, and Dilijan to expand its tourism offerings beyond the capital. Moreover, strategic initiatives such as the "Armenia, The Hidden Track" campaign aim to attract high-value tourists, increase spending, and showcase the country's cultural and natural appeal globally.[12]

Azerbaijan's 2023-2026 Tourism Strategy serves as a roadmap for aligning tourism development with broader national socio-economic goals. The strategy emphasizes sustainability, regional development, and competitiveness through a nine-pillar model, with the Azerbaijan Tourism Board (ATB) playing a key role, particularly since the launch of a new country brand in 2018 aimed at repositioning Azerbaijan as a sustainable tourism destination. On the other hand, Product development initiatives center around providing authentic and immersive experiences in nature, culture, and wellness. This includes the creation of cultural heritage routes, the design of recre-

ational zones, and a focus on sustainable tourism that respects local communities. The overarching goal is to position Azerbaijan as a competitive, year-round destination offering diverse and high-quality tourism experiences.[13]

Georgia, Armenia, and Azerbaijan share similar goals in their tourism strategies, such as attracting high-value tourists, improving service quality, and promoting regional development. Analyzing their policies reveals shared priorities like sustainable growth, investment in tourism infrastructure, and marketing strategies that emphasize cultural heritage and unique experiences.

These commonalities in vision present opportunities for cooperation. The South Caucasus Counties can utilize their complementary tourism products and develop joint marketing campaigns, cross-border tourism offerings, and coordinated standards that enhance the South Caucasus' appeal as a regional destination. These efforts can amplify the positive effects of regional tourism growth.

TOURISM INTELLIGENCE AND TRENDS IN THE SOUTH CAUCASUS: A COMPARATIVE ANALYSIS OF ARMENIA, AZERBAIJAN, AND GEORGIA

The assessment of tourism statistics across Armenia, Azerbaijan, and Georgia reveals substantial disparities in data collection, methodology, and availability, complicating direct comparisons. Georgia leads in terms of data accessibility and clarity, providing a comprehensive range of tourism-related statistical indicators. Its tourism intelligence includes four Tourism Satellite Account (TSA) tables, offering a detailed picture of the sector's demand side economic impact. However, Georgia's statistical system lacks specific information about organized tourism, which would enhance its understanding of tourism dynamics. Azerbaijan, in contrast, covers both organized and non-organized tourism but offers a limited set of variables. Moreover, the absence of a TSA and in-

11   Georgian National Tourism Administration. (2019). *Guideline for planning inbound tourism business* (4th edition). Georgian National Tourism Administration, 51. <https://gnta.ge/ge/publication/guideline/>.

12   World Tourism Organization. (2024). *Tourism Doing Business – Investing in Armenia.* UN Tourism, 1-28. <https://doi.org/10.18111/9789284425785>.

13   Azerbaijan Tourism Board & State Tourism Agency of the Republic of Azerbaijan. (2023). *Azerbaijan Tourism Strategy 2023-2026,* 3-18. <https://www.tourism.gov.az>.

FIGURE 1: INTERNATIONAL TOURIST ARRIVALS IN SOUTH CAUCASUS COUNTRIES 2014-2023 (MLN)
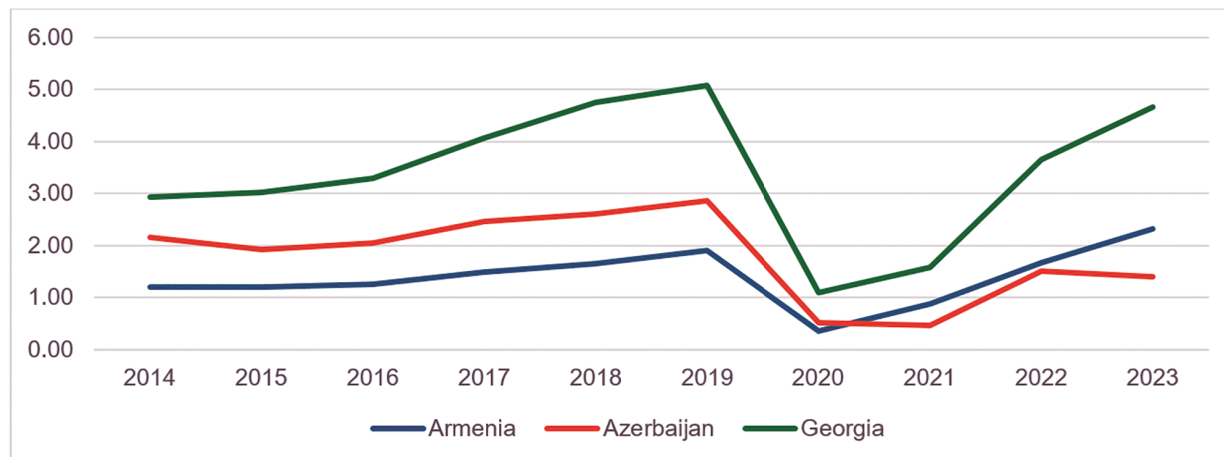
Source: World Tourism Organization (2024), 'UN Tourism Data Dashboard', UN Tourism, Madrid, available online: <https://www.unwto.org/tourism-data/global – and-regional-tourism-performance>.

sufficient methodological explanations weaken the overall reliability of its data. Armenia lags in terms of tourism research, having only recently reintroduced the International Visitor Survey in 2023 after an 11-year gap. Its data dissemination is also hindered by methodological inconsistencies and a lack of detailed explanations.

Despite these differences, an analysis of the available common variables reveals important insights into the region's tourism trends. The period from 2014 to 2023 highlights the steady pre-pandemic growth of international tourist arrivals in all three countries, followed by a sharp decline in 2020 due to the COVID-19 pandemic. By 2019, Georgia had established itself as the top destination in the region, attracting over 5 million tour-

ist trips. Azerbaijan followed with approximately 2.9 million, while Armenia saw 1.9 million tourist trips. The pandemic resulted in significant reductions in tourist arrivals—Armenia (-81%), Azerbaijan (-82%), and Georgia (-79%). However, by 2023, Armenia had demonstrated strong resilience, surpassing pre-pandemic levels with a 22% increase in arrivals compared to 2019. Georgia also showed a solid recovery, reaching 4.67 million tourist arrivals, while Azerbaijan struggled to regain momentum, with only 1.40 million tourist trips due to continued land border restrictions (see Figure 1).

Examining the purpose of international visits to South Caucasus Countries provides insight into the visitor segment structure in each country. Azerbaijan stands out, with 66.9% of its inter-

FIGURE 2: INTERNATIONAL VISITOR TRIPS BY PURPOSE OF VISIT TO SOUTH CAUCASUS COUNTRIES IN 2023
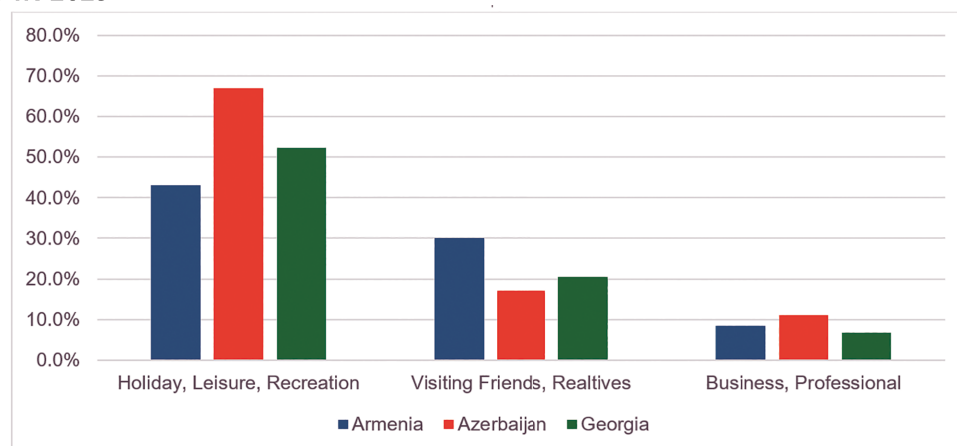
Source: National Statistics Office of Georgia, State Statistical Committee of the Republic of Azerbaijan, & Statistical Committee of the Republic of Armenia.

FIGURE 3: SOURCE MARKETS OF SOUTH CAUCASUS COUNTRIES
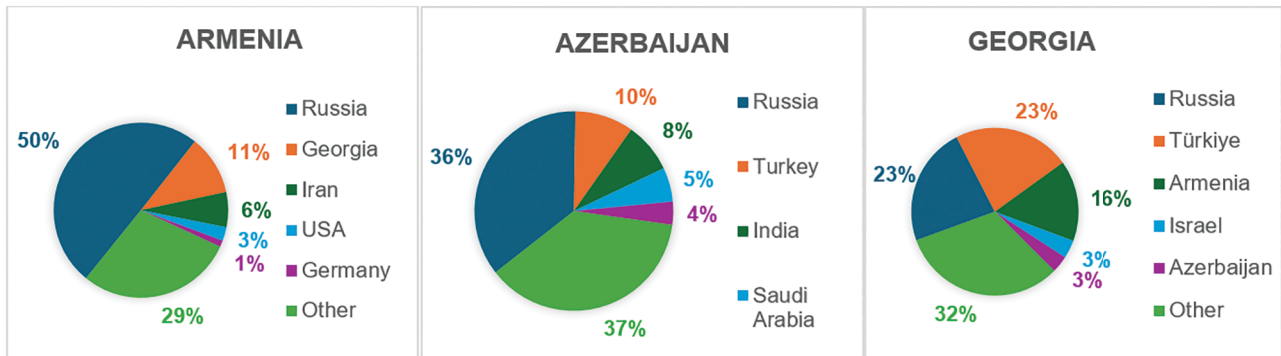
Source: World Tourism Organization (2024), 'UN Tourism Data Dashboard', UN Tourism, Madrid, available online: <https://www.unwto.org/tourism-data/global – and-regional-tourism-performance>.

national visitors arriving for holiday, leisure, and recreation purposes, positioning it as a strong leisure tourism destination. Georgia follows with 52.3%, showcasing its diverse recreational offerings, while Armenia trails with 43.1%, suggesting a need for more aggressive marketing strategies to enhance its appeal in this segment.

In contrast, Armenia leads in the "Visiting Friends and Relatives" (VFR) category, with 30.1% of its visitors motivated by familial ties, compared to Georgia (20.4%) and Azerbaijan (17.2%). This highlights the role of the Armenian diaspora in driving tourism. Meanwhile, Azerbaijan leads in business travel, with 11.0% of visitors arriving for professional reasons, positioning itself as an emerging business hub in the region, followed by Armenia (8.4%) and Georgia (6.8%) (see Figure 2).

Russia is the dominant source market for all three countries, accounting for half of the arrivals in Armenia, 36% in Azerbaijan, and 23% in Geor-

gia. This heavy reliance on Russian tourists underscores the need for diversified source markets to mitigate potential economic risks. Armenia's second-largest source market is Georgia (11%), reflecting the close ties between the two neighbors. In contrast, Azerbaijan attracts a broader range of visitors, with Türkiye (10%) and India (8%) being key contributors, demonstrating its appeal beyond the immediate region. Georgia's strong connections with neighboring countries, especially Türkiye and Armenia, further emphasize its role as a regional tourism hub within the South Caucasus (see Figure 3).

The analysis of international travel receipts from 2014 to 2023 reveals significant trends in the economic impact of tourism in Armenia, Azerbaijan, and Georgia, closely correlating with data on international tourist arrivals and source markets. Armenia's receipts increased from $1.0 billion in 2014 to $3.0 billion in 2023, reflecting a robust re-

FIGURE 4: INTERNATIONAL TRAVEL RECEIPTS 2014-2023 (BLN)
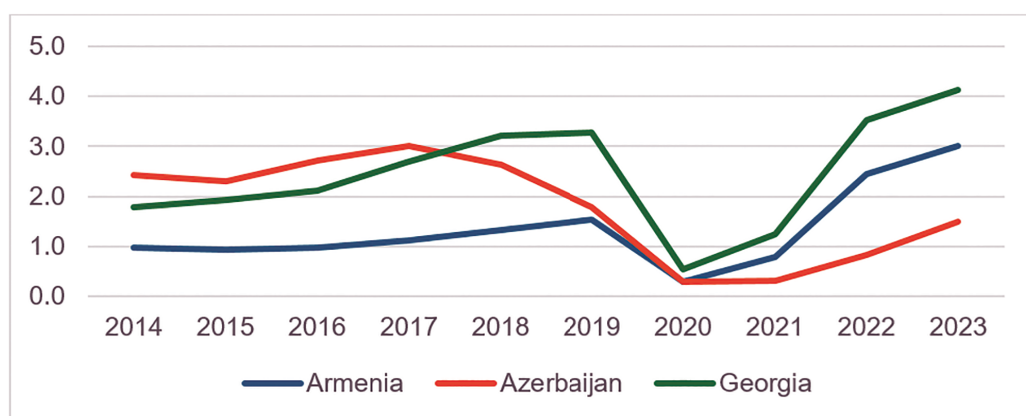
Source: World Tourism Organization (2024), 'UN Tourism Data Dashboard', UN Tourism, Madrid, available online: <https://www.unwto.org/tourism-data/global – and-regional-tourism-performance>.

covery that aligns with its strong visitor numbers, particularly from Russia, which accounts for 50% of arrivals. In contrast, Azerbaijan's receipts peaked at $2.7 billion in 2016 but experienced volatility, dropping to $0.3 billion in 2021 before recovering to $1.5 billion in 2023. This decline can be attributed to the limited international tourism activity during the pandemic and subsequent restrictions despite the country having a strong domestic tourism market. Georgia, consistently the leader in tourist arrivals, demonstrated a significant increase in receipts from $1.8 billion in 2014 to $4.1 billion in 2023, which correlates with its high volume of arrivals, particularly from Russia, Türkiye, and Gulf countries (see Figure 4).

The four-quadrant graph[14] illustrates the relationship between the average length of stay and the average daily expenditure for visitors in the South Caucasus countries. The vertical axis represents the average length of stay, which is 8.4 days across the region, while the horizontal axis shows the average daily expenditure, calculated at 142 USD. The product of these two values gives the average total expenditure per visitor in the South Caucasus, amounting to 872 USD.

A key pattern observed from the graph is that the further east a country is located, the longer the average stay of international visitors. Armenia, positioned furthest east among the South Caucasus countries, has the longest average stay, with visitors staying 15.3 days. Conversely, Azerbaijan, located to the north, sees much shorter stays, averaging only 4.5 days. Georgia falls between these two extremes, with an average stay of 5.4 days. This suggests that visitors tend to spend more time in Armenia despite the relatively low daily expenditure there. The unusually long stays of visitors to Armenia require further research, as this may be attributed to methodological differences or the characteristics of the VFR (Visiting Friends and Relatives) segment, which tends to stay for longer periods.

On the other hand, the graph shows that countries located further north tend to have higher daily expenditures. Azerbaijan stands out with the highest average daily expenditure of 225.8 USD,

significantly exceeding the regional average. This can be attributed to the fact that only air travelers are allowed to cross the border, which tends to generate higher expenditures in the country. Georgia also sees relatively high spending, with visitors spending an average of 147.8 USD per day. Armenia, despite having the longest stay, shows the lowest daily expenditure, with visitors spending only 51.9 USD per day.

The size of the circles in the graph indicates the total expenditure per visitor, combining both the length of stay and daily spending. Azerbaijan, despite the short average length of stay, sees a relatively high total expenditure per visitor. Georgia, with a moderate length of stay and daily expenditure, shows a total expenditure per visitor close to Armenia's at 798 USD and 795 USD, respectively. Although Armenia has a longer stay, the lower daily expenditure results in a total expenditure that is comparable to Georgia.

The diagram below shows that Azerbaijan attracts higher-spending visitors who stay for shorter periods, while Armenia attracts visitors who stay longer but spend less per day. Georgia falls in between, balancing moderate stays with moderate spending (see Figure 5).

In summary, the assessment of tourism intelligence across Armenia, Azerbaijan, and Georgia underscores both the challenges and opportunities for each country. A key challenge that needs to be addressed through coordination is the methodological differences in tourism research. While methodological differences hinder direct comparability, the analysis of common variables reveals important trends in tourism arrivals, receipts, and visitor expenditure patterns. Georgia leads in terms of overall arrivals and revenue, Armenia shows resilience in its post-pandemic recovery, and Azerbaijan attracts high-spending visitors in the region but faces challenges in fully regaining its pre-pandemic momentum due to the border closure.

Furthermore, the dominance of Russian tourists as a common source market reflects a shared reliance on this demographic. This presents both opportunities and risks, as fluctuations in Russian outbound tourism could significantly impact all three countries. Therefore, diversifying tourism is crucial for long-term stability, and this can be

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14   Dwyer, L., Forsyth, P., & Dwyer, W. (2020). *Tourism economics and policy* (2nd ed., Aspects of Tourism Texts, Vol. 5, 282). Channel View Publications.

FIGURE 5: FOUR QUADRANT DIAGRAM OF SOUTH CAUCASUS COUNTRIES: EXPENDITURE PER DAY & AVERAGE LENGTH OF STAY
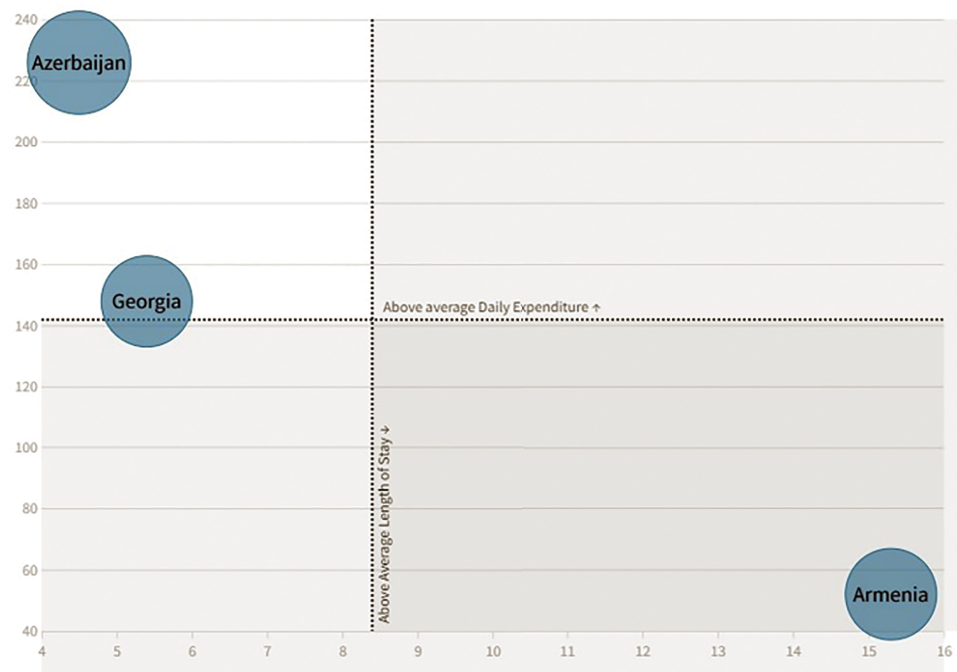
Source: National Statistics Office of Georgia, State Statistical Committee of the Republic of Azerbaijan, & Statistical Committee of the Republic of Armenia. The diagram was constructed using Flourish.

achieved through cooperation among the tourism sectors in the South Caucasus region.

COMPETITIVENESS AMONG THE SOUTH CAUCASUS COUNTRIES

The indicators provided by the World Economic Forum reveal a range of performances in Armenia, Azerbaijan, and Georgia, highlighting both strengths and areas for improvement in their tourism sectors.[15]

Armenia, ranked 72nd in the Travel and Tourism Development Index (TDDI), leads the region in prioritization of travel and tourism (4.8) and demand sustainability (4.7), reflecting strong governmental commitment and resilient tourism demand. The country also performs well in safety and security (5.6) and health and hygiene (5.8). However, challenges persist in the business environment (4.0) and ICT readiness (5.0). Furthermore, Weak infrastructure, particularly in air transport (3.1) and
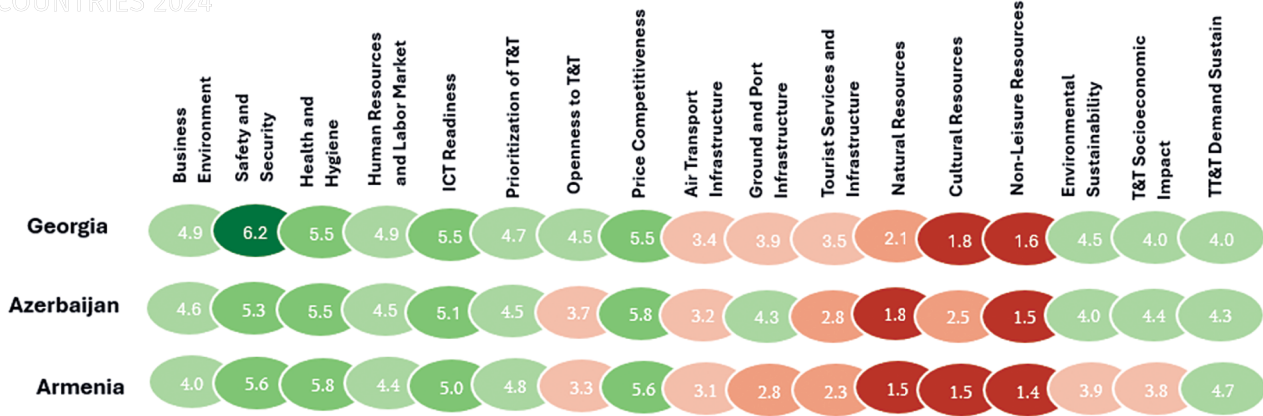
tourist services and infrastructure (2.8), combined with underutilized natural (2.3), cultural (1.5), and non-leisure resources (1.5), limit Armenia's full tourism potential.

Azerbaijan, ranked 56th, leads the region in price competitiveness (5.8) and socioeconomic impact (4.4), positioning it relatively as a cost-effective destination in the region while demonstrating stronger contributions of tourism to its broader economy. Its scores in health and hygiene (5.5) and safety and security (5.3) remain reliable, ensuring a safe and stable environment for visitors. Nevertheless, Azerbaijan faces significant challenges in tourist services and infrastructure (2.8), natural resources (1.8), and non-leisure resources (1.5). Although it is the leader in cultural resources, its score remains low overall (2.5), signaling the need for improvement. These weaknesses reflect underdeveloped tourism infrastructure and limited utilization of the country's natural and cultural assets, emphasizing the need for strategic investment to strengthen these areas and enhance its overall tourism offering.

Georgia, ranked 45th, leads the region in several indicators, particularly excelling in safety and

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15   World Economic Forum. (2024*). Travel & tourism development index 2024: Insight report.* World Economic Forum, 37.

FIGURE 6: HEAT MAP TRAVEL AND TOURISM DEVELOPMENT INDEX OF SOUTH CAUCASUS COUNTRIES 2024

	Business Environment	Safety and Security	Health and Hygiene	Human Resources and Labor Market	ICT Readiness	Prioritization of T&T	Openness to T&T	Price Competitiveness	Air Transport Infrastructure	Ground and Port Infrastructure	Tourist Services and Infrastructure	Natural Resources	Cultural Resources	Non-Leisure Resources	Environmental Sustainability	T&T Socioeconomic Impact	TT&T Demand Sustain
Georgia	4.9	6.2	5.5	4.9	5.5	4.7	4.5	5.5	3.4	3.9	3.5	2.1	1.8	1.6	4.5	4.0	4.0
Azerbaijan	4.6	5.3	5.5	4.5	5.1	4.5	3.7	5.8	3.2	4.3	2.8	1.8	2.5	1.5	4.0	4.4	4.3
Armenia	4.0	5.6	5.8	4.4	5.0	4.8	3.3	5.6	3.1	2.8	2.3	1.5	1.5	1.4	3.9	3.8	4.7

Source: World Economic Forum. (2024). Travel & Tourism Development Index 2024. World Economic Forum. Available online: <https://www.weforum.org/publications/travel-tourism-development-index-2024/interactive-data-and-economy-profiles-afaa00a59c>.

security (6.2) and openness to travel and tourism (4.5) compared to other South Caucasus countries. The country also demonstrates relatively strong performance in the business environment (4.9), ICT readiness (5.5), and air transport infrastructure (3.4). However, like Armenia and Azerbaijan, Georgia faces challenges in its tourist services and infrastructure(3.5). Its natural and cultural resources, along with non-leisure resources, while slightly better than those of its neighbors, remain low (2.1, 1.8, 1.6), highlighting the need for more focused efforts to fully utilize these assets (see Figure 6).

In summary, tourism competitiveness shows a mixed performance across Armenia, Azerbaijan, and Georgia, each with unique strengths and challenges. Armenia demonstrates strong governmental commitment to tourism, excelling in safety, security, and demand sustainability but struggling with weak infrastructure and underutilized natural and cultural resources. Azerbaijan leads in price competitiveness and tourism's socioeconomic impact but faces significant gaps in tourist services and resource utilization. Georgia, though leading in safety, openness, and business environment, shares similar challenges in infrastructure and resource development. To unlock their full potential, all three countries must address these infrastructural and resource-related weaknesses through targeted policies and investment, which could significantly boost the region's overall tourism appeal.

COOPERATION AND COMPETITION IN THE SOUTH CAUCASUS REGION

The above analysis shows that the three countries are well-suited for a coopetition strategy. However, the question remains: Does coopetition have only positive effects, or could it also present challenges and risks for the three countries? Although the positive effects are evident—such as increased regional visibility, enhanced visitor experiences, access to new markets, and international support for regional cooperation and peacebuilding efforts—coopetition can also present challenges. Balancing cooperation and competition can be costly and complex, especially in terms of resource allocation. There may be an unequal distribution of benefits if one country has a more developed tourism infrastructure. Additionally, coordination challenges in aligning priorities, policies, and resources across the three countries may arise.

To maximize the positive effects of coopetition and mitigate the negative ones, it is crucial to clearly distinguish the areas of cooperation and competition. Each country can use its unique strengths to compete for tourists at the company level while collaborating at the government level to enhance the region's overall tourism appeal. As Schiavone and Simoni noted, cooperation occurs when companies complement one another to create a market while still competing for market share. In other words, the three countries can

Table 1: Potential Competitive and Cooperative Activities

COMPETITION	COOPERATION
Cultural Heritage: Each country highlights its unique cultural and historical assets	Joint Marketing and Intelligence Sharing: Develop unified marketing campaigns to promote the South Caucasus as a multi-country destination, while also sharing tourism statistical insights and addressing methodological differences in tourism research.
Adventure Tourism: Promote unique landscapes and adventure activities	Shared Tourist Routes: Create cross-border cultural and heritage routes linking major UNESCO and historical sites.
Gastronomy: Focus on unique wine, national dishes and culinary experiences	Infrastructure Development: Collaborate on transportation links and facilities to improve regional accessibility and ease of travel.
National Branding: Each country develops its own branding and marketing strategies to attract different tourist segments.	Safety and Crisis Management: Coordinate on regional safety protocols, Climate Change Adaptation Strategies and emergency response strategies to enhance tourism security.
Events and Festivals: Promote country-specific cultural events, music, arts, and festivals to attract tourists (e.g., Tbilisi Open Air, Yerevan Jazz Festival, Baku Formula 1).	Sustainable Tourism Initiatives: Joint efforts to promote eco-tourism, conservation, and responsible tourism practices.

collaborate to attract high-value tourists yet still compete for their market share.[16]

The South Caucasus countries have already made significant strides in promoting their unique attractions and competing in the tourism market. Each nation has developed a strong focus on cultural heritage, adventure tourism, and gastronomy, emphasizing its strengths to attract a wide range of visitors (see Table 1).

To unlock the full potential of the region, these countries can now move towards greater cooperation. By working together on joint marketing efforts, they can present the South Caucasus as a unified and diverse destination that offers a seamless travel experience. Shared tourist routes connecting key cultural and historical sites across the region can offer a more comprehensive experience for visitors. Improving cross-border infrastructure and coordinating safety and crisis management measures will also make travel more accessible and secure. Additionally, collaborative efforts in sustainable tourism can ensure the protection of natural resources, attracting environmentally conscious travelers and fostering long-term growth in the region.

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16   Schiavone, F., Simoni, M. (2011). An experience-based view of co-opetition in R&D networks. *European Journal of Innovation Management,* 14(2), 145. <https://doi.org/10.1108/14601061111124867>.

CONCLUSION

The South Caucasus region, encompassing Armenia, Azerbaijan, and Georgia, presents a dynamic yet complex tourism landscape shaped by unique strengths, challenges, and evolving trends. The analysis of tourism intelligence and competitiveness across these countries highlights significant disparities in data collection, market performance, and infrastructure quality.

Armenia has demonstrated resilience in its tourism sector, capitalizing on its rich cultural heritage and natural landscapes to drive growth. The Government Programme 2021-2026 aims to attract 2.5 million international visitors by enhancing direct flights and improving visa regulations. Its focus on promoting niche offerings like agritourism and specialized gastronomy tourism, alongside initiatives like "Armenia, The Hidden Track," aims to increase spending and broaden the country's appeal to high-value tourists. The emphasis on regional development seeks to spread the benefits of tourism more evenly, particularly in underdeveloped areas, aligning with sustainable tourism practices.

Azerbaijan has positioned itself as a destination for high-spending visitors through its strong international connectivity and a focus on providing immersive experiences in culture and well-

ness. The 2023-2026 Tourism Strategy promotes sustainability and regional development through a nine-pillar model, emphasizing the creation of cultural heritage routes and recreational zones. However, Azerbaijan faces challenges in regaining pre-pandemic momentum, underscoring the need to balance leisure and business tourism while enhancing its cultural offerings.

Georgia has emerged as a regional leader in tourism, offering a relatively strong business environment, comprehensive data accessibility, and the highest international tourist arrivals. However, it shares common challenges with its neighbors, including underdeveloped tourism infrastructure and reliance on a narrow range of source markets, particularly Russia. Georgia is transitioning from its 2015-2025 Tourism Strategy to a new plan that integrates tourism and marketing strategies into a cohesive framework. The focus on sustainable tourism development aims to attract high-value tourists while addressing infrastructure needs and utilizing unique experiences, such as its rich wine and gastronomy scene. Georgia's marketing strategy highlights core tourism products and emphasizes the importance of diverse offerings, ensuring its competitiveness in the region.

The concept of coopetition—a blend of co-operation and competition—emerges as a vital strategy for Armenia, Azerbaijan, and Georgia to navigate their shared challenges and enhance their collective tourism appeal. Fostering collaboration enables these countries to develop joint marketing campaigns, create cross-border tourist routes, and establish coordinated standards that strengthen the South Caucasus' image as a regional destination. This approach allows each country to retain its unique identity while benefiting from shared resources and experiences.

Coopetition offers an opportunity for these nations to address common challenges such as underdeveloped infrastructure and reliance on narrow source markets. Pooling resources for infrastructure development, promoting joint tourism products, and using each other's strengths in cultural, natural, and gastronomic offerings can help Armenia, Azerbaijan, and Georgia create a more attractive and sustainable tourism environment. Additionally, coopetition can facilitate tourism data sharing among these countries, enabling them to respond effectively to global tourism trends and challenges. Collaborative efforts could lead to improved service quality, enhanced visitor experiences, and increased competitiveness in attracting high-value tourists.

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გლობალურ სივრცეში ბიზნესის მართვის (მენეჯმენტის, მარკეტინგის და გაყიდვების და სხვა) თეორიულ-მეთოდოლოგიური და პრაქტიკული საკითხები

THEORETICAL, METHODOLOGICAL AND PRACTICAL ASPECTS OF BUSINESS MANAGEMENT (INCLUDING MANAGEMENT, MARKETING AND SALES) IN A GLOBAL CONTEXT

HOFSTEDE'S NATIONAL CULTURAL DIMENSIONS IN THE MANAGERIAL CONTEXT
(Case study)

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ABSTRACT. Efficient management is crucial for organizational development, considering the diverse national cultures worldwide. Solid empirical and theoretical knowledge exists globally to study cultural dimensions' role in this context. However, findings cannot be generalized to every culture, including Georgia, without local research on values and characteristics. This study aimed to identify Georgian society's cultural dimensions, influenced by both Western and Eastern elements due to its unique geographical position and context. Understanding these dimensions is essential for effective human resource management and cross-cultural cooperation in organizations, facilitating successful business activities.

The literature review highlights how national culture impacts management practices, citing studies by various scholars. The research employed Hofstede's cultural dimensions framework, updated with insights from five major Georgian cities, using quantitative methods to ensure representative findings.

Comparing the dimensional scores of cultural orientations of Polish culture studied similarities and differences, driven by shared history and regional proximity. The study's innovative approach addresses gaps in empirical cross-cultural management research in Georgia, offering recommendations for leadership and HR management in local organizations. Hypotheses were formulated and tested using self-administered surveys and SPSS software, confirming Georgia's individualistic tendencies and moderate long-term orientation. Differences between educational levels and national comparisons with Poland were also explored, revealing insights into cultural orientations. Limitations consider studying only two dimensions and five cities in the country.

INTRODUCTION

This research aimed to explore Georgia's unique cultural dimensions, shaped by both Western and Eastern influences, to inform effective human resource management and cross-cultural cooperation.

The literature review discusses how national culture impacts management, referencing studies by different authors. Using Hofstede's[1] cultural dimensions framework, the study conducted a quantitative analysis in five major Georgian cities. It compared Georgian cultural traits with Polish culture, identifying both similarities and differences due to shared history and regional context. The study offers new insights into Georgia's cultural orientations, with findings on individualism and long-term orientation, and explores the impact of education levels. However, it is limited by its focus on just two cultural dimensions and five cities.

LITERATURE REVIEW
Hofstede's Cross-Cultural Model

Welzel and colleagues[2] identified three key factors driving cultural change: socioeconomic shifts, value changes, and political institutions. Socioeconomic changes include technological innovation, improved health and life expectancy, higher income, better education, and increased access to information. The second factor is market expansion, while the third involves political institutions, particularly efforts to enhance democracy. To understand Georgian culture, it's important to consider these influences from the country's recent past. Hofstede and Bond[3] introduced the concept of "Long-term versus short-term orien-

tation" based on the Chinese Value Survey (CVS). The study compared students from 23 countries to highlight these cultural differences.

The Implications of National Culture in Management

Tarhini and colleagues[4] highlight the reciprocal influence between culture and organizational processes, where culture impacts business practices and vice versa. A diverse environment is seen as a valuable opportunity in business.[5] It was suggested that HR practices are shaped by managers' perceptions of workers and tasks,[6,7] which are, in turn, influenced by their cultural orientation.[8] Additionally, it was emphasized that the concepts of self and personality, linked to individualistic cultures, play a key role in branding and advertising.[9] In collectivist societies, self-identity is shaped by the social context, with behavior varying according to the situation.[10] Marketers use various strategies to build loyalty among current and potential customers, with branding often in-

1   Hofstede, G. (2011). Dimensionalizing cultures: The Hofstede model in context. *Online Readings in Psychology and Culture, 2*(1). International Association for Cross-Cultural Psychology.

2   Welzel, C., Inglehart, R. Klingemann, H. D. (2003). The Theory of Human Development and the Development of Human Theory, *Political Psychology 24*(3), pp. 493–511. <https://doi.org/10.1111/1475-6765.00086>.

3   Hofstede, G., Bond, M. (1988). The Confucius Connection: From Cultural Roots to Economic Growth. *Organizational Dynamics 16*(4), pp. 5–21.

4   Tarhini, A., Hone, K., Liu, X., Tarhini, T. (2016). Examining the Moderating Effect of Individual-Level Cultural Values on Users' Acceptance of E-Learning in Developing Countries: A Structural Equation Modeling of an Extended Technology Acceptance Model. *Interactive Learning Environments*. <https://doi.org/10.1080/10494820.2016.1183183>.

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7   Buller, P. F., McEvoy, G. M. (2012). Strategy, Human Resource Management and Performance: Sharpening Line of Sight. *Human Resource Management Review 22*(1), pp. 43–56.

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9   Mooij, M. D. (2015). The Hofstede Model Application to Global Branding and Advertising Strategy and Research. *International Journal of Advertising 29*(1), pp. 84–110.

10   Markus, H. (1991). Culture and the Self: Implications for Cognition, Emotion, and Motivation. *Research Gate 98*(6), pp. 224–246.

corporating personality, especially in individualistic cultures. Hofstede and colleagues noted that long-term-oriented traders focus on building lasting relationships and partnerships based on trust, while those with short-term orientation prefer more immediate, transactional interactions. People from individualistic cultures aim to fulfill their potential. Plim and his colleagues found that individualism, long-term focus, and indulgence are key cultural factors that support national innovation.[11]

Polish Cultural Orientation

Poland's shared Communist past likely influenced its long-term versus short-term orientation. However, according to Hofstede's Insights, Polish society now has a moderately individualistic orientation (55) and an intermediate score (47) for Flexibility vs. Monumentalism (FLX/MON). Poland's geographical location, surrounded by Western individualistic countries, also plays a role in shaping its cultural orientation.

Factors Influencing on Georgian Culture

Georgian historian Giorgi Anchabadze presents the significant influence of Soviet rule on Georgia's cultural and economic development. During the period from 1801 to 1878, Georgia was under Russian imperial control, freedom of speech was suppressed, and harsh punishments on dissenters were imposed. Despite attempts at independence, Georgia fell under Soviet rule, where private property was abolished, industries nationalized, and dissenters persecuted. The Soviet era brought industrialization, collectivization of agriculture, and cultural suppression, stifling artistic expression and limiting economic opportunities. The collapse of the Soviet Union in 1991 resulted in economic downturns across former member states, including Georgia, marking a significant shift in its socio-economic landscape. In conclusion, the literature suggests that in this context, competition in the market was not prioritized, quantity outweighed quality, and there were limited development opportunities across

all fields. Hence, the system upheld collectivistic values in Georgian society.[12]

Ganesan views investment as a key indicator of long-term orientation,[13] while investing in education is considered as crucial for productivity and well-being. Although quality education doesn't guarantee employment or full potential, it increases the chances of success. There is a high demand for higher education, as many students apply for National Unified Exams each year. Additionally, in Georgia's banking sector, various types of savings deposits are offered to help customers save for the future, with different durations and modest returns, illustrating another example of long-term orientation.[14]

As Georgia transitioned from socialism to capitalism, individuals gained the right to own businesses and private property, reflecting a shift toward Western values. The country joined international organizations, including the Council of Europe,[15] World Trade Organization.[16] Former President Eduard Shevardnadze expressed interest in joining NATO[17] and the European Union.[18] The Georgian population strives to get close to European Union and Western values.

11   Prim, A. L., Filho, L. S., Luiz, C., Zamur, G. A. (2017). The Relationship Between National Culture Dimensions and Degree of Innovation. *International Journal of Innovation Management, 21*(3), pp. 5-8.

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16   World Trade Organization. Georgia and the WTO: Accessions. *World Trade Organization*, accessed December 21, 2021. <https://www.wto.org/english/thewto_e/acc_e/a1_georgia_e.htm>.

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18   Ministry of Foreign Affairs of Georgia. Georgia–European Union Relations: Key Events Chronology. *Ministry of Foreign Affairs of Georgia*, accessed December 25, 2021. <https://mfa.gov.ge/en/european-union/903144-saqartvelo-evrokavshiris-urtiertobebis-mnishvnelovani-movlenebis-qronologia>.

Notably, a geographical factor of the country can potentially influence neighboring countries. Specifically, Russia scored 56 in FLX/MON and 57 in Individualism/Collectivism. The score is intermediate but above 50. If we go through the previous (2017-2021) and current (2022-2030) Strategic plans of the Ministry of Education and Science of Georgia, Internationalization is a key strategy in higher and professional education, emphasizing the importance of becoming more globally oriented rather than ethnocentric.

METHODOLOGY

Minkov and Hofstede used data from the World Values Survey to redefine Long-Term Orientation. Their subsequent work, particularly the study by Minkov introduced an updated dimension named Monumentalism-Flexumity. The following model classifies nations into Monumentalist cultures, prevalent in regions like the Middle East and Africa, which emphasize mutual assistance and reputation, and Flexumility cultures, which prioritize flexibility and adaptability.[19] The study considered applying a quantitative approach to generalize findings across a population, ensuring precision through statistical analysis of substantial raw data obtained from respondents. This analysis aimed to identify the indices of several cultural dimensions.[20]

Validation of the Model

The model, widely used by authors at Hofstede's Insights Center, has been utilized to conduct in more than 54 national cultures, using a revised framework by Michael Minkov[21]. Calculating scores for dimensions was performed through regression analysis. In our study, regression analysis was applied alongside published indices from other countries provided by Hofstede's Insights Center.[22]

Research Instrument

In the framework of the study, we utilized an instrument about cultural values provided by the Hofstede Research Center. The survey was meticulously formed by specialized groups, including psychologists. It comprised 102 items on a three-level scale, covering topics related to culture, personality, consumer behavior, and demographic information. The use of forced-choice items enabled precise measurement of concept intensity compared to free-choice items. The instrument was translated into the local language and back to verify accuracy, and each item was contextualized to ensure semantic equivalence. The research sample consisted of individuals with at least a high school education, evenly split between genders.

Research Design of Study N1

The sample for the following study was randomly selected from five major cities to ensure equal opportunity for potential respondents to participate. This approach, grounded in both empirical and theoretical frameworks, aimed for a representative sampling method. The questionnaire was distributed in two stages to reach the desired number of responses, considering past low response rates with lengthy questionnaires. Initially sent to 630 individuals, 122 incomplete responses were excluded, resulting in a 75% response rate from 472 participants who completed all questions. Cross-checking questions helped filter out illogical responses, yielding data from 468 respondents, balanced.

Research Design of Study N2

Focused on understanding Georgians' past experiences, this study calculates scores for IND/COL and LO/ST Orientation. Applying to Hofstede's Insights Research Center's precise sampling methodology, data was analyzed from respondents with higher education levels. This approach allows for comparison of aggregated means and scores from previous studies with

19   Minkov, M., Hofstede, G. (2012). *Hofstede's fifth dimension: New evidence from the World Values Survey. Journal of Cross-Cultural Psychology, 43*, pp. 2–14. <https://doi.org/10.1177/0022022110388567>.

20   Minkov, M. (2018). A revision of Hofstede's Model of National Culture: Old Evidence and New Data from 56 Countries. *Cross-Cultural and Strategic Management 25*(2), pp. 231–256.

21   Minkov, M. (2018b). What values and traits do parents teach their children? New data from 54 countries. *Comparative Sociology, 17*(2).

22   Hofstede's Insights. (n.d.). About Geert Hofstede. Retrieved March 30, 2022. <https://hi.hofstede-insights.com/about-geert-hofstede>.

a larger sample of 200 respondents, comprising 111 females and 89 males, distributed across Tbilisi (59), Kutaisi (46), Batumi (29), Rustavi (39), and Zugdidi (27).

This research also incorporates comparing Georgian cultural indices of Ind/Coll and FlX/MON with those of Polish society. The selection of Poland is justified by its geographical proximity to Georgia and shared historical influence, characterized by collectivistic values and short-term orientation similar to Georgia. The following survey was employed to gather data from both nations, facilitating direct comparison.

RESEARCH FINDINGS
Findings of Study N1

According to the obtained data from all age groups, the calibrated equation yielded a score of approximately 59.45 for the Individualism/Collectivism (IND/COLL) dimension in Georgian society, whereas the regression analysis indicated a score of approximately 54.05. This suggests that Georgian culture leans towards individualism. Conversely, on the Flexumility/Monumentalism (FLX/MON) dimension, Georgia scored lower with a calibrated score of approximately 17.66 and a regression-based score of 57.4, indicating a long-term-oriented culture. In summary, the study confirms the first and second hypotheses that Georgian culture is both individualistic and long-term oriented. Despite potential deviations attributed to the research instrument, the general orientation remains consistent, albeit potentially slightly lower in score.

Research Findings of Study N2
In both samples, Georgian society demonstrated consistent tendencies towards individualism and long-term orientation. Despite the small differences, the IND scores were 54.05 and 54.9, and the LTO scores were 57.4 and 57.9. In conclusion, it is anticipated that Georgian society needs certain time and generational change to increase scores in the following dimensions. A shift towards Western values is expected among younger people with modern education and less Soviet influence.

Research Findings of Study N3
Despite differences among nations, comparing cultural orientations based on two dimensions through scores provides interesting insights. Using aggregated mean data from Hofstede's Insights Research Center, we rescaled and converted cultural scores to a 0-100 scale, applying regression analysis to evaluate each orientation's level. It's notable that, for cross-cultural comparisons, we utilized scores from a smaller sample (the individuals with only high school education) similar to other countries. In terms of scores, Poland got around 55.72 on the scale for IND/COLL and around 47.12 for FLX/MOM. The scores underline Polish culture's higher level of individualism compared to Georgian society, while Polish scores for Flexumility-Monumentalism were lower than those for Georgia. Polish society exhibited higher individualism scores than Georgian society. However, Georgian culture showed higher scores for Long-Term Orientation (LTO).

FIGURE 1 – COMPARATIVE SCORES. SOURCE: AUTHOR'S RESEARCH
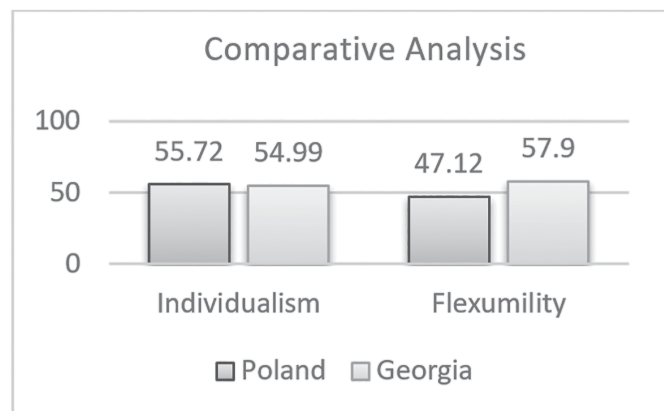
The differences in the Flexumility dimension may stem from factors such as social desirability bias, varying sample sizes, and data being collected at different times.

Research limitations
Every study has limitations. Scholars agree that larger sample sizes lead to more accurate representations of the general population, so expanding the sample size in each city could be a focus for future research. Additionally, including more cities would provide a more accurate

evaluation of cultural dimensions at the national level. The current model does not analyze other dimensions based on survey data, so we cannot confirm the existence of dimensions like power distance or indulgence vs. restraint. We hope future research will develop a more comprehensive model with relevant items for analysis. It was emphasized that nations may not be the best unit of analysis for cultural differences, as countries often contain various subcultures. They also noted that culture is dynamic and evolving due to globalization, technology, and other challenges. Therefore, it's important to periodically study cultural dimensions to maintain up-to-date knowledge for future development.[23]

CONCLUSION

The study underscores the critical importance of examining national cultural orientations across various domains. The theoretical framework highlighted in the research underscores how cultural dimensions significantly impact organizational behavior and related fields.

In addressing the empirical gap within the Georgian cultural context, this research employed a meticulous methodology encompassing diverse target groups and precise sample selection. By calculating dimensional scores from two distinct samples, the study revealed insights into the lingering influence of the Soviet experience on older generations.

The findings, derived from both smaller and comparative analyses with over 50 other national cultures studied by Hofstede's Insights Research Center, yielded compelling results, particularly in the comparison of Georgian and Polish cultures. The hypotheses concerning Individualism orientation were substantiated, with intermediate scores. Similarly, the acceptance of Georgian society's Long-Term Orientation aligns with the study's expectations despite some non-significant variables in regression analysis. Surprisingly, Polish culture exhibited a lower score in Long-Term Orientation compared to Georgian culture while demonstrating a higher Individualism orientation.

Despite its limitations, this study holds implications for organizational contexts in Georgia. The theoretical foundation offers robust insights into cultural dimensions' role in organizational development. Generalizable findings at the national level can inform management practices, ensuring organizational alignment with cultural preferences. Recommendations for managing individualistic orientations include promoting fairness, involving employees in decision-making, implementing formal job appraisal systems, offering motivating rewards, granting autonomy, and providing developmental opportunities. Team-building efforts should be prioritized for tasks requiring collective effort among individuals with the following orientation. Lastly, management should engage in ongoing dialogue regarding long-term organizational goals and invest in employee professional development to support long-term employment. Flexibility in managing human resources across Georgian and Polish societies is crucial.

In conclusion, this study and its insights into cultural orientations offer valuable guidance for scholars and managers navigating organizational development challenges.

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