According to the Decision of the NAQAER No. 15 from 26.02.2021, JSS is classified as

B+ journal

The Journal of Social Sciences is indexed in:

1. DOAJ (Directory of Open Access Journals)
2. ROAD (Directory of Open Access scholarly Resources)
3. CEEOL (Central and Eastern European Online Library GmbH)
4. INDEX COPERNICUS (IC)
5. ZENODO
6. ERIH PLUS (European Reference Index for the Humanities and the Social Sciences)

Main subjects areas of the Journal:

- Economics Policy and Economic Policies
- Economics and Management
- Finance and Accounting
- Marketing and Logistics
- Arts and Design
- Pedagogy and Psychology
- Sociology
- Philosophy
- History
- Philology and linguistics
- Law

How to publish a paper:

1. Send the manuscript and information about the author to the **Editorial Board address:** jes@meridian.utm.md, rodica.sturza@chim.utm.md
2. Manuscripts are accepted only by e-mail, in template file (https://jss.utm.md/)
3. Articles are accepted in original language, with name, abstract and keywords in English.
4. After a review, you will be notified of the editorial board's decision.
5. After the Journal has been published, we will send it to you immediately by mail.

CONTENT

CONŢINUT

OPEN ACCESS

CC BY

INTEGRATED REPORTING QUALITY DETERMINANTS: THE CASE OF BASIC MATERIALS AND INDUSTRIAL COMPANIES

Ana-Carolina Cojocaru (Bărbieru)[1*], ORCID: 0000-0001-9271-5932,
Svetlana Mihaila[1], ORCID: 0000-0001-5289-8885,
Veronica Grosu[2], ORCID: 0000-0003-2465-4722

[1]Academy of Economic Studies of Moldova, 61 Mitropolit Gavriil Bănulescu-Bodoni Str., Chisinau, Republic of Moldova
[2]„Stefan cel Mare” University of Suceava, 13 Univesitatii Str., Suceava, Romania
*Corresponding author: Ana-Carolina Cojocaru (Bărbieru), carolinabarbieru@gmail.com

Abstract. This study investigates the determinants of integrated reporting quality in the context of basic materials and industrial companies. The motivation stems from the need to enhance reporting quality and provide guidance to companies and academia. Specific hypotheses were formulated, including the influence of profitability, company size, age, and board size on integrated reporting quality. The research aims to offer insights into these factors' impact. The study employs a mixed-method approach involving quantitative regression analysis and qualitative content analysis. Findings reveal that profitability is not a significant determinant of integrated reporting quality, while larger companies exhibit higher-quality reports. Younger firms tend to present more elaborate reports. The study validates the role of board size in enhancing reporting quality. These results contribute to refining integrated reporting standards, enhancing transparency, and guiding strategic decisions for sustainable development.

Keywords: *corporate transparency, empirical analysis, integrated reporting factors, sustainability.*

Rezumat. Această cercetare investighează factorii determinanţii ai calităţii raportării integrate în contextul companiilor din domeniul industrial şi al producerii materialelor de bază. Motivaţia studiului provine din necesitatea de a îmbunătăţi calitatea raportării şi de a oferi îndrumări atât companiilor, cât şi mediului academic. Au fost formulate ipoteze specifice, inclusiv influenţa rentabilităţii, dimensiunii şi perioadei de activitate a companiei, şi dimensiunea consiliului de administraţie asupra calităţii raportării integrate. Scopul cercetării este de a oferi perspective cu privire la impactul acestor factori. Studiul utilizează o abordare mixtă care implică analiza de regresie cantitativă şi analiza de conţinut calitativă. Concluziile demonstrează că rentabilitatea nu este un determinant semnificativ al calităţii raportării integrate, în timp ce companiile mai mari prezintă rapoarte de calitate superioară. Companiile mai tinere tind să prezinte rapoarte mai elaborate. În acelaşi timp, studiul validează rolul dimensiunii consiliului de administraţie în îmbunătăţirea calităţii raportării. Aceste rezultate contribuie la consolidarea standardelor de raportare integrată, îmbunătăţirea transparenţei şi orientarea deciziilor strategice pentru dezvoltare durabilă.

Cuvinte cheie: *transparență corporativă, analiză empirică, factorii raportării integrate, sustainabilitate.*

1. Introduction

The purpose of this research is to identify the factors influencing the improvement of integrated reporting quality in companies within the industrial sector. To achieve this goal, the following objectives have been established:

1. Analyzing and evaluating the quality of integrated reports within the selected sample.
2. Interpreting the obtained data and identifying potential determinants in enhancing the quality of integrated reports.

An analysis of a sample of 35 enterprises has been proposed, located across different continents (Africa, Asia, South America, Australia, and Europe), as indicated on the International Integrated Reporting Council (IIRC) website in the Company Search section. This research is significant for companies, stakeholders, as well as the academic environment.

In general, the results of previous research indicate that companies with higher return on equity (ROE) are more likely to make more extensive and detailed disclosures regarding their corporate social responsibility (CSR) practices [1,2].

These studies have found that higher ROE provides companies with greater available financial resources to invest in CSR projects and initiatives [3]. Furthermore, companies with increased ROE may enjoy a better reputation among investors and consumers, which can motivate them to engage in more comprehensive CSR disclosures [4].

Companies with higher ROE may exhibit greater transparency and responsibility in their activities, as their financial performance is more closely monitored by investors and other stakeholders [5].

However, there are also some studies that have provided contradictory results or have not identified a significant relationship between ROE and CSR disclosure [6]. This could be attributed to differences in methodologies and measurements used in various studies, or to the influence of other factors such as company size or industry.

In conclusion, despite some discrepancies in study results, it is generally observed that ROE has a significant influence on CSR disclosure. This suggests that strong financial performance can encourage companies to make more extensive disclosures regarding their corporate social responsibility practices.

H1. Company profitability has a positive influence on the integrated report quality

Studies in the field indicate that larger companies, with higher assets, revenues, and employee numbers, are more likely to report more extensive non-financial information [7]. This is primarily due to the greater financial resources and capacities they have available to develop and implement non-financial reporting systems, as well as to monitor and report performances in this area. Larger companies are more inclined to provide a more detailed and comprehensive presentation of CSR information compared to smaller ones [8]. In fact, there is a positive correlation between company size and the quality of CSR reporting, suggesting that larger-sized firms can offer a better presentation of their social responsibility practices [9]. As the size of a company increases, so does the pressure exerted on it by various stakeholders, such as investors, consumers, non-governmental organizations, and regulatory authorities, to be more transparent and report non-financial information in more detail [10]. Large companies face higher demand from these stakeholders to justify their impact on the environment and society, as well as to demonstrate their commitment to responsible practices. Larger entities enjoy greater visibility in the market and society at large, being

scrutinized by analysts and being more sensitive to their public image. Consequently, they have more potential users of the financial information they provide, which can lead to a greater demand for information and higher pressure to disclose additional information [11].

Moreover, research also reveals a positive relationship between company size and the level of transparency in non-financial reporting [12]. Larger companies, which have broader exposure and complex interactions with stakeholders, are more likely to adopt international standards and guidelines for non-financial reporting and to follow best practices in this field [13].

In conclusion, it can be inferred that the size of a company has a significant impact on the level of non-financial reporting. Larger companies are more inclined to report more extensive non-financial information due to their greater resources and higher pressure from stakeholders. This brings benefits, including enhancing trust and the company's reputation, as well as aligning with regulatory requirements and business environment expectations.

H2. Integrated report quality is positively influenced by the company's size

Various studies have offered diverse perspectives on the influence of a company's age on the quality of non-financial reporting [14]. Some studies suggest that older companies tend to have more well-established systems and processes, which can contribute to higher-quality non-financial reporting [15]. These companies may have accumulated more experience and knowledge over time, allowing them to better understand the significance of non-financial information and communicate it effectively [16].

On the other hand, there is research supporting that younger entities may exhibit higher levels of innovation and adaptability, which can translate into proactive and comprehensive non-financial reporting. These companies might be more attuned to emerging sustainability issues and have a greater inclination to experiment with new reporting practices. Moreover, the industry context can also play a role. Some studies have found that businesses operating in industries with greater environmental or societal impact are more likely to prioritize and offer better non-financial reporting. This can be attributed to stakeholder pressures, regulatory requirements, and specific reputational risks associated with these industries. It is important to note that the relationship between a company's age and the quality of non-financial reporting is complex and can be influenced by various factors such as organizational culture, stakeholder expectations, regulatory frameworks, and reporting standards. Further research is needed to fully understand the nuances of this relationship and its implications for corporate reporting practices.

Overall, the influence of a company's age on the quality of non-financial reporting remains a subject of ongoing study and debate, with findings varying based on specific contexts and the methodology of each study. There are also studies that have not identified a correlation between a company's age and the quality of non-financial reporting [17].

H3. The quality of the integrated report is positively influenced by the company's operating period

Perspectives on the influence of the board of directors' size on the quality of the integrated report can vary based on research and specific context. Some studies suggest that a larger board of directors can have a positive impact on the quality of the integrated report [18].

A larger board can bring diverse expertise and perspectives, which can contribute to a more comprehensive and well-grounded process of integrated reporting [19]. Different opinions and competencies can enhance oversight and accountability in the reporting process, ensuring that all relevant aspects of the company's performance are considered and communicated appropriately [20].

There are also studies supporting a negative relationship between the board of directors' size and the quality of the integrated report. These studies argue that a larger board might face difficulties in decision-making, coordination, and information processing, which can affect the quality and coherence of integrated reporting [21]. A smaller board, with focused and efficient decision-making processes, might be more effective in producing a high-quality integrated report.

Other research has found mixed or inconclusive results regarding the influence of the board of directors' size on the quality of the integrated report. These studies emphasize the importance of considering other factors such as board composition, independence, expertise, and the overall governance structure of the organization, which can interact with board size to influence reporting outcomes [22].

It's important to note that the influence of the board of directors' size on the quality of the integrated report is complex and context-dependent. The specific dynamics of each company, industry, and regulatory environment can play a role in shaping this relationship. Further research is needed to better understand the mechanisms and conditions under which the board of directors' size influences the quality of integrated reporting.

H4. The size of the board of directors has a positive influence on the quality of the integrated report

In conclusion, perspectives on the influence of the board of directors' size on the quality of the integrated report are varied, and results can vary based on the specific study and context.

2. Materials and Methods

The quantitative method was employed to achieve the objectives, involving the collection and analysis of integrated reports from 35 companies for the year 2022. The relationship between independent variables and the quality of integrated reports was tested using a regression model. The cross-sectional analysis was selected instead of a panel analysis, given the availability of fewer relevant data points for analysis and the low variability of the dependent variable over time.

The data used in this research were extracted from the integrated reports of 35 companies in the industrial and basic materials sector for the year 2022.

Table 1 illustrates the sample distribution across categories, based on information obtained from the International Integrated Reporting Council website. It can be observed that the distribution is nearly equal, with a slight predominance of companies in the basic materials sector.

Table 1

Distribution of the sample by company types

IR categories	Frequency	
	Absolute	Relative
Basic materials	19	54.28571
Industrials	16	45.71429
Total	35	100

Source: Prepared by the authors.

Table 2 presents the distribution of the sample by continents. The companies included in the sample originate from 5 different continents, with a greater presence of South African enterprises due to the mandatory requirement of integrated reporting in that country. The integrated reports were downloaded from the respective company websites.

Distribution of the sample by continents

Continent	Frequency	
	Absolute	Relative
Africa	17	48.57143
South America	1	2.857143
Asia	7	20
Australia	2	5.714286
Europe	8	22.85714
Total	35	100

Source: Prepared by the authors.

The regression analysis was performed to test the relationship between independent variables and integrated report quality (IRQ). Because the data available for analysis are limited and the variability over time reduced, cross-sectional approach was applied instead of a longitudinal analysis. The estimated regression model included the following variables.

$$IRQ = \beta_0 + \beta_1 ROE + \beta_2 S + \beta_3 AGE + \beta_4 BS + \varepsilon_i, \tag{1}$$

where:

IRQ – integrated reporting quality;

ROE – return on equity;

S – company size;

AGE – company age;

BS – board size.

The model used in this study to assess the quality of integrated reporting was built based on evaluation attributes in line with the IIRC principles. A visual content analysis was conducted to develop this model. Additionally, certain aspects of the dashboard proposed by Pistoni et al. [23] were incorporated, concentrating on four primary components, as: content, context, format, and audit and reliability.

The context assessment involved analyzing if reports featured an introductory section covering established objectives, motivations, manager identification, stakeholders, title, standards conformity, and director's commitment.. The presence or absence of each variable was evaluated, with one point awarded for the presence of the variable and 0 if it was absent. The maximum possible score was 7 points.

Content was evaluated based on its compliance with the IIRC framework requirements, which encompass eight elements and two fundamental concepts: strategy and resource allocation, governance, internal and external organizational environment, risks and opportunities, performance, perspectives, basis of presentation, business model, value creation, and capitals. Each of the ten variables received a score of 0 for lacking these aspects in the report and 1 for the presence and description of the above-mentioned elements and concepts. The maximum score for the content category was 10 points.

The form of the integrated report was evaluated by examining the number of pages, accessibility, and readability/clarity of the report, following the scoring proposed by Pistoni et al.[23], as shown in Figure 1. A score ranging from 0 to 5 was assigned, in accordance with the appreciation levels. The maximum score for the format category was 15 points.

It is important for an integrated report to be concise enough to be accessible and easy to read, without becoming overly long and tedious for readers. The ideal length of the report depends on the target audience and the essential information it needs to contain.

Score	0	1	2	3	4	5
Nr. of pages	Not applicable	>201 pages	200-151 pages	150-101 pages	100-51 pages	<50 pages

Figure 1. Form area assessment scoring by number of pages in report.
Source: According to the study of researchers Pistoni et.al. [23].

Score	Accesibility of the report
0	Not applicable
1	Hard copy report
2	PDF file on firm website only
3	Contents of the report available on the firm website
4	Interative platform where the report can be browsed
5	Possibility to create personalized report; interactive platform; report on social media

Figure 2. Form area assessment scoring by accesibility of integrated reports.
Source: According to the study of researchers Pistoni et.al. [23].

The availability of the integrated report in various formats is extremely important to ensure accessibility and efficient use of the information contained in the report. Thus, the score that can be applied to different reports were established, according to the Figure 2. Offering the integrated report in different formats, such as digital format, printed format, or an accessible format for individuals with visual impairments, ensures that the information is accessible and usable by diverse categories of readers.

Presenting the report in digital formats allows readers to quickly access and navigate through the content using search, bookmarks, or internal links. It also provides the flexibility to access the report from various devices, such as computers, tablets, or mobile phones, for convenient use. Furthermore, publishing the report in different formats facilitates sharing and distribution of the report to various stakeholders, such as employees, investors, customers, or other organizations. This promotes transparency and effective communication of information. Additionally, online display of the report reduces reliance on printed copies and contributes to environmental conservation by saving natural resources and reducing waste.

The clarity of an integrated report is essential to ensure a proper understanding of the presented information. An integrated report should be written in a clear, concise, and easily comprehensible style. The use of accessible language is recommended, avoiding technical terminology that could be difficult to grasp for readers who are not experts in the specific field. Furthermore, it is necessary for the report to have a clear and coherent structure, employing relevant titles and subtitles to indicate each section and guide the reader through the content. The inclusion of graphs, tables, and other visual elements to illustrate and highlight important information is a crucial aspect for a readable report. Moreover, incorporating hyperlinks that redirect the reader to another page within the report or to an

external cited source is recommended. The reports were evaluated following the scoring system presented in Figure 3.

0	• Report quite not clear; absence of tables, figures, graphs, etc.
1	• Sparse inclusion of graphs and tables; qualitative approach; absence of the index, abbreviations table, etc.
2	• Sufficient utilization of graphs and tables, yet an index with minimal details.
3	• Graphs and tables enhance understanding; balance narrative with visuals; references avoid redundancy in other sections.
4	• Excellent graphs, detailed index, and external hyperlinks for references.
5	• Great layout, cohesive index, linked to narrative and visuals.

Figure 3. Form area assessment scoring by comprehensibility of the reports.
Source: According to the study of researchers Pistoni et.al. [23].

To assess the audit and reliability aspects, consideration was given to conducting an internal audit and third-party verification. A score of 0 was assigned in the absence of these elements, while a score of 1 was attributed if they were present. The maximum score was 2.

The final score representing the quality of the integrated report is the sum of scores for all four categories, with a maximum score of 34 points, Figure 4.

Background	**Contents**
•Objectives	•Strategy and resource allocation
•Motivations	•Governance
•Person in charge of IR	•Overview and external environment
•Document's beneficiaries	•Risks and opportunities
•IR title	•Performance
•Consistency with disclosure standards	•Outlook
•CEO letter	•Basis of presentation
	•Business model
	•Value creation
Maximum score: 7	•Capitals
Scores: 0 or 1	
	Maximum score: 10
	Scores: 0 or 1

Form	**Assurance and reliability**
•Number of pages	•Internal audit
•Accessibility	•External audit
•Readability/clarity	
	Maximum score: 2
Maximum score: 15	**Scores: 0 or 1**
Scores: from 0 to 5	

Figure 4. Overview of the scoring model.
Source: According to the study of researchers Pistoni et.al. [23].

3. Results and Discussion

Tabel 3 presents relevant descriptive statistics for the analyzed variables. These statistics provide a general overview of the distribution and characteristics of the variables within the data sample. For the dependent variable, CRI (Integrated Report Quality), in can be observed that the mean is 21.614, indicating a central value around which the data are concentrated. It can be noted that, on average, the quality of integrated reports is quite good. The standard deviation of 5.407 reflects the data dispersion around the mean and provides us with a measure of variability.

Table 3

Statistical Summary of Continuous Variables

Variables	Obs.	Avg	St Dev	Min	Max
IRQ	35	21.614	5.407	12	30
ROE	35	11.23	15.55	-24.9	50.84
S	35	22.708	1.933	18.64	25.81
AGE	35	78.94	46.33	15	165
BS	35	10.2	2.153	6	15

Note: IRQ – integrated reporting quality; ROE – return on equity; S – company size; AGE – company age; BS – board size; Obs. – observation; Avg. - average; St Dev – standard deviation.

The reflected ROE values in the descriptive statistics provide relevant information about the financial performance of companies in the sample. The average ROE of 11.23 indicates the average value of return on equity for the analyzed companies. This can be interpreted as a measure of overall efficiency and profitability of these companies. The standard deviation of ROE at 15.55 gives us a measure of the dispersion of these values around the mean, indicating a greater variation in return on equity among the companies in the sample. The minimum value of -24.9 and the maximum value of 50.84 for ROE allow us to identify the companies with the lowest and highest ROE and evaluate the diversity of their financial performance.

The values of company size, expressed by the natural logarithm of total assets, presented in the descriptive statistics indicate a minimum value of 18.64 and a maximum value of 25.81, with an average of 22.708. The standard deviation of the size value is 1.933, indicating that most companies are of similar size.

The operating period of the analyzed companies varies from 15 to 165, with an average of 78.94 and a standard deviation of 46.33, indicating a greater variation in terms of company age within the sample. The board size recorded minimum values of 6 and maximum values of 15 points, with an average of 10.2 and a standard deviation of 2.15.

Table 4

Pearson correlation coefficients

	IRQ	ROE	S	AGE	BS
IRQ	1.0000				
ROE	0.0296	1.0000			
S	0.3233	0.1808	1.0000		
AGE	0.3162	-0.1102	0.4177	1.0000	
BS	0.3832	0.1476	-0.0365	0.3240	1.0000

Note: IRQ – integrated reporting quality; ROE – return on equity; S – company size; AGE – company age; BS – board size.

Table 4 presents Pearson correlation coefficients between the analyzed variables. These coefficients provide information about the direction and strength of linear relationships between pairs of variables. The values of the Pearson correlation coefficients range between -1 and 1. A correlation coefficient of 1 indicates a perfect positive correlation, while a coefficient of -1 indicates a perfect negative correlation. A coefficient close to 0 suggests a lack of linear correlation between variables.

It can be observed that the Pearson correlation coefficients presented in the table have positive values for the associations between profitability, company size, company age, and board size. The strongest positive linear correlation is observed for the board size variable.

Table 5

The results of the linear regression

	Coefficients	Standard Error	P-value
IRQ	16.4689	13.1803	0.2211
ROE	-0.2155	0.4215	0.6129
S	0.1174	0.0639	0.0761
AGE	0.1047	0.5411	0.8480
BS	0.0462	0.0203	0.0303

Note: IRQ – integrated reporting quality; ROE – return on equity; S – company size; AGE – company age; BS – board size.

A multiple linear regression analysis was conducted to test the research hypotheses. Table 5 presents the results of the regression regarding the relationship between the quality of the integrated reports and the selected variables. The adjusted R-squared coefficient is 0.1729, meaning that approximately 17% of the variation in integrated report quality can be explained by the proposed model. The table presents the regression coefficients for all explanatory variables in relation to the dependent variable, integrated report quality. The results do not validate the first hypothesis, showing a non-significant negative correlation between ROE and the quality of integrated reports, with a p-value of 0.6129. The test/statistics results indicate that the proposed hypothesis was not validated at the specified p-value. Consequently, there is not enough statistical evidence to support the formulated hypothesis. These findings suggest that the quality of integrated reports presented by companies in the industrial and basic materials sector is not influenced by the level of profitability.

The second hypothesis was validated, indicating that companies in the industrial and basic materials sector of larger sizes are more likely to provide high-quality information in their integrated reports. The results reveal a positive correlation between company size and integrated report quality, with a p-value of 0.0761, at a significance level of 10%. The credibility, economic importance, and social impact of larger companies generate demands from stakeholders for more information regarding social responsibility practices.

The results obtained in the analysis contradict hypothesis 3, with a *p*-value below the significance level (*p*=0.8480). This finding indicates that there is no significant positive influence of one variable on the other. This outcome may be attributed to the tendency of younger organizations to craft more sophisticated reports in alignm.

The last hypothesis was confirmed, with results showing a positive relationship with a p-value of 0.0303. In this regard, it can be concluded that a board of directors composed of more members will influence the presentation of a high-quality integrated report. This

determining factor can be explained by the involvement of the expertise of several specialists, resulting in a readable and concise report.

4. Conclusions

Analyzing studies in the field of integrated reporting has led to the idea that there is a need to highlight the determinants that contribute to the improvement of integrated reporting quality. This aspect is crucial for companies that have not yet adopted integrated reporting. The uncertainty these companies face might hinder them from initiating integrated reporting, as they might not know what, how, and in what form they should present their reports to obtain benefits rather than the opposite. In this regard, the research aimed to provide an answer to companies and the academic environment regarding the factors that determine high-quality integrated reporting. Furthermore, this is the first study that investigated integrated reporting quality in the context of the industrial and basic materials sector.

Findings reveal that profitability is not a significant determinant of integrated reporting quality, while larger companies exhibit higher-quality reports. Younger firms tend to present more elaborate reports. The study validates the role of board size in enhancing reporting quality.

This research is subject to several limitations specific to its field of application. First, focusing on the industrial and basic materials sector limits the possibility of generalizing the obtained results to other sectors. Second, the surveyed sample is relatively small. In future research, it would be useful to expand the sample by focusing on various sectors to enhance the generalization of results. Finally, longitudinal studies could be considered to track the evolution of integrated reporting quality over time.

While integrated reporting encompasses financial and non-financial data, evaluating the latter's quality remains a persisting challenge. Subsequent research ought to prioritize developing techniques for assessing non-financial information's quality and its holistic impact on the overall quality of integrated reporting.

It is also important to assess the impact of integrated reporting quality on stakeholders' decisions and behavior. Future research can analyze how integrated reporting quality influences investment decisions, public perception, and relationships with the business environment.

Future research can contribute to the development and improvement of standards and guidelines related to integrated reporting. By evaluating current practices and identifying areas for improvement, researchers can contribute to the development of more effective and relevant guidelines to ensure integrated reporting quality.

Simultaneously, technological advancements like artificial intelligence and big data analysis can play a significant role in assessing integrated reporting quality. Future research should explore how these technologies can be used to enhance the collection, analysis, and presentation of information in integrated reporting.

Conflicts of Interest: The authors declare no conflict of interest.

References
1. Nawaiseh, M.E. Do firm size and financial performance affect corporate social responsibility disclosure: employees' and environmental dimensions?. *American Journal of Applied Sciences.* 2015, 12(12), pp. 967-981.

2. Iredele, O.O. Examining the association between quality of integrated reports and corporate characteristics. *Heliyon.* 2019; *5*(7): pp. 1-8.
3. Gaio, C.; Henriques, R. Social responsibility and financial performance: the case of STOXX Europe Index. In Corporate Social Responsibility, Orlando B., IntechOpen, 2020, pp. 201-218.
4. Arshad, R.; Othman, S.; Othman, R. Islamic corporate social responsibility, corporate reputation and performance. *International Journal of Economics and Management Engineering* 2012, 6(4), pp. 643-647.
5. Veronica Siregar, S.; Bachtiar, Y. Corporate social reporting: empirical evidence from Indonesia Stock Exchange. *International journal of Islamic and Middle Eastern finance and management* 2010, 3(3), pp. 241-252.
6. Hidayat, W.W. The influence of size, return on equity, and leverage on the disclosure of the corporate social responsibility (CSR) in manufacturing companies. *International Journal of Education and Research* 2017, 5(8), pp. 57-66.
7. Lee K.H. Does size matter? Evaluating corporate environmental disclosure in the Australian mining and metal industry: A combined approach of quantity and quality measurement. *Business Strategy and the Environment* 2017, 26(2), pp. 209-223.
8. Yuan, Y.; Tian, G.; Yi Lu, L.;Yu, Y. CEO ability and corporate social responsibility. *Journal of Business Ethics* 2019, 157, pp. 391-411.
9. Malik, F.; Wang, F.; Naseem, M.A.; Ikram, A.; Ali, S. Determinants of Corporate Social Responsibility Related to CEO Attributes: An Empirical Study. *SAGE Open* 2020, 10(1), pp. 1-12.
10. Duran, IJ.; Rodrigo, P. Why do firms in emerging markets report? A stakeholder theory approach to study the determinants of non-financial disclosure in Latin America. *Sustainability* 2018, 10(9), 3111.
11. Frias-Aceituno, JV.; Rodríguez-Ariza, L.; Garcia-Sánchez, I.M. Explanatory factors of integrated sustainability and financial reporting. *Business strategy and the environment* 2014, 23(1), pp. 56-72.
12. Sierra-Garcia, L.; Garcia-Benau, M.A.; Bollas-Araya, H.M. Empirical analysis of non-financial reporting by Spanish companies. *Administrative Sciences* 2018, 8(3), pp. 29.
13. Spallini, S.; Milone, V.; Nisio, A.; Romanazzi, P. The dimension of sustainability: A comparative analysis of broadness of information in italian companies. *Sustainability*, 2018,13(3), 1457.
14. Withisuphakorn, P.; Jiraporn P. The effect of firm maturity on corporate social responsibility (CSR): do older firms invest more in CSR?. *Applied Economics Letters* 2016, 23(4), pp. 298-301.
15. Tiron-Tudor, A.; Nistor, C.S.; Ştefănescu, C.A.; Zanellato, G. Encompassing non-financial reporting in a coercive framework for enhancing social responsibility: romanian listed companies'case. *Amfiteatru Economic* 2019, 21(52), pp. 590-606.
16. D'Amato, A.; Falivena, C. Corporate social responsibility and firm value: Do firm size and age matter? Empirical evidence from European listed companies. *Corporate Social Responsibility and Environmental Management* 2020, 27(2), pp. 909-924.
17. Činčalová, S.; Hedija, V. Firm characteristics and corporate social responsibility: The case of Czech transportation and storage industry. *Sustainability* 2020, 12(5), 1992.
18. Vitolla, F.; Raimo, N.; Rubino, M. Board characteristics and integrated reporting quality: An agency theory perspective. *Corporate Social Responsibility and Environmental Management* 2020, 27(2), pp. 1152-1163.
19. Akhtaruddin, M.; Hossain, M.A.; Hossain, M.; Yao, L. Corporate governance and voluntary disclosure in corporate annual reports of Malaysian listed firms. *J. Appl. Manag. Account. Res* 2009, 7, pp. 1–19.
20. Chen, C.J.; Jaggi, B. Association between independent non-executive directors, family control and financial disclosures in Hong Kong. *J. Account. Public Policy* 2000, 19, pp. 285–310.
21. Alnabsha, A.; Abdou, H.A.; Ntim, C.G.; Elamer, A.A. Corporate boards, ownership structures and corporate disclosures. *Journal of Applied Accounting Research* 2018, 19(1), pp. 20–41.
22. Songini, L.; Pistoni, A.; Tettamanzi, P.; Fratini, F.; Minutiello, V. Integrated reporting quality and BoD characteristics: An empirical analysis. *Journal of Management and Governance* 2021, 25, pp. 1–42.
23. Pistoni, A.; Songini, L.; Bavagnoli, F. Integrated reporting quality: An empirical analysis. *Corporate Social Responsibility and Environmental Management* 2018, 25(4), pp. 489-507.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

SELECTION AND EVALUATION OF TRANSFER TECHNOLOGIES

Vadim Iatchevici*, ORCID: 0009-0007-8156-6434

Universitatea Tehnică a Moldovei, 168 Ştefan cel Mare si Sfânt Blvd., Chişinau, Republica Moldova
*Corresponding author: Vadim Iatchevici, *vadim.iatchevici@gmail.com*

Abstract. Technological development is not a process determined only by the technology itself, the characteristics of which are largely decisive. Technology must be absorbed by an initially foreign system, in which a series of process-factors manifests itself, such as: strategy, top management, organization (company), technology and environment. The results are determined by each of these factors, but especially by the interactions, the connections between them. This paper develops a methodology for selecting and evaluating technologies for transfer based on groups of evaluation criteria (strategic, financial, industry / market technology consumers, internal, technological specifications, intangible effects) with the assignment of points (prioritization) starting from the performance descriptors for each criterion. The role of performance descriptors is not only to elucidate the relative value of technologies, but also to do so as objectively as possible.

Keywords: *technology management, technology transfer, success factors, technology selection and evaluation, evaluation criteria, industry 4.0, advanced manufacturing technology.*

Rezumat. Dezvoltarea tehnologică nu este un proces determinat numai de însăşi tehnologia, caracteristicile căreia sunt în mare măsură decisive. Tehnologia trebuie absorbită de un sistem inițial străin, în care se manifestă o serie de procese-factori cum ar fi: strategia, managementul de vârf, organizaţia (compania), tehnologia, mediul înconjurator. Rezultatele sunt determinate de fiecare dintre aceşti factori, dar mai ales de interacţiunile, legăturile dintre acestea. În lucrare este dezvoltată o metodologie de selectare şi evaluare a tehnologiilor pentru transfer bazată pe grupe de criterii de evaluare (strategici, financiari, consumatori de tehnologie din industrie / piaţă, interni, specificaţii tehnologice, efecte intangibile) cu atribuirea punctajului (ponderat) pornind de la descriptorii de performanţă pentru fiecare criteriu. Rolul descriptorilor de performanţă este nu numai de a elucida valoarea relativă a tehnologiilor, dar şi a face acest lucru cât se poate de obiectiv.

Cuvinte cheie: *managementul tehnologic, transfer de tehnologie, factori de succes, selecția și evaluarea tehnologiei, criterii de evaluare, Industria 4.0, tehnologie avansată de fabricație.*

1. Introducere

Transferul de tehnologie este în esența sa un act de comercializare a tehnologiei în scopul transformării acesteia într-un rezultat de valoare economică.

Eficiența transferului tehnologic este determinata de cunoaşterea profundă a însăşi tehnologiei transferate (aplicabilitatea, posibilităţile, condiţiile de utilizare, rezerva de dezvoltare etc.), a procesului de transferare şi a efectelor rezultate din transfer. Astfel, transferul de tehnologie este un proces complex ce necesită efort intelectual multidisciplinar, organizatoric şi financiar depus de mai mulţi „actori" în munca managerială de echipă.

Transferul de tehnologie este parte componentă a managementului tehnologic, care conform Consiului Naţional pentru Cercetare al SUA este „un proces, care include planificarea, conducerea, controlul şi coordonarea dezvoltării şi implementării capacităţilor tehnologice pentru a modela şi îndeplini obiectivele strategice şi operaționale ale unei organizaţii" [1]. Această definiție combină sintetic atât aspecte „dure" ale tehnologiei (ştiinţă şi inginerie), cât şi dimensiuni „soft", cum ar fi procesele care permit aplicarea eficientă a acesteia. Unul dintre modelele managementului tehnologic include şase activităţi generice [1] după cum urmează:

1. Identificarea tehnologiilor de evidentă sau probabilă importanţă pentru afacere, care ţine cont atât de evoluţiile tehnologice, cât şi de schimbările pieţei. Identificarea se referă la definirea, evaluarea, colectarea datelor şi analiza tehnologiilor.

2. Selectarea tehnologiilor potenţial utile pentru companie. Selecţia este un act decizional, care ia în considerare aspectele strategice relevante şi capacitatea de evaluare. În acest sens selecţia ţine cont de obiectivele strategice, de priorităţile de dezvoltare şi de potenţialul de aliniere a tehnologiei la strategia de afaceri.

3. Achiziționarea tehnologiilor selectate. Adoptarea tehnologiei se face dintre alternativele de a cumpăra, de a dezvolta în colaborare, de a dezvolta în intern.

4. Exploatarea tehnologiilor cu scopul obţinerii beneficiilor dorite, acumulării cunoştinţelor şi formării competenţelor tehnologice.

5. Protecţia cunoştinţelor şi a competenţelor încorporate în produse, tehnologii şi sisteme de producţie prin acte de protecţie a proprietăţii industriale şi de păstrare a personalului.

6. Învăţarea din dezvoltarea şi operarea tehnologiilor este un aspect critic al competenţei tehnologice, presupune analize asupra desfăşurării proiectelor de dezvoltare tehnologică, stabilirea bunelor practici şi a factorilor de succes.

Primele două activităţi indică la faptul că din funcţiile importante ale managementului tehnologic fac parte selecţia şi evaluarea tehnologiilor ce urmează a fi implementate în rezultatul transferului tehnologic sau prin dezvoltarea tehnologiilor cu forţele proprii sau în colaborare cu terţe părţi.

Au fost dezvoltate mai multe abordări şi metode de selecţie şi evaluare a tehnologiilor. Astfel, în lucrarea [2] este prezentată o listă de principii şi „bune practici" pentru instrumentele de management tehnologic observate de mai mulţi autori, parte dintre care se aplică în special pentru selectarea şi evaluarea tehnologiilor. Tehnologiile trebuie să fie fezabile, robuste (teoretic posibile şi fiabile), economic avantajoase, simplu şi practic de implementat, integrabile în alte procese şi instrumente ale afacerii, flexibile, adaptabile pentru a se potrivi contextului particular al afacerii etc.

Autorii lucrărilor [3,4] împart metodele de evaluare în următoarele categorii: financiare, strategii de afaceri, diagrame cu bule (sau hărţi de portofoliu), metode de punctaj, liste de verificare. Sunt menţionate şi alte metode care nu se încadrează în cele listate de mai sus cum ar fi: metodele multicriteriale fără un model formal de punctaj, probabilităţile de succes

comercial şi tehnic, metodele hibride din metodele cuprinse în categoriile de mai sus, metodelele informale cum ar fi deciziile bazate pe experienţă, managementul de vârf, preferinţe sau pur şi simplu intuiţie.

Este greu de definit un set de criterii universal şi adecvat aplicabil pentru toate circumstanţele de selectare şi evaluare a tehnologiilor, deoarece acestea vor diferenţia mult între ele în diferite companii şi pentru diferite tehnologii. Există multe criterii utilizate pentru selectarea şi evaluarea tehnologiilor de diferite tipuri şi în diferite condiţii, există şi diferite moduri în care criteriile pot să fie organizate, ordonate [5-9].

Autorii lucrării [10] scot în evidenţă criteriile bazate pe efecte:
- financiare (rentabilitatea, fluxul de numerar, costurile etc.);
- asupra consumatorilor (valoarea de piaţă, satisfacţia părţilor interesate, momentul comercializării etc.);
- asupra proceselor interne (contribuţie la competenţele de bază, corespundere cu misiunea şi obiectivele strategice ale companiei);
- asupra învăţării şi creşterii capacităţilor resurselor umane, sistemelor tehnologice şi proceselor;
- asupra riscurilor şi incertitudinii (probabilitatea succesului tehnico-tehnologic şi comercial etc.

O abordare similară este utilzată în lucrarea [7], în care se propun criterii de sensibilitate exprimate prin variaţia:
- volumului (dimensiunea pieţei, potenţialul de vânzare, beneficiul clienţilor, intensitatea concurenţială pe piaţă);
- marjei (reducerea costurilor afacerii, pregătirea industriei/pieţei);
- creşterii viitoare (creşterea pieţei, potenţialul viitor);
- caracteristicilor produsului (diferenţierea produsului, durabilitatea provocărilor concurenţiale şi tehnice);
- aptitudinilor şi cunoştinţelor (cunoştinţe de piaţă, capacitate tehnică);
- proceselor de afaceri (potrivire pentru vânzări şi/sau distribuţie, potrivire pentru producţie şi/sau lanţul de aprovizionare);
- suportului organizaţional (potrivire strategică, organizaţională).

2. Factorii ce determină succesul adoptării tehnologiilor avansate

Companiile moderne se găsesc în stare de concurenţă globală. Ca răspuns concurenţei companiile mari au adoptat sau adoptă tehnologiile avansate de fabricaţie (TAF). Avantajele companiilor din ţările industrial dezvoltate de la implementarea tehnologiilor conceptului Industrie 4.0 sunt mari, dar de durată scurtă, deoarece companiile din ţările în curs de dezvoltare nu investesc în cercetări, dar asimilează rapid noile cunoştinţe şi tehnologii şi le aplică la eficienţă înaltă. Dezvoltarea rapidă a tehnologiei informaţiei şi comunicaţiilor (TIC) influenţează substanţial alte industrii. Conceptul Industriei 4.0 scoate în prim plan informatizarea tehnologiilor şi sistemelor de fabricaţie, permite să se producă viziune fabricii inteligente, care se poate schimba în timp real, poate eficientiza resursele proprii, poate integra clienţii şi partenerii de afaceri în procesele proprii pentru creşteri valorice. Conceptul este inovativ în aşa măsură încât una din problemele principale este cum pot fi fie adaptate fabricile existente la noile condiţii de funcţionare [11].

Mai multe companii din Republica Moldova pot beneficia de aceste oportunităţi, deoarece majoritatea activează în calitate de filiale ale companiilor din ţările dezvoltate cu tehnologii moderne sau produc pentru export în aceste ţări.

Conform autorilor [12] eficienţa adoptării tehnologiilor avansate de către companii este determinată de mai mulţi factori de succes, fiecare dintre care este constituit din elemente - subfactori. Dintre factorii de bază pot fi menţionaţi: strategia, organizaţia, managementul de vârf, tehnologia şi mediul, Figura 1.

Strategia	Managementul de top	Organizatia	Tehnologia	Mediul
Planificarea strategica	Circulatia finantelor	Structura organizationala	Tehnologia in uz	Presiuni externe
Resurse umane si management	Strategia de fabricatie	Beneficii de la tehnologii	Facilitati si infrastructura	Dezvoltarea furnizorilor
Beneficii tangibile si intangibile	Viziunea asupra fabricatiei	Alinierea organizatiei si businessului	Resurse umane si tehnologice	Planificarea businessului
Pozitia financiara	Angajamentul managementului	Cunostintele angajatilor		
Pozitia companiei				

Figura 1. Factori de succes pentru adoptarea tehnologiilor avansate de fabricație [12].

Strategia. Strategia reflectă modul de atingere a obiectivelor, iar acestea pot să fie orientate spre producţie, fabricaţie, flexibilitate, calitate, cost etc. Strategiile orientate spre producţie, fabricaţie sunt considerate cheie pentru competitivitate oferind cele mai sigure avantaje. Sunt identificaţi cinci subfactori strategici critici de succes după cum urmează:

Planificarea strategiei stabileşte modul de funcţionare a companiei ce asigură îndeplinirea unui set specific de obiective şi performanţa operaţională. Dezvoltarea unei strategii de implementare a TAF se poate face numai după stabilirea punctelor forte şi punctelor slabe.

Resursele umane şi managementul companiei sunt elemente fundamentale ale implementării tehnologiei prin alocarea sarcinilor adecvate nivelului de competenţă ale angajaţilor.

Beneficii tangibile/intangibile pot fi atinse prin implementarea TAF. Beneficiile tangibile se referă la indicatorii operaţionali, iar beneficiile intangibile se referă la avantajele competitive obţinute din TAF.

Poziția financiară este considerată un factor important în implementarea TAF, deoarece sunt necesare investiţii suficient de mari, dar să se potrivească cu stategia de business a companiei.

Poziția companiei reflectă nivelul de adecvare al deciziilor financiare şi capacitatea de efectuare a investiţiilor.

Managementul de top. Managementul de top se manifestă prin responsabilităţile de dezvoltare, îmbunătăţire şi prioritizare a activităţilor de implementare a TAF în companie, deoarece inspiră dorinţa de schimbare, motivând şi sprijinind angajaţii să înţeleagă şi să adopte noile tehnologii.

Circulația financiară reflectă intensitatea tranzacţiilor activelor companiei, investiţiile fiind surse de beneficii strategice (intrarea la timp şi liderismul pe piaţă, personalizarea produselor etc.).

Strategia de fabricație se manifestă prin obiectivele sistemic coordonate şi activităţile utilizate în limitele funcţiei de producţie a companiei, urmărind asigurarea avantajelor durabile. Se constată că planificarea strategică la nivel de afaceri trebuie să fie asistată de

planificarea strategică la nivel de fabricaţie. *Viziunea asupra fabricaţiei* este reflectată prin decizii strategice ale managementului pentru utilizarea de către companie a TAF, capabilităţile şi resursele implicate.

Angajamentul managementului de top se manifestă prin atitudinea faţă de politicile şi activităţile orientate spre atingerea obiectivelor legate de pregătirea, implementarea şi utilizarea TAF. În aşa mod efectele perturbatoare ale schimbării pot fi mult reduse.

Organizaţia. Organizaţia include în sine componentele, personalul, infrastructura unei companii şi este un factor important pentru procesul de implementarea a TAF.

Structura organizatorică este o reflecţie a calităţii organizaţionale şi determină măsura corespunderii proceselor şi rolurilor de muncă cu mecanismele administrative, de control şi de integrare. Infrastructura organizaţională este cheia susţinerii implementării cu succes a TAF.

Beneficiile tehnologiei prin implementarea TAF pot fi directe şi indirecte, tangibile şi intangibile şi sunt un argument forte pentru implementare.

Alinierea organizaţiei şi businessului. Structurile organizaţiei şi afacerii trebuie să corespundă reciproc, să fie coerente obiectivelor de atins. Structura trebuie să fie flexibilă, iar atingerea nivelului înalt de flexibilitate necesită investiţii mari şi atenţie din partea managementului la nivel strategic.

Cunoștințele angajaților sunt cele legate de tehnologiile ce trebuie implementate, astfel încât angajaţii trebuie să fie formaţi, instruiţi şi educaţi pentru a înţelege scopurile, obiectivele şi principiile urmărite. Transformarea personalului din executori în adepţi este cheia succesului.

Tehnologia. Tehnologia este definită ca „totalitatea instrumentelor, maşinilor, sistemelor și proceselor utilizate în activitățile practice și în inginerie" [13]. Nivelul de dezvoltare tehnologică determină capacitatea de a adopta TAF, iar factorul de selecţie a tehnologiei este esenţial pentru succesul fazei de justificare şi de planificare [14]. La selecţie este important ca tehnologiile avansate să se poată alinia, ajusta la tehnologiile actuale.

Tehnologia în uz determină tipul de tehnologie ce trebuie implementată în companie. TAF pot transforma tehnologiile tradiţionale în uz în tehnologii moderne pentru a atinge cu succes obiectivele tehnologice şi cele de afaceri. Anume tehnologia determină capacitatea unei companii de a conştientiza realitatea concurenţei, varietatăţii de produse, cerinţelor clienţilor etc.

Facilităţile şi infrastructura se manifestă prin dotările disponibile şi necesare oferite procesului de implementare TAF. Importantă este şi structura industriei în calitate de mediu prietenos inovării tehnologice [15]. Implementarea TAF depinde de nivelul de dezvoltare a infrastructurii informaţionale care cuprinde diverse hardware şi software organizate în reţea şi care ajută la furnizarea de capabilităţi tehnologice [16].

Resursele umane şi tehnologice determină capacitatea personalului şi a tehnologiilor de a constitui procese coerente om-maşină. Calificarea personalului, capacitatea de a înţelege şi de a acţiona în conformitate cu noile principii de organizare industrială este un factor major.

Mediu inconjurator. Mediul de afaceri este unul factorizat care influenţează, ajută, dar şi afectează activităţile companiei (resursele financiare, sprijinul furnizorilor, concurenţa etc.). Mediul impune companiile să inoveze, să actualizeze sistematic tehnologiile pentru a fi competitive.

Presiunea externă se manifestă, în primul rând, prin variaţia cerinţelor clienţilor şi a pieţei care obligă compania să adopte TAF. Noile tehnologii pot fi rezultatul presiunii din partea partenerilor, actelor legislative reglementatoare etc.

Dezvoltarea furnizorilor reflectă activităţile de ajustare sistemică a performanţelor tehnologice ale partenerilor de afaceri. Astfel TAF devin obiectivul mai multor companii strâns legate prin lanţul valoric.

Planificarea afacerii stabileşte obiectivele, strategiile şi activităţile predictive pentru a asigura competitivitatea şi dezvoltarea companiei pentru un anumit orizont de timp. Astfel planificarea devine o condiţie prin care TAF se manifestă ca factor de dezvoltare tehnologică.

Schimbările tehnologice creează destabilizări în activitatea companiilor, dar şi oportunităţi de dezvoltare tehnologică pentru lansarea de afaceri noi şi diversificate. Destabilizările se depăşesc, iar oportunităţile trebuie să fie valorificate printr-un management tehnologic activ, dinamic, fapt ce se poate produce prin inovare şi transfer tehnologic. Astfel, în prim plan se plasează capacităţile dinamice de a reconfigura, redirecţiona, transforma şi integra în mod adecvat competenţele proprii de bază existente cu resursele externe şi complementare pentru a face faţă provocărilor concurenţe şi situaţiilor ce se schimbă rapid sub presiunea timpului.

Inovarea tehnologică devine un proces continuu orientat spre [1]:
- formarea capacităţilor de a genera un flux amplu de schimbări în produse şi procese care contează pentru performanţa companiei pe termen lung;
- transformarea companiei într-un obiect dinamic evaluat şi măsurat în competenţe tehnologice;
- luarea în considerare a pieţei, produsului, tehnologiei ca obiecte de reconstituire strategică realizată prin adaptarea, integrarea şi reconfigurarea adecvată a abilităţilor, resurselor şi competenţelor funcţionale interne şi externe într-un mediu în permanentă schimbare.

3. Metodologie de selectare şi evaluare a tehnologiilor pentru transfer

Companiile responsabile recunosc că trebuie să investească în noile tehnologii de digitalizare şi de îmbunătăţiri ale sistemelor de producţie pe termen lung [17]. În acest proces este necesară o abordare realistă şi o integrare informaţională optimă a noilor tehnologii cu infrastructurile existente. Potenţialul este bine conştientizat, dar aducerea ideilor la nivelul fabricii se confruntă cu provocări mari. Sunt necesare strategii, sprijin ghidat, foi de parcurs pentru a ajuta companiile să adapteze cu efecte bune tehnologiile digitale cheie. O abordare - cadru structurată pe etape poate servi ca instrument decizional, ca ghid pentru selectarea tehnologiilor şi strategiilor adecvate de implementare a acestora. Procesul - cadru de selecţie a tehnologiei de fabricaţie include şase paşi interconectaţi sistemic [18]:

1) Evaluarea situaţiei curente. Principala problemă de rezolvat aici este evaluarea performanţelor curente a companiei în contextele concurenţei şi pieţei pentru a reevalua strategia de afaceri şi a defini zonele în care compania este capabilă să concureze.

2) Stabilirea factorilor strategici critici pentru implementarea Industriei 4.0, care ar permite companiei producătoare să concureze cu succes. Părţile tari şi părţile slabe sunt surse pentru redefinirea strategiei de afaceri în condiţiile pieţei. Există mai mulţi factori care afectează implementarea prevederilor Industriei 4.0, în mod direct succesul producţiei digitale, după cum urmează: factori tehnico-tehnologici, de complexitate şi de interfeţe, de performanţă şi de calitate; factori de management al proiectelor, de finanţare, de dependenţe de proiect, de resurse şi de prioritizare; factori organizaţionali, de planificare, de control şi de comunicare; factori externi, de furnizori, de reglementări, de piaţă şi de clienţi.

3) Definirea intervalului de planificare (orizontului de timp). Strategia de afaceri redefinită, natura pieţei şi a afacerii sunt factori ce determină orizontul de timp. În rezultat se obţine o hartă de perspective ordonate în timp util al activităţilor de implementare a prevederilor Industriei 4.0. Orizontul de timp defineşte dacă compania adoptă o abordare rapidă, revoluţionară sau una mai moderată, evolutivă.

4) Identificarea tehnologiilor ce pot adecvat îndeplini obiectivele critice definite prin factorii strategici. Este necesară o analiză tehnologiilor, a conformităţii tehnice aşteptate. Una din principalele tehnologii-cheie a Industriei 4.0 sunt sisteme ciber-fizice, care asigură achiziţia şi procesarea datelor, comunicarea maşină-maşină, interacţiunea om-maşină etc. [19].

5) Evaluarea detaliată a tehnologiilor identificate în scopul identificării tehnologiilor alternative pentru atingerea obiectivelor de fabricaţie şi de afaceri. Oportunităţile se pot referi la modurile de funcţionare, la strategie, la mediu, la personal. Cele mai importante caracteristici legate de Industria 4.0 se referă la viabilitatea şi competitivitatea viitoare, la calificarea angajaţilor şi capacitatea acestora de a asimila noi tehnologii.

6) Evaluarea riscurilor alternativelor tehnologice. Conceptul Industria 4.0 este unul relativ nou şi din această cauză pot apărea noi riscuri legate de tehnicile modificate, infrastructura IT complexă şi specifică. Factorii de risc pot afecta negativ atingerea obiectivelor, astfel încât identificarea riscurilor este extrem de importantă. Un risc neidentificat nu va fi luat în considerare şi poate avea consecinţe mari [20]. Riscurile legate de implementarea prevederilor conceptului Industrie 4.0 pot fi clasificate după cum urmează [18]: risc operaţional determinat de maşini-unelte şi tehnologii de fabricaţie, de metodele de prelucrare, de scule utilizate, de materiale, de mentenanţă, de calificarea personalului; risc legat de securitatea informaţiilor (atacuri cibernetice), de confidenţialitate, de pierderea integrităţii datelor şi de disponibilitatea informaţiilor.

Managerii de tehnologie au la dispoziţie mai multe variante de selectare şi evaluare tehnologică. Condiţiile interne şi externe ale companiilor sunt foarte diferite, astfel încât, metodologiile trebuie să fie modificate şi adaptate la necesităţile situaţionale ale companiei. Pornind de la această idee, este propusă o metodologie menită să ajute companiile la selectarea şi evaluarea tehnologiilor. Metodologia dată poate fi caracterizată ca una flexibilă pentru a fi adaptată şi personalizată la nevoile specifice ale companiei şi, în acelaşi timp, este suficient de robustă pentru a permite aplicarea acesteia la diferite tipuri de tehnologii cum ar fi cele de produs, de fabricaţie etc. Schematic această metodologie este reflectată în Figura 2.

Metodologia este aplicată de către o echipă de factori de decizie pluridisciplinară pentru a elimina subiectivismul selectării şi evaluării tehnologiilor şi pentru a implica o gamă mai mare de competenţe, cunoştinţe şi experienţe relevante. Între diferitele părţi interesate şi managerii companiei pot exista opinii şi preferinţe contradictorii, deoarece decizia individuală optimă pentru fiecare departament este rareori optimă în aspect colectiv.

Această abordare tehnico-tehnologică, economico-socială şi combinatorică este în acord cu analiza decizională multicriterială. Prin urmare, rezultatele obţinute pot fi influenţate de experienţa mai multor factori de decizie, de diversitatea datelor disponibile şi de modul în care au fost obţinute, de criteriile de selectare şi evaluare, de punctajele acordate tehnologiilor concurente etc. Rezultatele vor fi o reflecţie a efortului general alocat acestui exerciţiu de echipă.

Metodologia analizată de selectare şi evaluare a tehnologiilor în construcţia de maşini include următoarele etape principale:

```
┌─────────────────────────────────────────────┐
│ Procesul de selectare si evaluare a tehnologiilor │
└─────────────────────────────────────────────┘
```

Stabilirea procesului de selectare si evaluare	←→	Identificarea criteriilor de evaluare, constituirea descriptorilor de performanta, nivelurilor de referinta si ponderarea criteriilor
Colectarea datelor despre tehnologii si verificarea criteriilor	←→	Identificarea potentialelor tehnologii, clasificarea dupa tip, colectarea si verificarea datelor, stabilirea criteriilor de selectare si evaluare
Selectarea tehnologiilor prin filtrul de triaj	←→	Stabilirea conditiilor pentru acceptarea sau respingerea tehnologiilor propuse spre evaluare
Evaluarea tehnologiilor: punctarea partiala si generala	←→	Evaluarea in baza criteriilor, descriptorilor de performanta, nivelurilor de referinta si ponderilor
Evaluarea tehnologiilor cu ajutorul instrumentelor de suport	←→	Stabilirea nivelului de maturitate tehnologica si de fabricatie
Analiza rezultatelor si luarea deciziilor	←→	Interpretarea rezultatelor evaluarii de catre factorii de conducere si luarea deciziilor

Figura 2. Selectarea şi evaluarea tehnologiilor.

1. Stabilirea procesului de selectare şi evaluare: identificarea criteriilor, constituirea descriptorilor de performanţă, nivelurilor de referinţă şi ponderarea criteriilor;

2. Colectarea datelor despre tehnologii, identificarea şi verificarea criteriilor: identificarea potenţialelor tehnologii, clasificarea după tip, colectarea şi verificarea datelor, stabilirea criteriilor de selectare şi evaluare;

3. Selectarea tehnologiilor prin filtrul de triaj: stabilirea condiţiilor pentru acceptarea sau respingerea tehnologiilor propuse spre evaluare;

4. Evaluarea tehnologiilor prin punctarea parţială şi punctarea generală: evaluarea în baza criteriilor, descriptorilor de performanţă, nivelurilor de referinţă şi ponderilor;

5. Evaluarea tehnologiilor cu ajutorul instrumentelor de suport: stabilirea nivelului de maturitate tehnologică şi de fabricaţie;

6. Analiza rezultatelor şi luarea deciziilor: interpretarea rezultatelor evaluării de către factorii de conducere şi luarea deciziilor.

Stabilirea procesului de selectare și evaluare. Prima etapă a metodologiei stabileşte procesul de lucru al sesiunilor viitoare de selectare şi evaluare a tehnologiilor. Aceasta constă din paşi ce pot fi executaţi în prealabil, devreme ce nu depind de tehnologii, dar mai degrabă de companie, pentru a asigura că selectarea şi evaluarea tehnologiilor este mai consecventă şi imparţială. Această sarcină se realizează o singură dată, apoi este revizuită ocazional, conform schimbărilor obiectivelor şi situaţiei în companie.

Celelalte etape ale metodologiei alcătuiesc structura procesului de selectare şi evaluare. Înainte de fiecare sesiune, rezultatele obţinute în prima fază trebuie revizuite şi confirmate sau ajustate la situaţia specifică, dacă este nevoie.

Metodele de punctare permit reflectarea multiplelor obiective ale organizaţiei, sunt uşor adaptabile la schimbările organizaţionale şi de mediu şi nu sunt influenţate de viziunile pe termen scurt inerente metodelor de rentabilitate, deoarece în prim plan sunt scoase criterii strategice şi alte beneficii ce se manifestă pe termen lung. Chiar dacă utilizatorii metodelor de punctare le consideră efective şi eficiente, valoarea reală a tehnologiei exprimată de factorii de decizie nu este bazată exclusiv pe punctajele date, ci pe procesul de analiză a criteriilor, discutând şi obţinând concluzii pentru fiecare criteriu.

Identificarea criteriilor. Identificarea criteriilor reflectă cel mai bine obiectivele strategice ale companiei, situaţia, caracteristicile tipice tehnologiei, mediul şi alţi factori care pot avea un impact asupra tehnologiei sau care pot fi rezultatul acesteia. Criteriile utilizate sunt împărţite pe următoarele grupe generale: strategice, financiare, industrie/piaţă, interne, specificaţii tehnologice şi intangibile.

Descriptorii de performanţă. Pentru a evalua performanţa unei tehnologii conform unui criteriu este definit un descriptor de performanţă cu specificări pe nivele pentru fiecare criteriu, acesta fiind modul în care tehnologia va fi „măsurată" pentru evaluare. Nivelele descriptorilor servesc pentru:
- ✓ operaţionalizarea evaluării performanţelor şi/sau efectelor acestora;
- ✓ descrierea mai obiectivă a impacturilor opţiunilor analizate;
- ✓ restrângerea nivelurilor de impact la un domeniu de plauzibilitate prin depistarea situaţiilor ce nu sunt admisibile sau sunt în afara contextului;
- ✓ verificarea independenţei criteriului abordat.

Descriptorii de performanţă pot fi cantitativi sau calitativi, cu caracter continuu sau discret, ajută la convertirea performanţei tehnologiilor pe criterii într-un punctaj numeric. Utilizarea descriptorilor calitativi ai performanţei este foarte utilă pentru a ajuta factorii de decizie să trateze mai adecvat toate informaţiile disponibile cu privire la tehnologie.

Criteriile şi descriptorii de performanţă sunt prezentaţi în grupele: strategice, financiare, industrie/piaţă, interne, specificaţii de tehnologie şi intangibile. Descriptorii prezentaţi au până la 6 nivele performanţă, dar pot exista mai multe sau mai puţine în funcţie de companie şi de contextul de selectare şi evaluare a tehnologiilor. Fiecare următor nivel reflectă o valoare mai mică a descriptorului şi este independent de celelalte precedente sau următoare. Primul şi ultimul nivel nu reflectă neapărat cele mai bune sau cele mai joase performanţe posibile pentru criteriile corespunzătoare, existând posibilităţi situaţionale de schimbare a accentelor.

Grupele de criterii şi caracteristica nivelurilor de performanţă utilizate în metodologie.
Strategic:
- potrivirea strategică: potrivire în multe aspecte specifice, potrivire în puţine aspecte specifice, potrivire incertă, nepotrivire probabilă, nepotrivire;
- congruenţa: cu mai multe elemente-cheie ale strategiei, cu unele elemente-cheie ale strategiei, cu elemente non-cheie ale strategiei, improbabilă;
- alinierea strategică: clară, poate fi asigurată, poate fi asigurată parţial, improbabilă;
- importanţa pentru succesul companiei: decisivă, semnificativă, moderată, minimă, lipsită de importanţă;
- impactul tehnologiei asupra strategiei: critic, mare, mediu, minim, fără impact;
- adecvarea cunoştinţelor legate de Industria 4.0 în raport cu tehnologiile care urmează să fie adoptate: înaltă, medie, joasă, nesemnificativă.
Financiar:

- finanţarea: externă şi/sau internă garantată şi nelimitată; strictă în limita bugetului; cu risc minor de neîncadrare în limita bugetului; cu risc de neîncadrare în limita bugetului; neîncadrare în limita bugetului, surse suplimentare identificate; neîncadrare în limita bugetului, surse suplimentare neidentificate;
- probabilitatea rentabilităţii investiţiei estimată la: 70-100%, 50-69%, 30-49%, 20-29%, 10-19%.

  Industrie/piaţă:
- pregătirea industriei / pieţei pentru tehnologie: cerere clar formulată şi exprimată, cerere clar formulată şi exprimată de majoritatea clienţilor, cerere formulată şi exprimată de mulţi clienţi, cerere formulată şi exprimată de o parte din clienţi, cerere neformulată şi neexprimată;
- conştientizarea relevanţei conceptului Industrie 4.0: inaltă, medie, joasă, nesemnificativă;
- raportarea tehnologiei cu necesităţile actuale ale industriei / pieţei: adecvată necesităţilor, cu relaţie clară cu necesităţile, cu relaţie ajustabilă prin modificarea tehnologiei, cu relaţie probabilă, cu relaţie inexistentă;
- atractivitatea industriei / pieţei interne: extrem de profitabilă şi în creştere, profitabilă şi în creştere, extrem de profitabilă şi în stagnare, profitabilă şi în stagnare, profitabilă şi în scădere;
- atractivitatea industriei / pieţei externe: profitabilă şi în creştere rapidă, profitabilă şi stabilă, profitabilă şi în stagnare, profitabilă şi în scădere;
- dimensiunea industriei / pieţei: demonstrată şi cunoscută prin sondaj oficial, cunoscută prin date suficiente dar neprelucrate, cunoscută prin reprezentativitatea unor companii, nu este cunoscută;
- intensitatea concurenţială în industrie / pe piaţă pentru tehnologie: singură (monopolistă), concurenţă obişnuită multiplă sau 1 concurent puternic, 2 concurenţi puternici, 4 sau mai mulţi concurenţi puternici;
- ciclul de viaţă (industrial, tehnico-tehnologic) estimat: lung cu oportunităţi de îmbunătăţire incrementală, moderat (4-6 ani) cu oportunităţi de îmbunătăţire incrementală, scurt (1-3 ani), nedefinit.

  Factori interni:
- disponibilitatea de personal şi facilităţi: disponibile imediat şi nemijlocit, disponibile parţial şi în timp, deficienţă recunoscută în domenii-cheie, sunt necesare angajări / instruiri;
- competenţele digitale ale angajaţilor la scara investiţiilor planificate în Industria 4.0: înalte, medii, joase;
- competenţe de bază tehnico-tehnologice: există şi nu sunt necesare capacităţi, abilităţi sau cunoştinţe noi, sunt necesare unele capacităţi şi abilităţi noi dobândite în timp scurt, sunt necesare unele capacităţi şi abilităţi noi dobândite în timp mediu (câteva luni), lipsesc unele capacităţi şi abilităţi importante şi este necesar un plan pentru a le dobândi, sunt necesare capacităţi majore şi/sau recrutată o nouă echipă tehnico-tehnologică sau este necesară asistenţa unui partener;
- abilităţi tehnico-tehnologice necesare: practicate pe larg în companie, practicate parţial în companie, practicate la nivel de cercetare şi dezvoltare, nepracticate în companie;
- abilităţi de dezvoltare a aplicaţiilor tehnologice: existente şi mature, existente emergente, noi şi uşor dobândite, noi;

- sprijin organizatoric din partea tuturor părților interesate: sprijin consistent, sprijin condiționat de argumentare, opoziție relativă, opoziție severă;
- potrivire pentru transfer/distribuție pentru departamentul și personalul abilitat: obișnuit, cu mici modificări, majoritatea personalului necesită instruire, necesară restructurarea departamentului, necesar un nou departament sau un nou canal de transfer;
- potrivire pentru lanțul de producție / aprovizionare: modificări minore ale producției sau ale lanțului de aprovizionare, modificări realizabile în limitele capacităților existente, resurse suplimentare pentru adaptarea procesului de fabricație sau schimbarea în lanțul de aprovizionare, este necesar un nou sistem de fabricație sau o schimbare majoră în lanțul de aprovizionare;
- potrivire cu canalele de aprovizionare existente: potrivire completă, necesare unele schimbări nesemnificative, sunt iminente schimbări semnificative.
  Specificații tehnologice:
- raportarea caracteristicilor tehnologiei cu concurența: multe importante și mult mai bune, cel puțin una importantă este semnificativ mai bună, câteva neimportante sunt mai bune, cel puțin una neimportantă este mai bună, nu există mai bune;
- alinierea tehnologiei la conceptele moderne de tehnologii digitalizate (tehnologii avansate de fabricație, Industrie 4.0 etc.): inaltă, medie, joasă, nesemnificativă;
- valoarea oferită de tehnologie: esențială, mare, moderată, mică, inexistentă;
- avantaj concurențial al tehnologiei: esențial, mare, moderat, mic, inexistent;
- rezerva de dezvoltare a tehnologiei: prin modificarea parametrilor, prin modificarea fazelor tehnologice, prin înlocuirea fazelor, incertă;
- funcţionalitatea tehnologiei demonstrată în prototip: toate caracteristicile demonstrate, caracteristicile - cheie demonstrate, o caracteristică - cheie nedemonstrată, mai multe caracteristici - cheie nedemonstrate, caracteristicile nedemonstrate;
- implementarea tehnologiei: ușor realizabilă, moderat realizabilă, greu realizabilă, modul de realizare incert, multiple obstacole;
- avantaj competitiv al tehnologiei bazat pe complexitatea reproducerii caracteristicilor - cheie de către concurenții: mai mult de 2 ani, cel puțin 2 ani, cel puțin 1 an, este necesar efort de îmbunătățire continuă, inexistent;
- poziţia de drept al proprietăţii intelectuale a tehnologiei: foarte bine protejată (combinație de brevete, secrete comerciale, acces la materiile prime etc.), bine protejată (brevete, secrete comerciale etc.), protejată fără a fi factor de descurajare pentru concurenți, neprotejată;
- oportunități de sinergie a tehnologiei: parte - cheie a unui ecosistem tehnologic, parte a unui ecosistem tehnologic, importantă separat, moderat importantă separat, slab importantă separat, neimportantă;
- capacitatea de a forma ecosisteme tehnologice: cu multe tehnologii, cu un număr redus de tehnologii, cu unele tehnologii, cu unele tehnologii cu efort de modernizare, limitat;
- mentenanța tehnologiei după transfer: există nelimitat, există condiţionată de factorii interni şi-sau externi, limitată.
  Intangibile:

- tehnologia ca o platformă de creştere: deschide noi oportunităţi tehnico-tehnologice şi comerciale, reprezintă potenţial de diversificare şi/sau oportunităţi de extindere, reprezintă un caz izolat;
- potenţial oferit de tehnologie: un început de afacere nouă profitabilă sau de aplicaţii multiple, o nouă linie tehnologică şi/sau de produse şi aplicaţii, variaţii tehnologice şi/sau de produse şi aplicaţii, relansarea valorii unor tehnologii şi/sau produse şi aplicaţii existente;
- formarea noilor competenţe şi cunoştinţe oferite de tehnologie: majoritatea, multe, câteva, unele, nesemnificativ;
- impactul asupra imaginii companiei, mărcii (publicaţii ştiinţifice, bunele practici, presa etc.): creştere substaţială, creştere, creştere nesemnificativă, menţinere la nivel, fără impact;
- rolul tehnologiei asupra relaţiilor cu clienţii: vitală pentru creşterea numărului de clienţi, vitală pentru păstrarea clienţilor, vitală pentru păstrarea clienţilor cheie, vitală pentru păstrarea unui client cheie, neutru, îngrijorări (ex. de mediu) ale clienţilor;
- impactul reglementărilor industriale, economice, sociale, legale, politice: avantajos, pozitiv, neutru, negativ;
- potenţialul tehnologiei pentru exportul extern: poate creşte rapid, poate creşte constant, la nivel stabil, în descreştere.

Un studiu de caz de evaluare a tehnologiilor conform metodologiei analizate a fost realizat la ITA "Mecagro" şi a avut în calitate de variante tehnologiile de produs: maşina de stropit autopropulsată pentru tratarea culturilor de câmp (T1), maşina de stropit cu ventilare-pulverizare locală (T2), sisteme modulare multifuncţionale pentru maşinile de stropit (T3), utilajului pentru prelucrarea solului între rânduri din livezi (T4).

Filtrarea de triaj a fost realizată utilizând criteriile: identificarea problemelor de rezolvat, efectele soluţionării problemelor, nivelul de dezvoltare al tehnologiilor, fezabilitatea tehnologiilor, costurile tehnologiilor similare, performanţele tehnologiilor similare, performanţele tehnologiilor alternative analizate, documentaţia de schiţă a tehnologiilor, sarcinile tehnice de dezvoltare a tehnologiilor, funcţiile tehnologice asigurate de tehnologii. Rezultatul filtrării de triaj a fost stabilirea necesităţii de precizare a unor informaţii referitoare la tehnologia T2.

Exerciţiu de evaluare a tehnologiilor s-a soldat cu selectarea tehnologiei T1 - "Maşina de stropit autopropulsată pentru tratarea culturilor de câmp" pentru dezvoltare, având acumulate 4,75 puncte, Tabelul 1.

Tabelul 1

Rezultatele evaluării tehnologiilor la ITA Mecagro

Grup de criterii	Puncte acumulate			
	Tehnologia T1	**Tehnologia T2**	**Tehnologia T3**	**Tehnologia T4**
Strategice	5,4	4,6	4,2	4,8
Financiare	3,7	3,7	4,0	3,7
Industrie / piaţă	4,0	3,5	3,4	3,4
Factori interni	5,9	5,5	5,9	5,4
Specificaţii tehnologice	5,3	4,4	4,4	4,4
Intangibile	4,2	3,9	3,4	3,9
Total	**4,75**	**4,26**	**4,21**	**4,26**

4. Concluzii

Transferul de tehnologie este act responsabil de luare decizii manageriale în scopul transformării acesteia într-un rezultat valoros economic. Succesul transferului tehnologic este determinat de tehnologia însăşi (corespunderea cu nivelul modern, aplicabilitatea, posibilităţile şi condiţiile de utilizare, rezerva de dezvoltare etc.), de structura ecosistemului tehnologic din companie şi de mediul industrial. Ca factori al succesului pot fi menţionate atât elementele ecosistemului industrial din companie (strategia, managementul de vârf, organizaţia, tehnologia, efectele mediului extern), cât şi interacţiunile dintre acestea.

Procesul de selectare şi evaluare a tehnologiilor pentru transfer este reprezentat ca o analiză a factorilor determinaţi ca: strategici, financiari, consumatori de tehnologie din industrie / piaţă, interni, specificaţii tehnologice, efecte intangibile cu atribuirea unor priorităţi valorice (puncte) determinate de o serie de descriptori de performanţă pentru fiecare criteriu. Rolul descriptorilor de performanţă este nu numai de a elucida valoarea tehnologiilor, dar şi a face acest lucru cu cât se poate mai obiectiv.

Bibliografie

1. Cetindamar, D.; Phaal, R.; Probert, D. Understanding technology management as a dynamic capability: A framework for technology management activities. Technovation, 2009, 29, pp. 237–246. doi:10.1016/j.technovation.2008.10.004
2. Kerr, C.; Farrukh, C.; Phaal, R., Probert, D. Key principles for developing industrially relevant strategic technology management toolkits. Technological forecasting and social change 2013, 80 (6), pp. 1050-1070. https://doi.org/10.1016/j.techfore.2012.09.006.
3. Cooper, R.G.; Sommer, A.S. Dynamic portfolio management for new product development. Research-Technology Management 2023, 66 (3), pp. 19-31. https://doi.org/10.1080/08956308.2023.2183004.
4. Doorasamy, D. Product portfolio management: an important business strategy. Foundations of Management 2015, 7 (1), pp. 29-36. DOI: 10.1515/fman-2015-0023.
5. Meredith, J.R.; Mantel Jr., S.J. Project management: a managerial approach. John Wiley & Sons, Inc., 2021, p. 544. ISBN: 978-1-119-80383-6.
6. Pinto, J.K. Project management: achieving competitive advantage. Pearson, 2019, p. 490. ISBN 13: 978-0-134-73033-2.
7. Mitchell, R.; Phaal R.; Athanassopoulou, N. Scoring methods for prioritizing and selecting innovation projects. Centre for technology management working paper series 2018, 2, pp. 1-19. doi:10.17863/CAM.21297.
8. Flechas Chaparro, X.A.; de Vasconcelos Gomes, L.A.; de Souza Nascimento, P.T. The evolution of project portfolio selection methods: from incremental to radical innovation. Revista de Gestão 2019, 26 (3), pp. 212-236. DOI 10.1108/REGE-10-2018-0096.
9. Sokmen, N. A multi-criteria project assessment framework for R&D organizations in the it sector. In: Proceedings of PICMET '14: Infrastructure and Service Integration, Portland, 2014, pp. 2455-2466.
10. Leong, W.Y.; Wong, K.Y.; Wong, W.P. A new integrated multi-criteria decision-making model for resilient supplier selection. Applied System Innovation 2022, 5 (1), p. 18. DOI: 10.3390/asi5010008.
11. Wang, S.; Wan, J.; Li, D.; Zhang, C. Implementing smart factory of industrie 4.0: an outlook. International Journal of Distributed Sensor Networks 2016, 4, 3159805, p. 10. DOI: 10.1155/2016/3159805
12. Sukathong, S.; Suksawang, P.; Naenna, T. Analyzing the importance of critical success factors for the adoption of advanced manufacturing technologies. International Journal of Engineering Business Management 2021, 13, pp. 1–16. DOI: 10.1177/18479790211055057
13. Tehnology matters: questions to live with D. Nye. The MIT Press, Cambridge, Massachusetts, London, England, 2006, 304 p. ISBN: 9780262640671.
14. Bhise, D.; Vand Sunnapwar, V.K. Developing framework for the implementation of advanced manufacturing technologies in small and medium-sized enterprises. International Journal of Applied Management and Technology 2019, 18 (1), pp. 88-110. DOI: 10.5590/IJTAF.2018.18.1.07.
15. Simões, A.C.; Barros, A.C.; Soares, A.L. Conceptual framework for the identification of influential contexts of the adoption decision. In: IEEE 16th International Conference on Industrial Informatics (INDIN), Porto, Portugal, 2018, pp. 1059–1064. DOI: 10.1109/INDIN.2018.8471963

16. Abualoush, S.; Masa'deh, R.; Bataineh, K.; Alrowwad, A. The role of knowledge management process and intellectual capital as intermediary variables between knowledge management infrastructure and organization performance. Interdisciplinary Journal of Information, Knowledge and Management 2018, 13, pp. 279–309. DOI: 10.28945/4088
17. Lu, Y. Industry 4.0: a survey on technologies, applications and open research issues. Journal of Industrial Information Integration 2017, 6, pp. 1-10. https://doi.org/10.1016/j.jii.2017.04.005
18. Hamzeh, R.; Zhong, X.; Xu, W.; Kajáti E.; Zolotova I. A technology selection framework for manufacturing companies in the context of Industry 4.0. In: 2018 World Symposium on Digital Intelligence for Systems and Machines (DISA), Košice, Slovakia, 2018, pp. 267-276. doi: 10.1109/DISA.2018.8490606.
19. Wagner, T.; Herrmann, C.; Thiede, S. Industry 4.0 Impacts on Lean Production Systems. Procedia CIRP, 2017, 63, pp. 125-131. DOI: 10.1016/j.procir.2017.02.041
20. Tupa, J.; Simota, J.; Steiner, F. Aspects of risk management implementation for Industry 4.0. In: Proceeding of the 27th International Conference on Flexible Automation and Intelligent Manufacturing, FAIM2017, 27-30 June 2017, Modena, Italy, Procedia Manufacturing, 2017, 11: p. 1223-1230.

Submission of manuscripts: jes@meridian.utm.md

INSURANCE DEVELOPMENTS IN THE LIGHT OF DATA USE

Madaoui Nadjia*, ORCID: 0009-0005-1096-211X

Lounici Ali, University of Blida2, Blida 9000, Algeria
*Corresponding author: Madaoui Nadjia, *madaoui.nadjia99@yahoo.com*

Abstract. Insurance companies are increasingly utilizing large sets of data and artificial intelligence for the purpose of evaluating risks and tailoring insurance products within the framework of insurance contracts. This research seeks to examine the effects of employing extensive data in insurance contracts, particularly concerning privacy and risk. It aims to assess the extent to which existing legal regulations can safeguard policyholders from potential mistreatment resulting from the use of such methodologies. The study concludes that despite the safeguards offered by data and consumer protection laws, the unregulated and unconstrained application of data analytics and algorithms in risk evaluation could potentially harm policyholders by infringing on their privacy and leading to discrimination, thereby impinging on their rights.

Keywords: *Artificial intelligence, sensor technology, privacy, risk.*

Rezumat. Companiile de asigurări folosesc din ce în ce mai mult seturi mari de date şi inteligenţă artificială în scopul evaluării riscurilor şi al personalizării produselor de asigurare în cadrul contractelor de asigurare. Această cercetare urmăreşte să examineze efectele utilizării datelor extinse în contractele de asigurare, în special în ceea ce priveşte confidenţialitatea şi riscul. Articolul îşi propune să evalueze măsura în care reglementările legale existente pot proteja asiguraţii de potenţialele maltratări rezultate din utilizarea unor astfel de metodologii. Studiul concluzionează că, în ciuda garanţiilor oferite de legile privind datele şi protecţia consumatorilor, aplicarea nereglementată şi neconstrânsă a analizei datelor şi a algoritmilor în evaluarea riscurilor ar putea dăuna asiguraţilor prin încălcarea vieţii private a acestora şi conducând la discriminare, afectând astfel drepturile acestora.

Cuvinte cheie: *inteligenţă artificială, tehnologie de senzori, confidenţialitate, risc.*

1. Introduction

The emergence of big data analytics and artificial intelligence [1] led to a significant transformation in the insurance industry, as insurance companies have rushed to digitize their operations and products to assess (previously uninsurable) risks and define and predict them. Access to data and the capacity to generate new risk insights will be key competitive elements in the insurance sector.

The emergence of these innovative technologies is predicted to bring about significant changes within the insurance sector through two distinct ways. Firstly, the growing volume of data, amplified computational capabilities, and advanced sets of data analysis tools will enable insurance firms to intricately and comprehensively assess risks, thus imparting a personalized nature to risk evaluation. Conversely, the utilization of big data and algorithms has the potential to considerably compromise individuals' privacy and may lead to discriminatory outcomes.

Sensing technology in collecting personal data promptly allows insurance companies to customize insurance products and allocate risks.

Accordingly, adopting the insurance contract for each insured on his situation requires knowledge of some aspects of his personal and professional life, which enables defining a specific risk for him. Based on that, an appropriate insurance amount can be determined for him. This creates a form of fairness in the contract and changes the legal nature of the traditional insurance contract for its excessive submission.

Undoubtedly, there are significant operational and legal risks for insureds' counterpart to the benefits arising from using big data and smart technologies.

In general, this study seeks to identify the impact of using big data on insurance contracts regarding privacy conditions, the risk factor, and whether the current legal framework is adequate to provide the required protection for insureds.

The study's problematic lies in the fact that big data is modern technology, and its use is a relatively new development in the insurance industry. The stakeholders in this industry anticipate that it will significantly impact insurance, both positively and negatively.

Based on the previous, the following main question can be raised:

How can big data bring about transformation in the world of insurance?

The study adopted an analytical and descriptive approach to explore this subject comprehensively, encompassing various aspects. This was achieved by analyzing relevant legal texts and elucidating certain legal concepts primarily related to big data, individualization, privacy, and risk. This was conducted within the framework of two fundamental points.

2. Research Method

This type of research is a legal research method that bases its analysis on applicable laws and regulations that are relevant to the research topic. Based on its type, the legal materials in this study consist of primary legal materials, legal materials secondary, legal doctrines, concepts, theories and expert opinions related to civil law and Social Security contained in written form (books, texts, legal journals and papers or views of legal experts published in the mass media) as well as direct interviews to deepen analysis), and tertiary legal materials. Data collection techniques were carried out through literature and internet searching. Data analysis was carried out using qualitative methods which were presented systematically by analyzing descriptive analysis.

3.Results and Discussion
3.1 Big Data and Policyholder Privacy

Big data constitutes information assets characterized by voluminous size, velocity, and diversity, necessitating innovative and efficient forms of processing distinct from ordinary data processing. This empowers users to enhance insights, make decisions, and engage in automated operations.

3.1.1. Big Data, Informational Privacy, and Globalization

Big data is described as information resources characterized by their large volume, rapid generation speed, and diverse range, necessitating efficient and creative processing methods to facilitate improved comprehension and decision-making. It has five dimensions: volume, velocity, variety, veracity, and value [2]. These can be categorized into three types [3]:

1. Structured data refers to organized data presented in tables or databases, ready for processing.

2. Unstructured data: This constitutes the most significant portion of data, encompassing textual writings, video images, messages, and online clicks individuals generate daily.

3. Semi-structured data: This is a form of structured data, but not arranged in tables or databases [4].

Today's world is surrounded by an abundance of data, which has given rise to a new market in the technology sector known as "Big Data." The volume of data, particularly the data generated automatically, presents significant challenges in handling this data. The importance of utilizing big data in the insurance field as part of business intelligence systems is evident. Big data is processed to develop products, create new products, reduce costs, avoid errors, enhance competitiveness, promote innovation and renewal processes, and strengthen business intelligence.

On the other hand, one of the biggest challenges and risks associated with big data is ensuring personal data privacy. The latter has become a valuable currency traded on platforms such as Facebook, Twitter, Yahoo, Google, and others. These companies profit by exploiting customers' personal data, including browsing habits, for advertising purposes. Advanced consumers seeking car insurance are likely unaware of the information being retained about them and how it is used [5] to assess risks [6] .

Privacy is the most delicate issue in this context as a fundamental human right [7]. Consequently, societies, particularly democratic ones, strive to protect privacy, viewing it as an independent and inherent right. They do not merely rely on laws to safeguard it but also endeavor to instill it in minds by cultivating noble values that play a significant and effective role in preventing intruders from encroaching upon others' privacy and revealing their secrets. This right has garnered significant attention from global entities, institutions, constitutions, and legal frameworks. At the international level, this concern is reflected in various global agreements, such as the Universal Declaration of Human Rights enacted by the United Nations General Assembly on 10th December 1948, with specific emphasis on Article 12" [8].

There is a type of information referred to as personal data related to individual and belongs to his entity as a person, such as a name, address, phone number, and other similar information. It is information that takes the form of data inherently linked to every natural person, whether identifiable or definable [9].

In our present time, this type of information has gained significant importance in contemporary information philosophy, significantly since the digital world concept can only progress and align with human interests with the use of information. Hence, the concept of information privacy, also known as data privacy, has emerged [10].
The concept of privacy has been addressed as a right to prevent the government's misuse of data processed electronically or digitally or to restrict its use in accordance with the law only [11].

In this context, a new term has emerged, which is 'data globalization.' What is protected in Switzerland may not be protected in the United States. This raises several questions in an environment where data transfers can be easily justified through laws such as the US Cloud Act ('The Cloud Act allows relevant parties to enforce US law by compelling technology companies that are based in the United States, through a court order, to furnish the required data stored on servers, irrespective of whether it is stored within the United States or abroad. Similarly, the improper utilization of data by non-professionals, leading to unjustifiable price discrimination against customers, is inherently unsound from a technical perspective.

Furthermore, accessing insured's data can lead to their segmentation into groups and categories, which may result in depriving them of insurance and excluding some consumers with relatively higher risks or imposing higher prices on them compared to other insureds.

While numerous benefits and advantages are associated with using big data in insurance, there are also several problems and challenges. This necessitates additional efforts to mitigate these issues. This can be achieved by advocating for the principle of trustworthiness, while simultaneously endeavoring to safeguard privacy through the implementation of data protection legislation.

3.1.2. Legal Framework for Privacy Protection

It should be noted that excessive privacy protection can negatively impact some insureds, as allowing the company access to their private data helps personalize and customize the insurance contract in a detailed manner that benefits the insured. Within the framework of an auto insurance contract, personal data can differentiate between a driver with drug-related tendencies or neurological disorders and another driver without such characteristics. Remote communication devices, often connected to vehicles, gather information about driving behavior, including geographical location, speed, acceleration, braking intensity, vibrations, collision events, and relay them to car insurance companies. Some home insurance companies offer their customers the opportunity to use remote home communication devices, which are often connected to smoke detectors, carbon monoxide detectors, smart locks, doors, windows, and are instantly transmitted to insurance companies or clients in case of violations.Similarly, some life insurance and health insurance companies provide wearable devices to their customers that collect and transmit real-time data about blood pressure, blood sugar, and heart rate to insurance companies, including dietary habits, weight, sleep, and exercise [12]. The former is more likely to be prone to accidents than the latter. Therefore, imposing the same conditions and contracts on both individuals would be unjust.

While leveraging big data in the insurance sector can yield considerable advantages for policyholders as mentioned earlier, it also has the potential to result in unfair discrimination, according to some viewpoints.

The imperative need to uphold consumer privacy has underscored the requirement for the highest standard of honesty and fairness.

Extending the obligation of transparency to encompass insurance companies utilizing big data entails the provision of comprehensive explanations regarding all risk-related information and the establishment of a legal foundation for its utilization. Furthermore, these companies should identify specific risk factors that directly influence individual insurance premiums. Moreover, individuals should be granted the right to rectify any inaccuracies in their data.

This suggests that insurance companies have an implicit obligation to reveal to policyholders the information they have gathered through the analysis of big data during risk assessments. In principle, during the initial stages before a contract is formed, the insurance company is obligated to disclose the information collected from various origins concerning the risks or attributes of the insured party.

Based on the inadequacy of the principle of good faith in alleviating insureds' privacy concerns, the logical next step is to consider whether data protection legislation provides an appropriate level of protection in data collection and use by insurance companies for risk assessment purposes**.**

It should be noted that most legislations do not prohibit insurance companies from obtaining personal data, but they may require explicit consent from their clients. Additionally, there is a requirement to specify the intended purpose of the collected information and data, which is a necessary assurance. However, this assurance may be relatively limited, as its consent might not be fully informed, considering that individuals might not fully comprehend the extent of their personal data that insurers can acquire, how this data can be used as part of processing, and the duration for which these companies retain such private information. Whether their consent is informed is subject to challenge under various laws, including (the European Directive [13] and several national legislations [14]).

3.2. The Impact of Big Data on the Risk Element in Insurance Contracts

Researching and analyzing big data allows for real-time insurance awareness, serving as a basis for providing individual insurance products to customers. However, before studying the impact of big data on risk, it is necessary to identify the fundamental principles of the risk concept in insurance contracts.

3.2.1. Risk as a Source of the Insurance Contract

An insurance agreement is categorized as an aleatory contract, signifying that it pertains to a subject matter or entity that did not exist at the time of contract formation. The involved parties cannot definitively ascertain the precise outcome or each party's gain from the transaction, as it hinges on the occurrence of insured risks. Hence, within the framework of civil law, insurance provisions are classified as aleatory contracts, as articulated in Article 57 of the Civil Code. This feature is also evident in Article 43 of Order 95-07. If the insured entity is destroyed or is no longer exposed to risk, the element of uncertainty ceases to apply, rendering it unsuitable for insurance.

According to Article 1964 of the Civil Code, an aleatory contract refers to a mutual agreement where the consequences, including gains and losses, for all parties or some of them, are contingent upon an uncertain event.

It is a type of contract where one of the parties involved cannot ascertain the exact amount to be given or received at the time of contract formation. Furthermore, even if one party can determine the amount given, they cannot ascertain the amount they will receive.

Since the texts of 1804 were unclear, the Court of Cassation intervened to declare that the contract is aleatory when the benefit the parties will receive is not perceptible at the time of contract formation [15].

According to Pothier: "In an insurance contract, neither party seeks a loss for the benefit of the other" [16].

Both parties are considered to have no vested interest in the event of the insured risk. As per the customary regulations, the contract subject should either exist presently or have

the potential for existence in the future, and it should be transferable or have the capacity for transfer and validity. When this is applied to an insurance contract, the risk should be feasible and probable, outlined within the contract as an insurable risk, with the specific stipulation in insurance contracts that it remains independent of the will of either party.

A - The necessity of risk assignment

The contracting parties shall agree on the risk or risks the insurance covers. The risk is assigned by specifying its nature, such as fire, theft, or lightning. Similarly, the object shall be assigned if we are discussing insurance for damages, such as houses, commercial premises, goods, or vehicles. In the case of personal insurance, the individual shall be specified, such as life insurance.

The risk may need to be assigned by establishing its cause if such a cause is specified. For example, fire insurance may cover the explosion of gas pipes, or life insurance may cover death due to natural causes. The risk can also be assigned in general terms, with the parties excluding certain cases. These specific cases must be precisely and clearly defined in such situations to avoid ambiguity. For example, the insurance may exclude coverage for fire caused by civil unrest in the case of war-related insurance. The insurer is not obliged to cover fire resulting from popular disturbances, for example.

B- The risk may be possible (risk probability)

The risk shall have the characteristic of probability. This probability can be viewed from two perspectives: the risk may be possible to occur in the future, meaning it may or may not happen at all, or it may be a particular risk that will occur; however, the date of occurrence is unknown and unspecified, making it possible to happen at any time. An example of such a risk is death. In all cases, the risk shall be potentially occurring, not impossible. If it is impossible, the contract becomes void due to the impossibility of the subject matter, meaning that the risk has materialized before the contract's conclusion, rendering its execution impossible [17].

3.2. 2.Big Data and Risk Sensing

The question arises is whether using big data and predictive analytics can impact the perceived risk probability in insurance contracts and mitigate the occurrence of risks, leading to removing the element of risk from insurance contracts?

Undoubtedly, predictive systems are one of the most important services of artificial intelligence. This service can understand the external environment, such as the timing of the day, social relationships, upcoming appointments, weather conditions, traffic, and many other factors. Predictive systems use various forms of diverse data, including social, local, and big data. They process all this data and provide valuable results and insights in forecasting. One of the types of predictive marketing is big data predictive marketing**.**

Big data is considered a fundamental pillar of predictive marketing. It collects the maximum possible amount of customer data and processes it to understand customer behavior, predict future actions, and analyze their current and past behaviors. The greater the quantity of customer data, the easier it becomes to analyze their behaviors by identifying differences between past and present behaviors, thus facilitating the identification of their desires and future tendencies [18].

Big data can significantly change how parties perceive insurance and the preferred conditions for contracting and risk coverage. Through massive amounts of data, significant

social benefits arise, leading to risk reduction and increasing the possibility of insuring against previously uninsurable risks.

Furthermore, new methods can be envisioned to encourage reaching optimal behavior through big data, allowing insurance to play a more significant role in providing complete protection against risks as well as predicting and preventing risks.

More specifically, big data can impact the principle of probability, mainly due to the reliability of predictive data analysis. By collecting more accurate data than ever, the risks and their financial outcomes can be precisely determined in terms of time and location.

Thanks to connected devices, associated applications, big data analytics, and soon genetic science, it is conceivable that the insured will have highly accurate and timely objective information about his health status and future developments [19]. Therefore, if permitted by the insured, the insurer may, through data and algorithms, assess the precise health risks that the insured faces and accordingly determine the insurance premium, considering his full knowledge of when the insured is likely to fall ill [20].

4.Conclusions

While big data significantly aids insurance companies in customizing the risk assessment procedure and adapting their insurance offerings to the public, the improper utilization of data analysis and algorithms for risk evaluation can pose multiple challenges for consumers. Given that existing regulations, particularly data protection laws, are unable to furnish the necessary level of protection for consumers, concerns have arisen regarding the adequate preservation of consumer privacy.
Among the findings, algorithms can indirectly lead to discrimination against specific consumers. These software applications are programmed to identify correlations between input data and target variables, regardless of the nature of these correlations. Additionally, there exists the potential for inaccuracies in data collection or analysis, which could yield unforeseen repercussions for certain policyholders.

- The findings suggest that precise risk evaluation could pose insurance difficulties for specific demographics, particularly individuals affected by hereditary, chronic, or health-related conditions.

- Algorithms have the capacity to enable insurance providers to create profiles for each individual and conduct more comprehensive risk assessments. This more refined understanding of risk allows insurers to place individuals into risk categories that align more closely with their specific characteristics, rather than relying solely on conventional generalized linear models for risk evaluation. Thus, a more detailed delineation of distinct risks is attained through diverse factors, including age, gender, health, occupation, social activities, shopping preferences, and even engagement on social media.

- Consequently, due to this personalized risk evaluation, policyholders will no longer be charged the same insurance premium as those who possess similar relevant traits.

- The unrestrained and unregulated application of these analyses might violate consumer privacy and potentially lead to discriminatory outcomes for those seeking insurance. This could potentially render certain individuals unable to secure insurance or faced with exorbitantly high insurance rates due to factors outside their control, such as their genetic predispositions.

- Nevertheless, even though this new avenue of development presents promising prospects for insurance companies, it is crucial to find the appropriate equilibrium in

regulating it, as excessive regulation might impede the realization of its complete potential. Hence, it is imperative to refine legislation to safeguard data, thereby enabling the equitable and transparent utilization of this technology in risk assessment procedures. It is anticipated that the insurance sector will acknowledge this requirement.

After this study, the following recommendations can be made:

• Closing legal loopholes that could jeopardize individuals' privacy by imposing a time limit on the extent to which insurance companies can go in collecting and using individuals' personal information.

• Beware of the risk of data theft or breaches resulting from a cyber-attack if insurance companies entrust the responsibility of conducting analyses to smaller "insurtech" providers, as the security systems of these firms might be more vulnerable to external infiltration. Consequently, it is vital to define specific mandates concerning how insurance companies must safeguard personal data.

• All types of insurance companies intensify their use of artificial intelligence applications and integration into the digital economy to encourage financial inclusion and advance the insurance sector.

• Establishing a strong infrastructure for services by establishing legal legislation that ensures control over technological limitations and making them able to withstand economic turmoil and crises, and electronic hacks and attacks that affect the computer programs of insurance companies.

• Training researchers and providing support to research centers specialized in the fields of technology in general and artificial intelligence in particular, and optimal investment of accumulated scientific and applied knowledge and experience, updating them and using them in making decisions related to insurance activities.

• Facilitating the geographical spread of insurance companies, especially major international companies, because they provide more flexibility and streamlined movement of funds, as these complexes often have very advanced research centers and are often allocated financial funds that exceed the budgets of many countries, and this allows for the diversification and innovation of many services. Insurance that suits all groups in society.

Conflicts of Interest: The author declares no conflict of interest.

Reference
1. Bonadio, E.; McDonagh, L. Artificial Intelligence as Producer and Consumer of Copyright Works: Evaluating the Consequences of Algorithmic Creativity. *Intellectual Property Quarterly* 2020, 2, pp. 112-137.
2. Javiera, C.B.; Munoz, N.F. Big Data and Its Role in Supporting Decision-Making and Strategic Bypass: A Case Study. *Journal of law and management* 2020, 9(2), pp. 108-131.
3. Crawford, K.; Schultz, J. Big Data and Due Process: Towards a Framework to Redress Predictive Privacy Harmst. *J. law* 2000, 16 (3), pp. 295 – 303.
4. Brown, R. L. Big Data for Development: Challenges & Opportunities. *Journal of Business and Economic Statistics* 1995, 13 (3), pp. 277 – 280.
5. Jihan, A. The Impact of Big Data Analysis on Financial and Operational Performance in Business Organizations. *Journal of Financial and Commercial Research* 2020, 21(2), pp. 161-163.
6. Abu Bakr, B. Crimes Arising from Internet Use. *International Review of Applied Economics* 2015, 29(3), pp. 403-434.
7. Mohamme, A. Towards a New Formulation of the Concept of Personal Life and its Guarantees in the Face of Computer Threats. 1st edition, Lioncrest Publishing, Austin, USA, 2021, pp. 9-185.
8. Abderraouf, E. Electronic formalism. *Economic and Law Modelling* 2013, 30, pp. 792-798.

9. Directive (EU) 2019/790 of the European Parliament and of the Council of 17 April 2019 on copyright and related rights in the Digital Single Market and amending Directives 96/9/EC and 2001/29/EC. Available online: https://eur-lex.europa.eu/eli/dir/2019/790/oj (accessed on 10 September 2023).
10. Kisswani, K.M.; Elian, M.I. Analyzing the contracts. The Journal of Economic Asymmetries 2021, 24, e00204.
11. Nargo, S.L.; LuschR. F. Protecting computer programs (methods and vulnerabilities). *J. Acad. Mark. Sci.* 2008, 36(1), pp. 1 - 10.
12. Ibrahim, J. Aleatory contracts. *Journal of Law* 2023, 05 (2), pp., pp. 201-203.
13. Martin, J. C. Big technology and data privacy. *Cambridge Journal of Economics*, Volume 46, Issue 6, November2022, pp. 1369–1385, Available online: https://academic.oup.com/cje/article-abstract/46/6/1369/6987605?redirectedFrom=fulltext (accessed on 27 May 2021).
14. Mbeki, T. The role of Big Data in Technology in developing. University of Cape Town, Cape Town, 2010, pp. 1-15.
15. Mamokhere, J. The reality of development in light of scientific progress and the concept of artificial intelligence. *Commonwealth Youth & Development* 2018, 16(2), pp. 1-15.
16. Amadi, L.; Ekwekwe, E. Artificial Intelligence as Producer and Consumer: Institutional approach. *Journal of Political Science and International Relations* 2017, 6(6), pp. 163–174.
17. Ncube, C.L. Big Data for Development: Challenges & Opportunities. *Journal of Law* 2010, 12 (7), pp. 541-550.
18. Olum, Y. Utilization of Big Data in Technology Companies and User Privacy. *Journal of Public Administration* 1995, 68(1), pp. 79-113.
19. Bloomberg, J. Innovations in the use of data facilitating insurance as a resilience mechanism for coastal flood risk. *Civil Law* 2023, 25(1), pp. 13-30.
20. D'Souza, S. *Analyzing the contracts.* 2nd edition, LID Publishing, London, UK, 2022, pp. 42-93.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS CC BY

THE PROMOTION OF NATIONAL IDENTITY AND ROMANIAN TRADITIONAL AESTHETICS THROUGH THE USE OF CONTEMPORARY ADORNMENTS

Inga Mațcan-Lîsenco, ORCID: 0000-0002-2419-1396

Technical University of Moldova, 168 Stefan cel Mare Blvd., Chisinau, Republic of Moldova
Corresponding author: Inga Mațcan-Lîsenco, inga.matcan@udu.utm.md

Abstract. This study accentuates the importance of the contemporary jewelry in the promotion of the national Bessarabanian identity. Romanian jewelry and adornments can include traditional elements, materials and techniques for the purpose of creating a unique masterpiece, which reflect Romanian culture. The ways through which contemporary jewerly can help promote Romanian national and traditional identity include inspiring traditional motifs, exploring cultural symbols, education and awareness, collaborating with local designers, and promoting sustainability. This study highlights the vital role of contemporary jewelry in preserving and transmitting Romanian Cultural Values in Bessarabia to future generations and in creating deep connections between artists, designers and the local community. It also highlights the importance of national identity in the development of contemporary jewelry, which can contribute to the promotion of Romanian traditions and crafts in the contemporary global context.

Keywords: *Bessarabian fine jeweler, contemporary jewelry, national and cultural identity, sustainability, traditional motifs in jeweler*

Rezumat. Acest studiu evidențiază importanța bijuteriilor contemporane în promovarea identității naționale basarabene. Bijuteriile și podoabele românești pot încorpora elemente tradiționale, materiale și tehnici pentru a crea opere de artă, unice care să reflecte cultura românească. Modurile prin care bijuteriile contemporane pot contribui la promovarea identității naționale și tradiționale românești includ inspirarea din motive tradiționale, explorarea simbolurilor culturale, educație și conștientizare, colaborări cu designerii locali și promovarea sustenabilității. Acest studiu subliniază rolul vital al bijuteriilor contemporare în conservarea și transmiterea valorilor culturale românești din Basarabia către generațiile viitoare și în crearea unor conexiuni profunde între artiști, designeri și comunitatea locală. De asemenea, evidențiază importanța identității naționale în dezvoltarea bijuteriilor contemporane, care pot contribui la promovarea tradițiilor și meșteșugurilor românești în contextul global contemporan.

Cuvinte cheie: *bijuterie basarabeană, podoabă contemporană, identitatea națională și culturală, sustenabilitate, motive tradiționale în bijuterie.*

1. Introduction

Contemporary clothing adornments can play a significant role in promoting national ideology and traditional Romanian stylistics. They can combine modern elements with traditional influences to create unique works of art that reflect the beauty and richness of Romanian culture. Jewelry is an inseparable part of the costume, often representing its particularities [1, p. 116]. Contemporary jewelry can be a powerful way of promoting national identity and traditional Romanian Stylistics reflected through creativity, innovation and respect for traditions. Contemporary jewelry can be a powerful way of promoting national identity and traditional Romanian Stylistics reflected through creativity, innovation and respect for traditions. They can contribute to the preservation and transmission of Romanian Cultural Values to future generations and to the growth of a deep connection between jewelers, designers and the local community.

The ethnic identity of a human community is manifested through the historical evolution, cultural influences and the transmission from one generation to another of the specific heritage, which illustrates the ethnic particularities of the Romanian people. The Moldavian folk costume preserved the lirico-thraco-Dacian substrate [2, p. 12]. This cultural heritage is visible in the aesthetic expression of contemporary jewelry and clothing adornments, thus contributing to the promotion of the cultural values of the Romanian people within the Republic of Moldova.

With the status of candidate country in the European Union obtained by the Republic of Moldova, it highlights the integration of our country into the experience and practices of other European states in terms of documentation, preservation and protection of national cultural heritage through scientific methods. This status implies a great responsibility through the academic community involved in research, including with regard to the identification, valorization and promotion of the cultural treasure.

The National Museum of History of Moldova (NMHM), the National Museum of Ethnography and Natural History (NMENH), The National Museum of Art of Moldova and the National Library (NMAMNL) were the main scientific and cultural forums that organized many events during the years of independence of the Republic of Moldova, such as publications in magazines such as "Tyragetia" and "Buletin Stiintific", presentation sessions, exhibitions, etc. Recently, the topic of cultural heritage has entered the range of activity of the Museum of History of Chisinau, which also frequently organizes cultural and scientific events [3]. Throughout the historical evolution, we have witnessed the process of enriching the physical appearance and manner of wearing clothing of the Romanian people, including handmade jewelry and adornments, made of precious metals or textile materials, being decorated with various symbols [4]. Therefore, we have a valuable and representative cultural heritage, inherited from our ancestors, which is carefully cherished in families and the institutions of national museums.

The research of specialists in the field of jewelry and fashion design tries to reveal the morphological stylistics of jewelry and adornments, providing a deep understanding of the concept of style. It consists of a set of elements specific to a particular historical period [5, p.53-57], based on the evaluation principles that define a specific artistic and aesthetic language. Along with elements of impressive aesthetics, designers are engaged in a continuous search for innovation, combining functionality with beauty. This approach allows them to create remarkable collections and clothing accessories, capable of satisfying the most demanding standards of pragmatism and the most refined tastes.

2. Materials and Methods

There are presented several research methods used for the study of contemporary clothing adornments and promotion of national identity and traditional Romanian Stylistics. These methods include historical, typological, formal-stylistic research and the analysis of cultural and ethnic influences.

The author explores the historical evolution of Romanian jewelry, identifying stylistic changes and cultural influences, and examines the types of traditional jewelry, highlighting their common and differential characteristics. It also analyzes the cultural and national symbols and motifs present in the jewelry and investigates the artistic styles and traditional aesthetics applied in their creation. In addition, it explores cultural and ethnic influences and strategies to promote national identity. These research methods are essential for the preservation and transmission of cultural heritage and for the promotion of traditional Romanian aesthetics in the modern context.

3. Results and discussion
Historical evolution and stylistic aspects

The evolution and initial studies in the field of jewelery and adornment making marked a continuous development of the understanding of stylistic-morphological characteristics. These researches investigated aspects such as symmetry, proportion, use of materials and the design itself. These studies contributed to the development of a quantity of knowledge that provided craftsmen and designers with the necessary tools to create jewelry and adornments of great beauty being in constant evolution. Through this research, significant innovations were brought to the field and a deeper understanding of the aesthetic and functional aspects involved in the making of jewelry and clothing adornments was developed.

The review of the historical evolution and traditional stylistics in the specific Romanian context reveals a rustic aesthetic, characterized by the artisanal approach [6, p.136-137], which conveys a symbol related to nature, through the selection of colors, materials and symbols used. This continuous development of traditional crafts in Bessarabia, starting with the end of the 19th century and continuing into the 21st Century, gives a remarkable significance to the style specific to Romanian national adornments and jewelry, highlighting in particular the influence of folk art. This influence is particularly significant in the field of jewelry and adornments and has a profound impact on the development and promotion of a distinct style that masterfully combines tradition with innovation in contemporary creations. Thus, this collaboration between craftsmen and contemporary designers contributes to the preservation and enrichment of the cultural heritage and to the creation of works of art that reflect the national identity and Romanian folk art in a modern and innovative way.

The artisanal jewel works created by traditional craftsmen from various localities currently add value to the collections of museums, such as the National Museum of Ethnography and Natural History and, the Museum of Archeology and Ethnography of the Academy of Sciences of the Republic of SSRM until its absorption in 2006, by the National History Museum of Moldova being created the National Museum of Archeology and History of Moldova, etc., which constitutes the most imposing documentary source consisting of preserved archaeological and museum pieces. Through the museum collections one can use truthful information about the clothing adornments on the territory of Bessarabia. These

creations include jewelry and adornments such as bracelets, necklaces and beads from seeds and grains, as well as decorative ceramic objects, which vary according to the geographical characteristics of the different regions of the country, including the decor, shape and color palette used, Figures 1-4. All these Romanian artisanal artifacts not only represent a tradition and a historical imprint, but are also objects of interest for tourists exploring the country.

Figure 1. Metal pendants. Bulgarian and Gagauz women's adornment. Southern Basarabia, early 20th century, NMENH. Photo Matcan-Lisenco Inga from the personal archive, 2021.

Figure 2. Brass buckles, NMENH. Photo Matcan-Lisenco Inga from the personal archive, 2021.

Figure 3. Buckles, plaques and colthing accessories. (14th c. Costesti, Ialoveni Distirct), NHMM. Photo Matcan-Lisenco Inga from the personal archive, 2023.

Figure 4. Enkolpions, bronze. (12th-13th centuries, Republic of Moldova). NNMM. Photo Matcan-Lisenco Inga from the personal archive, 2023.

In the 21st Century, within the local communities, festive events are organized to promote folk costume, traditions and traditional customs. In addition, folk craftsmen and designers contribute to enriching clothing with traditional Romanian elements, including configurations and decorations for adornments, ornaments, etc.

Cultural and stylistic interactions between various ethnic groups

When analyzing the history of Bessarabia, which included invasions, changes in statehood, military conflicts and developments in the forms of government and social organization, we can observe the interethnic cultural influences of the communications that inhabited this region [7, p.80-83]. From archival documents, we learn that Bessarabia was inhabited by Moldovans, Romanians, Gagauz, Bulgarians, Ukrainians, Germans, Jews, Russians, Poles, Cossacks, Armenians and members of various religious sects who contributed

to leaving specific stylistic prints. The ornaments discovered in the treasures of migratory peoples (Hins, Scythians, Goths) also have a special significance Figures 5 and 6.

Figure 5. Gold earrings, scythian period (4-3ᵗʰ century. Gorgan near the village of Butor), NHMM [8].

Figure 6. Golden grivna for neck from the scythian period. (4-3ᵗʰ century. Gorgan near the village of Butor), NHMM. Photos from the Museum's heritage [8].

For example, the invasion of the Ottoman Empire on the territory of Bessarabia in the 16th century [9, p. 77-79] it had a significant influence on adornments and jewelry in the region during the following period. This influence was the result of the cultural interaction between the native inhabitants of Bessarabia and the Ottoman masters and had several aspects, Table 1.

Table 1

The influence of the Ottoman invasion on the Bessarabian jewelry

Use of Ottoman materials	Traditional materials used in traditional jewelry such as gold, silver, semi-precious stones, began to be used in the production of jewelry in Bessarabia and this contributed to the development of new styles and methods in the region.
Ottoman production styles and techniques.	Under the rule of the Ottoman Empire, the inhabitants of Bessarabia were exposed to specific styles and production techniques, this led to stylistic influences such as: characteristic geometric and floral motifs, the use of cloisonne enamel.
Incorporating local traditional elements.	Traditional Bessarabian elements, such as floral and geometric motifs specific to the region, were frequently combined with Ottoman influences, giving rise to unique and hybrid creations such as: earrings with beads of a large variety [10, p. 237-242], *temple pendants with the characteristics of kolt*, with one, three or more beads [11], made of silver, bronze, earrings with printed openwork beads, *smooth pendants* reminiscent of early Byzantine samples. Adornments with abundant decor, granulation, filigree wire.
Preservation of cultural identity.	Jewelry and adornments were, in a way, carriers of cultural identity. They remained important to the local community, preserving and promoting Bessarabia's cultural heritage despite Ottoman rule.

In Bessarabia, some of the ornaments and jewelry were brought from Transylvania and Italy [11, 12]. Therefore, in the region under consideration, a significant variety of beaded

jewelry was noted, with notable differences both in the shape of the bow and in the quantity, technique of execution and peculiarities of the beaded ornament. Overall, the invasion of the Ottoman Empire in the sixteenth century introduced stylistic and technical influences in the production of jewelry and adornment from Bessarabia, however, these influences were harmoniously integrated into the cultural identity and local context.

The influence of German settlers in the late nineteenth century during the invasion of Bessarabia in World War II on adornments and jewelry in the region was a complex and often tense process. The distinct characteristics of this influence being evident, Table 2.

Table 2

Influence of German settlers on Bessarabian jewel

Impact on local production.	German troops brought with them a number of modifications and transformations in the local production of ornaments and jewelry. The raw materials and technologies, typical of German culture, were influenced by the context of the war and the limited resources available: semi-precious stones, colored glass, silver, brass, oxidized metal, enamel and engraved emblems, natural and organic materials (wood, bone, etc.).
Adaptation to German styles.	Simplicity and functionality, alternative materials, glass and enamel.
Military and patriotic elements.	Under the influence of Nazi ideology, jewelry and adornments were decorated with military and patriotic symbols, images that reflected patriotism and loyalty to German troops.
Limited materials and resources.	Due to the lack of precious materials, alternative materials such as copper and nickel were used, these being much more affordable. Glass and enamel allowed the creation of pieces with colorful ornaments that offered more variety in aesthetics and semiprecious stones – Amethyst, Garnet added value and strong sentimental and symbolic meaning to jewelry.
Social and political pressures.	Under the domination of German troops, the production of jewelry was often subordinated to social and political pressures. This influenced the theme and aesthetics of jewelry and adornments.

During World War II, German styles and aesthetic preferences, marked by austerity, functionality and patriotism, exerted a significant influence on jewelry and adornments in Bessarabia and other regions occupied by Nazi Germany. This infuence was evident by the adaptation to German styles, the presence of military and patriotic symbols, the use of alternative materials creatively, and the subordination of the production of jewelry and adornments to social and political requirements imposed by the Nazi regime. Thus, the jewels and adornments from this area became reflections of the ideology and the specific context of the Second World War and the German occupation in the Bessarabia region. This process generated creations with elegant lines and refined shapes, thus contributing to the development of a distinct local style and influencing the cultural heritage of the region.

Bessarabia created a unique stylistic identity in the design and materials of adornments, incorporating various influences that contributed to the development of Bessarabian national identity, Figures 7a, b and 8 [2, 12 p. 10-21].

a)   b)

Figure 7. Ritual objects for betrothal. Ungheni, 1940s, National Museum of Ethnography and Natural History (NMENH): a) crown; b) crowns, belt.
Photo Matcan-Lisenco Inga from the personal archive, 2023.

Figure 8. Tamara Yatsintkovskaya, opera singer. Early 20th century, NHMM.
Photo Matcan-Lisenco Inga from the personal archive, 2021.

Adoption of environmentally friendly materials and technologies from cultural heritage for the creation of contemporary jewelry and adornments

The incorporation of ecological materials and technologies from cultural heritage in the creation of contemporary jewelry and adornments in the 21st Century can be achieved through several strategies and approaches:

- The selection of sustainable and environmentally friendly materials;
- Recycling and reuse of old jewelry may include smelting metals for reuse or remodeling;
- The encouragement of hand-crafted craftsmanship and the use of traditional metalworking techniques. It can bring a unique and authentic element to contemporary creations;
- Education and awareness of the community and adornment wearers about environmentally friendly materials and their importance for the environment;
- Cooperation with local communities and artisans to obtain traditional natural materials sustainably and responsibly;
- The collaboration with local jewelers and designers can lead to the development of jewelry collections that reflect with innovation elements of traditional Romanian Stylistics in the fashion industry;
- design inspired by cultural heritage, the use of traditional cultural symbols to create jewelry and adornments with a connection to cultural heritage. This may include the use of traditional symbols or techniques in a modern and innovative way;
- Ethics and transparency through clear communication of the provenance of materials with commitment to compliance with ethical and environmental standards;
- sustainability awareness in design and marketing, highlighting how jewelry and adornments can and can be inherited and appreciated in the long run;

- the use of advanced technologies for processing and fixing environmentally friendly materials. Technologies such as 3D printing, laser processing can be applied to create complex and detailed models [13, p. 231-233].

Incorporating ecological materials and technologies from cultural heritage into contemporary jewelry and adornments in the 21st Century represents an innovative and responsible approach that can contribute to protecting the environment and preserving traditional cultural values.

Eco-friendly materials are a major challenge for jewelers, designers, craftsmen, but also for the customers of clothing adornment items. Traditional Bessarabian objects, such as iie, carpets, barks, towels, provide an unlimited source of inspiration for Romanian artists, due to the domination of vegetal motifs, transmitted in the form of a treasure of symbols. Traditional Bessarabian carpets, Romanian iie illustrate the distinctive approach to motifs such as flowers, leaves, birds, trees offering a variety of shapes and colors. These articles reflect the ability of the Romanian (Bessarabian) people to interpret stylized concrete contents, such as vines, cruciform symbols, tree of life, seasons. All these elements contribute to the diversity and richness of the cultural heritage of traditional Bessarabian crafts.

The promotion of national identity in contemporary jewelry and adornments can be approached through an interdisciplinary process, involving the integration of specific cultural and aesthetic elements [14] of a nation in current creations in the field of jewelry and decorative art. This strategy may include the use of national symbols, traditional materials, specific-cultural processing techniques, and collaboration with local artisans to convey and perpetuate elements of cultural identity in the context of contemporary jewelry. It also involves an educational and awareness approach to convey to the public the significance and importance of the gem as a means of expressing national identity. Specialized art exhibitions and fairs can be ideal platforms to showcase these creations and to encourage dialogue between artists and the public interested in a nation's cultural and aesthetic values.

Both worldwide and in the Republic of Moldova, there have been observed recent developments in the fields of jewelry, visual arts, in which new concepts and methodologies have been developed. They are oriented towards the promotion of national identity and are adapted to meet the needs of a profound transformation, with significant implications anchored in contemporary reality.

The style of contemporary jewelry in the Romanian space is characterized by the transcultural and transdisciplinary approach, based on the adaptation of techniques, materials and concepts [15, p. 153-157] from diverse cultural sources. It combines local traditions with global influences, highlighting interaction with the environment through the use of sustainable and recyclable materials.

In addition, jeweler aesthetics explores advanced tailoring techniques such as 3D printing and Computer Technology [16, p. 33-36], to create innovative forms and structures. Thus, jewelry becomes more than just accessories, but also means of communication and artistic expression.

Contemporary clothing adornments from Bessarabia and Romania represent an interdisceplinaristic field in development, which combines art, science of materials and sociocultural aspects, making a significant and innovative contribution to the evolution of contemporary jewelry, Figures 9-11.

Figure 9. Set of adornments, Autor Petru Turtureanu, 2017, From the Museum of Visual Arts of the Faculty of Fine Arts and Design, Chisinau [17]. Photo Matcan-Lisenco Inga from the personal archive, 2021.

Figure 10. Ring *Spice fierbinți*, Autor Mațcan-Lâsenco Adrian, 2000 From the private collection Canada [15]. Foto Matcan Adrian from the personal archive, 2020.

Figure 11. Earrings, Returning to the Origins, Autor Tiron Olga, 1994 From the Museum of Visual Arts of the Faculty of Fine Arts and Design, Chisinau [17]. Photo Tiron Olga from the personal archive, 2022.

Contemporary jewelry and accessories currently align on the principle of minimalism, while traditional ones continue to bring elements from the past to the present. This trend includes the use of rough textures, naturalistic configurations, surfaces with pronounced roughness, imitations and influences of traditional ornaments, among others, Table 3.

Table 3

The influence of traditions and craft techniques in the design of Bessarabian clothing ornaments

Materials and processing.	Romanian peasant communities meticulously made ornaments from natural materials such as wool, cotton, flax and hemp, which were grown and processed by hand.
Clothing items	Embroidery, straps and beads were elaborated with attention to detail and used traditional sewing and embroidery techniques passed down from generation to generation.
Cultural expressions	Adornments were expressions of cultural and social identity, used in important ceremonies and celebrations.
Rediscovery in design	Traditional traditions and techniques are rediscovered and harnessed in contemporary fashion, bringing authenticity and cultural roots.
Cultural heritage	The connection between the past and the present preserves and brings into contemporary light the cultural heritage, offering an innovative perspective on traditions and artisan techniques.

The findings of this study bring into attention a series of significant implications in the context of promoting Romanian national identity through clothing. These implications can be discussed in a broader context to emphasize their importance and serve as a starting point for future research. At the same time, it is important to highlight the limitations of this

study, as well as the potential research directions based on the results obtained: geographical limitation – the study focuses mainly on the Republic of Moldova, which may limit the generalization of the results to other regions or cultures; time limitation – the study is based on data and trends specific to a particular point in time, which may affect its long-term relevance.This study paves the way for a number of researches: exploring the similarities and differences between the promotion of national identity through jewelry in Bessarabia and other countries and cultures; further research can explore new technologies that can be integrated in the manufacture of jewelry, as well as how they can influence traditional aesthetics; the economic and social impact of the traditional jewelry industry in the development of local communities, etc. [5, p. 10].

5. Conclusions

The study emphasizes the importance of etnic and cultural identity in promoting traditional Romanian aesthetics through clothing adornments, highlighting the stylistic evolution and cultural influences in traditional jewelry. It also discusses the need to adopt environmentally friendly materials and modern technologies in the production of contemporary jewelry and examines the cultural interactions between various ethnic groups in terms of integration and local tradition. The implications of these findings for the preservation and promotion of national identity through contemporary jewelry and adornments are significant, although the study of geographical and time limitations also opens prospects for further research, including cross-cultural comparisons and the evolving economic and social impact of the traditional jewelry industry.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Reabtseva, S. *Pieces of adornment and clothing on the territory of historic Moldova.* Academos, nr. 2, 2015, pp.128-134 [in Roumanian].
2. Buzilă, V. *Folk costume from the Republic of Moldova: practical guide.* Available online: https://archive.org/details/varvarabuzilacostumulpopular/page/n11/mode/2up (accessed on 21.10.2023).
3. Condraticova, L., Bujorean, T., Cercaşin, M., Tocarciuc, A., Pintilie, E., Ischimji, A. *The act of union of Bessarabia with Romania from 1918 and cultural heritage: impact, evolution, perspectives.* Dialogica 2023, 1(S), pp.141-154 [in Roumanian].
4. Zelenciuk, V., Kalaşnicova, N. *Vestimantația populației orăşănești din Moldova (secolele XV-XIX).* Ştiinţa, Chişinău, 1993, pp. 10-25.
5. Popescu, M. *Obiecte de podoabă sud-dunărene.* RM IV (1) 1967, pp. 56-57.
6. Bujorean, T. Relaţii de interdependenţă între costumul popular moldovenesc cotidian şi cel de sărbătoare în perioada contemporană. *Revista de Etnologie și Cultorologie* 2016, 20, pp. 135-139.
7. Cârciumaru, M.; Niţu, E.; Odabă, T.; Cîrstina, O.; Covalenco, S.; Lupu, F.; Leu, M.; Nicolae, A. *Personal Ornaments in the Mid Upper Palaeolithic East of the Carpathians.* PALEO – Revue d☒archeologie prehistorique 2019, 30, pp. 80-97.
8. Markevici V.I. *Muzeul de arheologie și etnografie al AS și RSSM*, 1989, 79 p.
9. Reabtseva, S. *Piese de podoabă şi vestimentaţie din Moldova şi Ţara Românească în contextul relaţiilor cultural-istorice (secolele XIV-XVII).* Istros, Braila, Romania, 2014, 375 p.
10. Spinei, V. *Sâpăturile de la Trifești* (jud. Iași). MCA XVI, 1986, pp. 237-242.
11. Reabtseva, S. Pandantive de tâmplă şi cercei în forma de semilună şi margelate în monumentele arheologice din regiunea Carpato-Danubiană (sec. XII-XVII). *Revista Arheologică*, 2013, 9(2), pp. 111-126.
12. Zelenciuk, V. *Moldavian national costume.* Timpul, Chisinau, Moldova, 1985, 148 p. [in Russian].
13. Matcan-Lisenco, I. *Tehnologiile informaţionale în domeniul giuvaiergiei. Utilizarea modelării 3D, in Identitate și tradiție în artă și cultură prin realitatea augumentată.* Academica Brâncuşi, Moldova, 2022.

14. Matcan-Lisenco, I. Valorisation of adornments in the professional training of students. *Studiul artelor şi culturologie: istorie, teorie, practică* 2022, 1(42), pp. 120-124 [in Roumanean].

15. Matcan-Lisenco, I. The composition and estehetics of the fundamental elements in contemporary clothing ornaments. In: *Materials of the XII-Russian Scientific and Practical Conference. Perm State Institute of Culture*, 2022, Available online: https://elibrary.ru/item.asp?id=50329102 (accessed 15.10.2023).

16. Matcan-Lisenco, I. Information technologies in the field of jewelry. Use of 3D design and modeling software. *Horizont for sustainability* 2023, 2(19), pp. 31-38. Available online: https://ippase.utgjiu.ro/cercetare-2/reviste-editate/revista-1/numar-curent/ (accessed 21.10.2023).

17. Matcan-Lisenco, I. *Olga Tiron (Popovskii) master of basarabian contemporary artistic jewelery*. Notograf Prim, Chisinau, Moldova, 2022, pp. 146-151.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

ARTISTIC ASPECTS OF TRADITIONAL BESSARABIAN FURNITURE
(LATE 19TH CENTURY - MID-20TH CENTURY)

Madan Elena[*], ORCID: 0000-0003-4955-1789

Technical University of Moldova, 168 Ștefan cel Mare Blvd., Chisinau, Republic of Moldova
Corresponding author: Elena Madan, elena.madan@dip.utm.md

Abstract. The study focuses on the artistic aspects of traditional furniture from Bessarabia, dating from the late 19th century to the mid-20th century. We emphasize the importance of materials, decorative techniques, artistic means, and decorative structure in the crafting and decorating of traditional furniture. The motivation for this research lies in analyzing how the culture and folk art of Moldova are reflected in the characteristics of traditional furniture. The specific hypothesis of this study posits that Moldovan traditional furniture represents an expression of the talent and artistic sense of the craftsmen and householders from Moldova. The research aims to conduct a detailed analysis of the materials used, including wood and others, as well as decorative techniques such as carving, sculpture, and painting. The objectives include a comprehensive description of the mentioned materials and techniques. The research methods included documentary analysis, relevant illustrations, and extensive field research in all regions of the Republic of Moldova, spanning the years 2007-2023, contributing to the scientific and applied foundation of the research. The main results consist of highlighting the role of traditional furniture in reflecting Moldovan culture and folk art, providing data and illustrative images to support these aspects.

Keywords: *folk art, materials, means, traditional furniture, techniques, structure.*

Rezumat. Studiul se concentrează asupra aspectelor artistice ale mobilierului tradiţional din Basarabia, datând de la sfârşitul secolului al XIX-lea până în mijlocul secolului al XX-lea. Acesta pune în evidenţă importanţa materialelor, tehnicilor decorative, mijloacelor artistice şi structurii decorative în confecţionarea şi decorarea mobilierului tradiţional. Motivaţia cercetării constă în analiza modului în care cultura şi arta populară din Moldova se reflectă în caracteristicile mobilierului tradiţional. Ipoteza specifică a acestui studiu presupune că mobila tradiţională moldovenească reprezintă o expresie a talentului şi a simţului artistic al meşterilor şi gospodarilor din Moldova. Scopul cercetării este de a efectua o analiză detaliată a materialelor utilizate, inclusiv lemnul şi altele, precum şi a tehnicilor decorative, cum ar fi crestarea, sculptura şi pictura. Obiectivele includ descrierea exhaustivă a materialelor şi tehnicilor menţionate. Metodele de cercetare au inclus analiza documentară, ilustraţii relevante şi cercetări de teren extinse în toate raioanele Republicii Moldova, pe parcursul anilor 2007-2023, ceea ce a contribuit la fundamentare ştiinţifică şi aplicativă a cercetării.

Principalele rezultate constau în evidențierea rolului mobilierului tradițional în reflectarea culturii și artei populare moldovenești, oferind date și imagini ilustrative pentru a susține aceste aspecte.

Cuvinte cheie: *arta populară, materiale, mijloace, mobilier tradițional, tehnici, structură.*

1. Introduction

The culture of people is expressed through the material and spiritual values that dominate in a specific region and define it as a nation. The article "Moldovan Folk Ornaments" by S. N. Șaranuța highlights the close connection between folk art and the everyday life of the people, serving as evidence of their rich talent [1, p. 5]. In this context, our article explores the richness and diversity of folk art, with a focus on rural furniture. Traditional furniture from Bessarabia, from the late 19th century to the mid-20th century, a period characterized by significant changes in society and rural environments, represents a remarkable aspect of the cultural and artistic heritage of this region. This furniture is not only an example of the skill of local craftsmen but also serves as a window into the history and culture of Bessarabia during that period. The rustic furniture of Moldova, deeply rooted in rural communities at the end of the 19th century, was profoundly influenced by the introduction of carpenter-made (urban) furniture into peasant households, revealing signs of modernization and cultural shifts.

This change generated a dynamic interaction between urban and rural environments, impacting the traditions and production styles of furniture. Development initiatives from gubernial and regional zemstvos contributed to the formation of classes and professional schools in the field of craftsmanship, significantly influencing the furniture creation process and reflecting the specific trends of that period.

In this article, we aim to explore the artistic aspects of traditional Bessarabian furniture from this period. Furthermore, in light of the detailed analysis of the classification of traditional furniture based on material, form, and function from previous research [2, pp. 16-17], with a particular consideration of the storage, leisure, and dining functions of furniture, we address the artistic aspects influenced by their placement within the home. Whether they are situated in a pantry, the main house, or the "Casa Mare," these pieces exhibit varying artistic characteristics [3, pp. 73-83]. Focusing on the materials used, decorative techniques, artistic means, and decorative structure. In this regard, we will examine wood, metal, and wickerwork in detail as materials, as well as techniques such as carving, fretwork, sculpture, pyrography, and painting. Additionally, we will delve into the artistic means employed in crafting the furniture, including proportion, symmetry, rhythm, and contrast, all of which contributed to the harmony and expressiveness of these works of art. The decorative structure of rural furniture will be emphasized, highlighting how ornamental elements and motifs were composed to create unique and significant pieces. We will carefully analyze the details that added beauty and value to these furniture pieces, bringing to the forefront the elements that made them so distinct and valuable in the cultural context of Bessarabia.

2. Materials and Methods

In this study, we focused on traditional furniture from the Bessarabia region, dating from the late 19th century to the mid-20th century. The materials used for research included authentic pieces of traditional furniture found in museum collections in the Republic of Moldova and items identified during field research. These artifacts were selected to cover a

variety of styles, decorative techniques, and regional characteristics, providing a comprehensive picture of furniture from this period.

To analyze the artistic aspects of traditional Bessarabian furniture in detail, we employed a combination of research methods, including direct observations, field studies, and documentary analysis. Field research involved visits to museums and private collections to examine authentic furniture pieces and document decorative techniques. Direct observations allowed for a detailed assessment of the materials used, wood processing techniques, decorative techniques, as well as the decorative structure of the furniture pieces.

Additionally, we consulted reference sources and previous studies to gain historical, social, and cultural context, crucial for understanding the production of traditional furniture in Bessarabia during the analyzed period. Moreover, based on data analysis, we utilized statistical processing of results to observe regional nuances.

Traditional furniture from rural environments holds a significant place within folk art. A careful observation of furniture pieces found in rural households reveals the craftsmanship and remarkable skills of those who built them, be they carpenters or householders. Although furniture was primarily focused on functionality, adopting simple and ingenious structures, ornamentation was rare. However, special emphasis was placed on ensuring a harmonious balance between the components of the furniture, and correct proportions were crucial. In the artistic album "Din ornamentica romană" (From Romanian Ornamentation) designed by D. Comsa, it is emphasized that art is a replica of nature, reflecting the artist's vision and feelings in the light of their talent [4, p. 4]. This artistic insight is found in folk art, even in objects that may seem predominantly practical but adhere to harmonious proportions, thus highlighting the remarkable aesthetic sense of Romanian rural communities.

In the context of furniture decorations, a limited approach to ornaments can be observed, with special attention paid to their harmonious placement on the respective surfaces. There is a preference for simple forms and entirely engraved surfaces, with a clear prevalence of geometric motifs [5, p.121]. When it comes to the constructive characteristics of traditional furniture, they are distinguished by proportionality and the ability to seamlessly combine various components into a unified ensemble. The decoration was strategically placed on the surfaces of furniture pieces, with a greater concentration on the main parts exposed to view and less presence on less visible sides, completely absent in areas considered invisible. For example, in the case of a bed, ornamentation was concentrated especially on the legs, while the long boards were covered with textiles. A significant observation is the gradual decrease in the density of decor on dowry chests, which held significant artistic value, having multiple exposed surfaces: the main front, the two sides, and the lid. Furthermore, variations can be distinguished regarding the ornamentation of component elements, so that the decor applied to flat and expansive surfaces differs from that applied to thin elements, such as legs or edges of the furniture [6, p.39].

On pieces of furniture, decorative elements such as the diamond or straight line are commonly found, appearing on different planes. These ornamental elements are often inspired by everyday life and the surrounding environment, adapted and stylized using various techniques such as incision, sculpture, painting, or fretwork. These details are carefully and harmoniously placed on the appropriate surfaces to seamlessly blend with the wood's texture [7, p.11].

Each culture develops distinct artistic characteristics defining its folk style. While some elements and ornamental motifs may be influenced by neighboring cultures or invaders, folk

style often evolves independently, still retaining common traits with other cultures. What distinguishes folk style is how the artistic ensemble is composed. By studying peasant furniture pieces from the entire region of Basarabia and through comparative analysis in specialized literature, we can identify the distinct artistic characteristics of peasant furniture, especially those from Basarabia. In general, dating antique furniture from the 19th to the 20th centuries divides this period into several distinct intervals: – until 1850; – between 1850–1917; – between 1918–1950; – after 1950 [8, p.171]. However, depending on the type of furniture, characterizing a specific period may be more or less apparent. For instance, dowry chests, due to their distinct artistic features, provide a more detailed characterization of the period in which they were created. Chests covered with tin, for example, are characteristic of the late 19th century and the early 20th century. This relatively short period of crafting these furniture pieces is explained by the rapid wear and tear of tin, which had rapid oxidation and deformation properties.

Moreover, for dowry chests, the furniture's form can provide information about the geographic space and specific period. For example, at the end of the 19th century, in the northern and central regions of Bessarabia, the chests were without legs and had a straight lid, with floral elements usually distributed in three rectangular registers. In the same period, in the southern regions, the chests were slightly larger, with profiled legs, a straight lid, and more stylized floral decorations distributed in 2 or 3 registers in a circular form.

However, for other pieces of furniture, such as tables or beds, dating covers a broader time span, usually being covered with different textiles. Dating furniture can bring up interesting aspects, but these will be addressed in detail in subsequent research. In this study, the focus will be on the general artistic aspects characteristic of the period from the late 19th century to the mid-20th century.

The artistic sensibility of the peasant or craftsman creating the furniture, whether for personal use or on commission, contributes to the emergence of remarkable artistic traits in peasant furniture. These artistic aspects are reflected in the choice of materials used in constructing the furniture, in the decorative techniques and artistic means employed, as well as in the decorative structure of the furniture pieces [9, p.98].

3. Results

The structured distribution of artistic features of peasant furniture can be observed in Figure 1. Furthermore, we will carefully analyze each component separately to better understand the specific aspects of this furniture.

Materials used in peasant furniture: Peasant furniture stands out through the use of a variety of materials, each contributing to a distinct and durable appearance. Among the most commonly used materials are wood, metal, and wicker, each possessing its own aesthetic characteristics and qualities.

Wood is frequently chosen for peasant furniture due to its availability and durability. It is used in various types, such as oak, beech, walnut, elm, cherry, lime, spruce, etc. Each type of wood has distinctive characteristics regarding texture, durability, and strength. For example, oak wood is renowned for its hardness and noble appearance, while beech wood is appreciated for its strength and uniform texture. In Figure 2, we can see a round low table made from oak wood, displayed at the Tomai Village Museum in Leova. This piece of furniture dates back to around 1940.
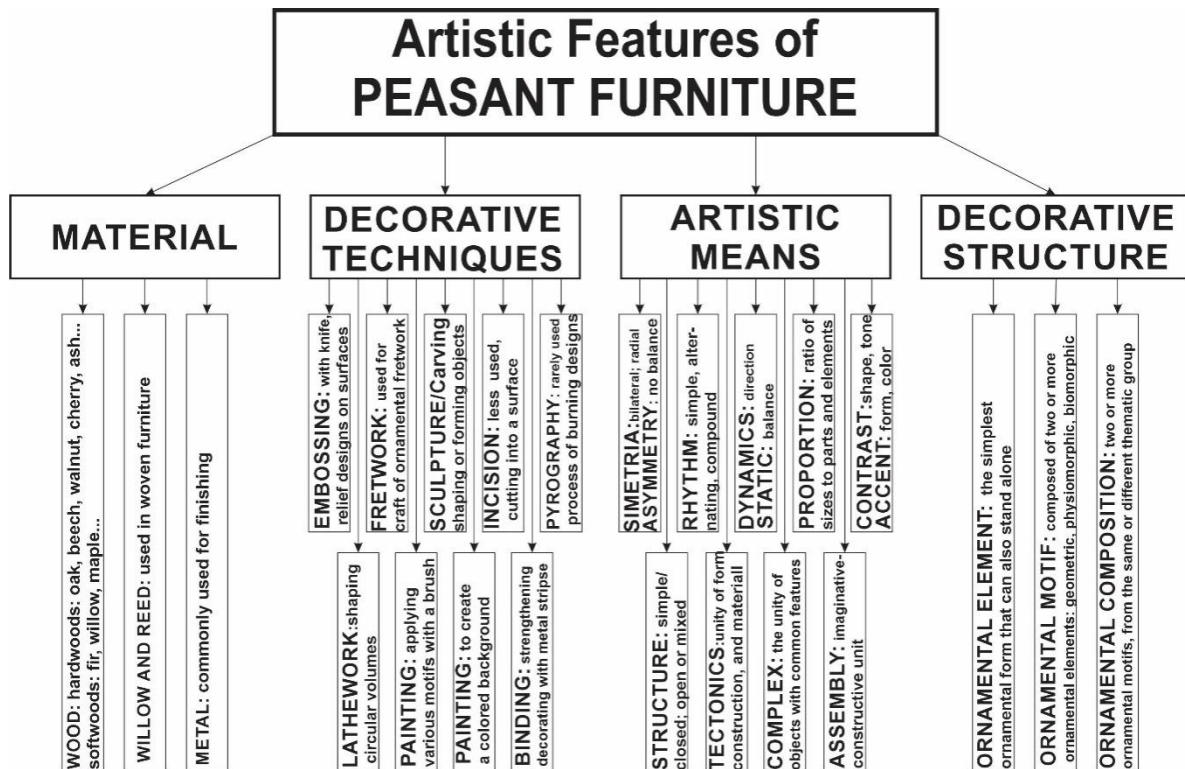
Figure 1. Artistic features of peasant furniture.

Here is a concise overview of the characteristics of several types of wood used in traditional furniture making:

1) Oak: Oak stands out for its durability and strength, featuring a distinct texture and various shades of brown. It is renowned for its nobility and is often used in traditional furniture, providing it with resilience and stability.

2) Beech: Beech is a solid and robust wood with a uniform texture and diverse shades of brown. It is appreciated for its strength and dimensional stability, making it suitable for crafting furniture. Beech is easy to work with and gives furniture a natural and warm appearance.

3) Walnut: Walnut is known for its beauty and a variety of shades, ranging from dark brown to light brown. This wood has a fine texture and a distinct look, prized for its aesthetic appeal. Walnut is often used in high-quality furniture, adding an elegant and sophisticated touch.

4) Elm: Elm is a durable and resilient wood with a medium to rough texture and various shades of brown. It is resistant to moisture and insects, making it suitable for traditional furniture with a rustic and natural appearance.

5) Cherry: Cherry wood stands out with its warm and attractive color, ranging from deep reddish-brown to pale pink. With a fine and uniform texture, it is easy to work with and suitable for detailed finishes. Cherry provides moderate strength to furniture and is often chosen to add elegance and refinement to pieces.

6) Lime: Lime wood is known for its slightly yellowish hues and fine, uniform texture. It is easy to work with and can be shaped, making it suitable for intricate carvings and complex decorative patterns. While it is a durable wood, it is less resilient than oak or beech. Lime is favored, especially in traditional furniture, for its pleasing appearance and ease of handling.

7) Spruce: Spruce is less durable than the other mentioned species but stands out with its bright color and uniform texture. It is often used for lighter furniture or decorative details, bringing freshness and lightness to pieces.

This provides a general overview of the characteristics of each type of wood mentioned. Exact characteristics can vary depending on the wood species and growth conditions [9, pp. 29-31].

Metal represents an essential element in traditional furniture, bringing both decorative elements and essential functionality to furniture pieces. Components such as hinges, handles, and locks, handcrafted from metals like wrought iron, copper, or tin foil, are carefully integrated into the furniture's structure, giving it a sophisticated look and increased durability.

An illustrative example of the application of metal in traditional furniture creations can be seen in Figure 3, where a dowry chest displayed at the Museum of History and Ethnography in the village of Mateuți, Rezina district, is presented. This chest is primarily made of wood, but its surface is covered with tin foil, a thin metallic material. Tin foil, also known as tinplate, is decorated with reliefs obtained by pressing or embossing a predefined pattern into the tinplate.

This concrete example demonstrates how metal adds value both aesthetically and functionally in the context of traditional furniture. By covering the wood with tin foil, the dowry chest receives a distinctive decorative appearance, while the elaborately crafted reliefs in the tinplate add a unique artistic element. Thus, traditional furniture is no longer just a simple container for precious items; it becomes an impressive and durable piece.

By including metal in the manufacturing process of peasant furniture, a perfect harmony is achieved between wood and metal, bringing significant benefits in terms of both aesthetics and functionality. Metallic elements such as hinges, handles, and locks not only contribute to the strength and stability of furniture pieces but also add a distinctive charm to their design.

Figure 2. Use of wood in furniture making. Tomai Village Museum, Leova, Approx. year 1940, Donated by Gumenita Terenti.
Photo by Uncu Ana (2020).

Figure 3. Dowry chest covered in tin foil. Museum of History and Ethnography in the village of Mateuti, Rezina district.
Photo by Stirbu Ion (2020).

Figure 4. Rush table Museum of History and Ethnography, Soroca city. Detail photo from 1926, School of Furniture and Basket Weaving, Soroca County Prefecture.
Photo by Bulat Nicolae (2020).

Rush represents a distinctive material in the context of traditional peasant furniture, notable for its flexibility and ease of processing. It is often used, especially for weaving and decorations, giving furniture pieces a unique and authentic character. In traditional furniture creations, rush is often chosen to bring various decorative details to life, such as weaves or ornamental elements, adding a special charm to these pieces.

A concrete example of the use of rush in furniture manufacturing can be seen in Figure 4, which presents a photograph of a table made of rush, displayed at the Museum of History and Ethnography in the city of Soroca. This image fully illustrates how rush is integrated into the design of traditional furniture and highlights the craftsmanship of artisans from the school of weaving of furniture and baskets, active in the Soroca county prefecture in 1926.

Decorative techniques represent a particularly important aspect of traditional peasant furniture, contributing to its artistic value and unique identity. Among these techniques, we can list the following:
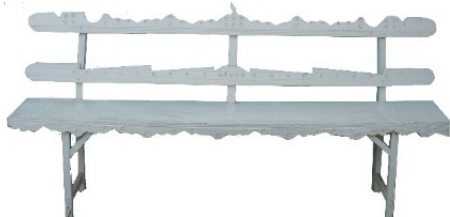

Figure 5. Long Chair, Cresting. Owner: Viorica Dabija, Trușeni Commune, Chişinău Municipality
Photo by Elena Madan (2007) [11, p.95].

Figure 6. Dowry Chest, Cresting. Museum of History and Ethnography, Balti Municipality. Late 19th – early 20th Century.
Photo by Elena Madan (2009) [8, p.176].

Figure 7. Wooden, Dish Rack, Fretwork Ethnography Museum in Cania Village, Cantemir.
Photo by Raisa Andronov (2020).

1) **Cresting:** This technique involves using tools such as knives, chisels, or compasses to create ornaments through cuts on the surface or edge of objects. Incision is characterized by making shallow cuts in wood, giving rise to geometric ornamental motifs. This technique is usually found in the decoration of items such as dowry chests, tables, chairs, benches, beds, dishes, and more. A conclusive example of the application of this technique can be seen in Figure 5, which presents a long bench illustrating incision techniques. It belongs to Mrs. Dabija Viorica from the village of Trușeni, Chisinau municipality. Additionally, Figure 6 presents a dowry chest that uses the incision technique and is exhibited at the Museum of History and Ethnography in Balti, dating from the 19th to the early 20th century.

2) **Fretwork:** This technique involves the precise cutting of wooden panels to create delicate shapes and elaborate decorations. Recently, this technique has gained increased importance, both in terms of its different working method and its application in the traditional decoration of rural interiors with truly beautiful motifs. Fretwork is used in furniture to decorate chair backs, corner shelves, platters, beds, corner cabinets, benches, or coat racks. A significant example is presented in Figure 7, where fretwork can be observed in a piece exhibited at the Museum of Ethnography in the village of Cania, Cantemir district.

3) **Sculpture or Carving:** This technique, derived from incision, involves shaping prominences to create three-dimensional or relief details. Typically, softwood species such as poplar or linden are used, but harder wood like oak can also be used because hardwood fibers are generally less prone to chipping. Sculpture is often used in a later period, with the introduction of mechanized tools, and is used in making table legs, chair backs, and sofa armrests, with a varied decorative profile. A relevant example can be seen in Figure 8, which shows the use of sculpture/carving in a piece exhibited in the House-Museum of the artist Igor Vieru in the village of Cernoleuca, Donduseni district.

4) **Incision:** This less common technique involves making deep scratches to highlight the contours of shapes. An example of the application of this technique can be seen in Figure 9, which presents the use of etching in a sofa owned by Mrs. Munteanu Ana from the village of Frumusica, Floresti district.

5) **Pyrography:** This technique involves the use of specialized tools and branding with heated iron to create ornamental motifs. A relevant example can be seen in Figure 10, where we can observe the use of pyrography in a piece displayed at the Museum of History and Ethnography in Slobozia Mare, Cahul. This work was created by Mr. Grigorii Brovcenco in 1910.

Figure 8. Wooden, Dish Rack Sculpture. House-Museum of Artist Igor Vieru, Cernoleuca Village, Donduseni District Owner and Crafted by Roland Vieru.
Photo by Elena Madan (2009).

Figure 9. Settle Incision. Owner: Ana Munteanu Frumusica Village, Floresti District
Photo by Elena Madan (2008) [12, p.3].

Figure 10. Pyrography Technique. Museum of History and Ethnography, Slobozia Mare Village, Cahul, Year 1910, crafted by Brovcenco Grigorii.
Photo by Maria Chiciuc (2020).

6) **Painting and Decoration:** These two techniques are used to add colors and decorative motifs to the surface of furniture. An example can be seen in Figure 11, which shows a dowry chest painted in a reddish-brown tone. This is displayed at the Giurgiulesti Village Museum, Cahul. As for painting, Figure 12 presents a painted dowry chest displayed at the Edinet County Museum. This technique involves the meticulous application of various decorative motifs on furniture, adding artistic and expressive details.

Through painting, craftsmen expressed their creativity and talent by creating various ornamental motifs such as flowers, leaves, animals, or geometric shapes. These details were applied with great care to give peasant furniture a distinctive touch and special charm. Furniture painting was initially done with water-based colors, and later, oil-based paints

became predominant, featuring floral designs or abstract patterns. This technique was successfully applied to many types of furniture pieces, such as dowry chests, low tables, high tables, sofas, and more. As it was a more recent technique, it became widespread throughout the republic because it was quick, accessible, and offered a wide range of decorative options.

7) **Wood Turning:** This technique refers to shaping forms/volumes through light scratching or cutting with a sharp tool. An illustrative example is shown in Figure 13, a table with turned legs, owned by Mrs. Olga Ciofu from Hasnasenii Mari Village, Drochia District.

8) **Metal Fittings:** This method involves reinforcing and decorating furniture pieces with metal strips. An example can be seen in Figure 14, which presents a dowry chest fitted with metal strips and displayed at the Village Museum in Boscana Village, Criuleni District.

Such classifications of decorative techniques can be found in several significant works, such as Nicolae Cojocaru's work "The Old Wooden House in Bukovina" [13], which addresses them in the context of interior decoration, and Vitalie Malcoci's work on "Architectural Stone Decoration in Moldovan Folk Art (Late 19th Century – 20th Century)" [14], which focuses on carving techniques and ornamental methods.

These examples represent just a few illustrations of how decorative techniques are applied in traditional furniture, detailed within each figure. The use of these techniques adds unique elements and aesthetic value to furniture pieces, thus contributing to the beauty and artistic diversity of these objects.

Figure 11. Painted, Dowry Chest. Museum of the Giurgiulesti Village, Cahul.
Photo by Aurica Cazacu (2020).

Figure 12. Painted Dowry Chest. Museum of the Edineț District.
Photo by Adriana Preaşca (2020).

Figure 13. Table with Turned Legs. Hasnasenii Mari Village, Drochia District, Owner: Olga Ciofu (born 1924).
Photo by Elena Madan (2007).

Figure 14. Iron-Banded, Dowry Chest. Museum of the Village, Boşcana, Criuleni District.
Photo by Elena Samoila (2020).

Artistic Means: The artistic means used in peasant furniture contribute to creating a harmonious and expressive aesthetic. Among these are:

1) *Proportion:* It represents the size relationship between the parts and components of the furniture pieces. A concrete example is illustrated in Figure 15, which depicts a bed exhibited in the "A. Mateevici" House-Museum in the village of Zaim, Căuşeni, dating back to the late 19th century.

2) *Symmetry*: Symmetry can take the form of bilateral or radial symmetry, which means the similar reflection of elements on both sides of the piece of furniture. A relevant illustration is provided by a dowry chest exhibited in the Museum of History and Ethnography in the village of Recea, Străşeni, owned by Corobceanu Pavel Alexandru, dating from approximately 1810-1820, with dimensions 900×405×420, as seen in Figure 16.

3) *Rhythm:* Rhythm is manifested through the repetition of forms and patterns, adding a dynamic aspect to the furniture pieces. An eloquent example is represented by a long bench

exhibited in the village of Tătărăşti, Strășeni district, owned by Coropcean Dumitru, as shown in Figure 17.

Figure 15. Bed, Proportion. House-Museum "A. Mateevici", Zaim Village, Causeni, Late 19th Century. Photo by Ion Găină (2020).

Figure 16. Dowry Chest, Symmetry. Museum of History and Ethnography, Recea Village, Straseni, Owner: Pavel Corobceanu, Dating: ~ 1810-1820, Dimensions 900×405×420. Photo by Mihai Iovu (2020) [10, p. 176].

Figure 17. Long Bench, Rhythm. Tatarasti Village, Straseni District, Owner: Dumitru Coropcean. Photo by Elena Madan (2009).

4) *Contrast and Emphasis:* These add visual interest by highlighting an element, either through shape or color. A carpenter's dowry chest from the National Museum of Ethnography and Natural History, Trebujeni – Orhei, dating from the late 19th century, illustrates the use of contrast and emphasis as artistic means, as depicted in Figure 18.

5) *Structure:* This refers to how the component elements of the furniture are integrated into a whole, ensuring both the solidity of the construction and a unified aesthetic. A representative example is a cupboard exhibited in the Museum of History and Ethnography in the village of Mateuți, Rezina district, owned by Gușan Elena, as shown in Figure 19.

Figure 18. Wardrobe, Static. Museum of History and Ethnography, Taraclia, 1930, crafted by Aflatarli Apostol, master from Bolgrad, Owner: Raisa Aflatarlî. Photo by Tatiana Nechit (2020).

Figure 19. Dowry Chest, Emphasis. National Museum of Ethnography and Natural History Chisinau, from Trebujeni – Orhei. Late 19th Century, [15, p.263].

Figure 20. Wardrobe, Structure. Museum of History and Ethnography, Mateuti, Rezina. Owner: Elena Gușan. Photo by Ion Ştirbu (2020).

6) *Tectonics:* This artistic means refers to the organization and connection of the component elements of the furniture. A relevant example is represented by a sofa exhibited

in the Museum of History and Ethnography in the city of Balti, dating from approximately the 1940s, with dimensions of 174×67×80, as seen in Figure 20.

7) *Complex:* This refers to the unity of furniture objects that share common features or form an ensemble, thus representing a piece of furniture with multiple elements that have similar characteristics. A significant example is the cupboard/sideboard exhibited in the "Constantin Stamati" Memorial House in the village of Ocnita, Ocnita district, as illustrated in Figure 22.

8) *Ensemble:* This refers to the imaginary-constructive unity in which multiple pieces of furniture have common features or elements. A representative example is provided by the cupboard and long bench exhibited in the Museum of Cahul County, owned by N.S. Conoval from the village of Semionovca, Codama, Odessa region, with dimensions 890×1450×2000, as illustrated in Figure 23.

These artistic means contribute to adding value and meaning to peasant furniture, giving it uniqueness and expressiveness.

Figure 21. Settle (bench with storage), Tectonics. Museum of History and Ethnography, Balti, Dating: ~ 1940s, Dimensions: 1740×670×800. Photo by Elena Madan (2008) [12, p.3].

Figure 22. Cupboard/Buffet, Complex. Memorial House "Constantin Stamati," Ocnita. Photo by Elena Madan (2008).

Figure 23. Cupboard and Long Bench, ensemble. Museum of Cahul County. Owner: N.S. Conoval, Semionovca Village, Codama, Odesa Region. Photo by Elena Madan (2009).

Decorative Structure: The decorative structure of peasant furniture focuses on the organization and composition of ornaments and decorative elements. This is highlighted through the following aspects:

1) *Ornamental Elements*: These represent the simplest form of ornamentation, consisting of indivisible parts that can be used independently in decoration, such as a leaf, a petal, a branch, a stem, or a fruit. An example is the ornamental element "fish and dove" discovered in the detail of a sofa from Țipova, Rezina district, as illustrated in Figure 24.

2) *Ornamental Motifs*: These are composed of two or more ornamental elements. An illustrative example is the ornamented stool owned by Laur Nina from Truseni, as illustrated in Figure 25.

3) *Ornamental Composition:* This represents the aesthetically pleasing arrangement of ornamental motifs resulting from two or more ornamental motifs, without the need for them to belong to the same thematic or stylistic group. A notable example is the ornamental composition on a carpenter's dowry chest exhibited in the Historical-Ethnographic Museum of Ocnita town, owned by Capmoale Dumitru and Agafia Vasile from the village of Dingeni, Ocnita district, as illustrated in Figure 26 [8, p.20].

These ornamental elements and compositions contribute to the pleasant and balanced appearance of peasant furniture, adding remarkable artistic details and aesthetic significance.

Through the detailed analysis of materials, decorative techniques, artistic means, and decorative structure, we can better understand the artistic peculiarities of peasant furniture and its contribution to our national values. Each component adds a unique and expressive element to the furniture, reflecting the artistic talent of the peasant or craftsman who created it. The careful choice and processing of materials, the use of ornamental techniques, and the application of artistic means breathe life into these exceptional pieces of furniture. The decorative structure contributes to the cohesion and beauty of the furniture, highlighting the skill and creativity of the craftsmen.
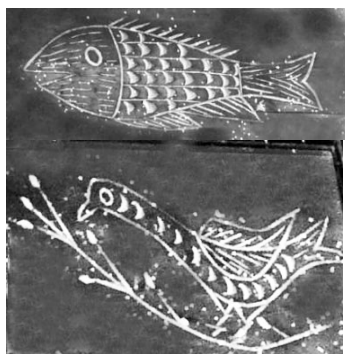

Figure 24. Ornamental Element - Fish and Dove. Sofa Detail, Tipova, Rezina District. Photo by Elena Madan (2008).
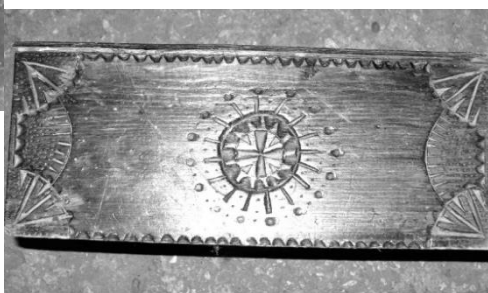
Figure 25. Ornamental Motif – Sun Motif, Small Chair Detail. Owner: Laur Nina, Truseni. Photo by Elena Madan (2007).

Figure 26. Ornamental Composition - Carpenter's Dowry Chest. Historical and Ethnographic Museum, Ocnița Owners: Capmoale Dumitru (born 1907) and Agafia Vasile (born 1910), Dingeni, Ocnita District. Photo by Maia Taraban (2020) [11, p. 176].

4. Discussions

Our research findings on traditional Moldovan furniture from the late 19th century to the mid-20th century add a new perspective to the discussion about the importance of integrating traditional elements into contemporary interior design. In this context, we have also analyzed the research of author Angela Munteanu, which highlights the role of traditional furniture in creating an authentic atmosphere and emphasizes the importance of harmonizing furniture with the interior to ensure comfort while preserving traditional elements [16, pp. 97-99]. We have also considered research from the article "Perception of style influences in architectural space" [17, pp. 59-67], authored by the same researcher.

These research studies support our conclusions regarding the value of traditional elements in contemporary interior design [18, pp.165-170]. Moldovan traditional furniture represents a concrete example of how traditional elements can bring authenticity and cultural identity to a modern space. Author Angela Munteanu also emphasizes the importance of harmonizing traditional furniture with the interior, which is essential for ensuring comfort and aesthetic coherence in a contemporary space.

These sources demonstrate that key elements of traditional furniture, such as specific ornamentation, shapes and decorations inspired by the past, the use of solid wood, specific assembly and functional accessories, as well as upholstery with traditional prints and ornaments, can be effectively integrated into contemporary interior design. The author also mentions the importance of structural details in influencing the functionality and appearance of furniture. These aspects significantly contribute to maintaining a connection with cultural heritage and adding uniqueness and authenticity to the contemporary interior.

A concrete example highlighting the success of this approach is the "Quintessence" collection created by Mihai Stamati in collaboration with Maria Bubuioc [19]. This collection of contemporary furniture leverages traditional heritage by reinterpreting crocheted structures and fabrics, using natural materials, and promoting the practice of traditional techniques. Through such projects, designers succeed in creating modern furniture that maintains a strong connection to cultural heritage and offers innovative and aesthetic solutions in contemporary interior design. These projects are concrete evidence that tradition and modernity can coexist harmoniously, and the results can be remarkable both artistically and functionally.

Furthermore, in an article authored by Natalia Berezovskaia about reinterpreted Romanian traditional style, it is emphasized that this style can be brought into modernity with delicacy and skill. Recommendations include using light colors in finishes, introducing wood into the design, and using solid wood furniture with carved details [20]. Textile accessories with traditional motifs are also essential for recreating the traditional atmosphere.

These practical examples demonstrate that integrating traditional elements into contemporary furniture and interior design can be successful and can contribute to promoting cultural identity in a globalized world. Therefore, it is important to continue exploring and harnessing this approach to create interior spaces with authentic and profound character.

5. Conclusions

In conclusion, traditional Moldovan furniture from the late 19th century to the mid-20th century represents an important aspect of the cultural and artistic heritage of the region. This furniture not only showcases the skill of local craftsmen but also reflects the history and culture of Bessarabia during that period. The artistic aspects of this furniture are remarkable and have contributed to the creation of unique and meaningful works of art. Using various materials and decorative techniques, craftsmen crafted furniture pieces that not only served practical purposes but also paid remarkable tribute to the aesthetics and culture of Bessarabia. These pieces of furniture are not just functional objects but also artworks that reflect the talent and creativity of rural communities during that time.

Moldovan traditional furniture, in particular, is a striking example of how these elements can be successfully adapted and used in contemporary interior design. Ornaments, shapes, and decorations inspired by the past, along with the use of solid wood and other traditional materials, contribute to creating spaces that blend tradition with innovation. This approach not only adds authenticity but also enhances comfort and aesthetic coherence in modern spaces.

Recommendations for future endeavors include establishing initiatives for the documentation and conservation of these valuable pieces. Collaborative efforts between

cultural institutions, local communities, and contemporary designers can play a pivotal role in ensuring the continued relevance and appreciation of Moldova's cultural heritage.

By valorizing and promoting these artistic characteristics, traditional furniture and interior design become symbols of cultural identity and testimonies to human talent and creativity. Thus, the continued exploration and application of this approach are crucial for creating interior spaces with authentic and profound character in the modern world.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Şaranuţa, S. *Ornamente populare moldoveneşti*. Timpul, Chisinau, Republica Moldova, 1984, 143 p.

2. Madan, E. Clasificarea mobilierului ţărănesc din Basarabia sfârşitul sec. al XIX-lea – mijlocul sec. XX. In: *Valorificarea artelor plastice şi arhitecturii naţionale - un imperativ al vremii*: conf. şt. naţional. Fox-Trading SRL, Chişinău, Republica Moldova, 2021, pp. 16-17.

3. Madan, E. Mobilierul locuinţei ţărăneşti. In: *Diversitatea expresiilor culturale ale habitatului tradiţional*: conf. şt. internaţional., 2-4 august 2007. Academia de Ştiinţe a Moldovei, Chişinău, Republica Moldova, 2007 pp.73-83.

4. Comşa, D. *Din ornamentica română: Album de broderii şi ţesături româneşti (40 planşe color cu 284 modele)*. Transilvania, Sibiu, România, 1976, 16 p.

5. Capesius, R. *Mobilierul ţărănesc românesc*. Dacia, Cluj-Napoca, România, 1974, 141 p.

6. Petrescu, P. *Creaţia plastică ţărănească*. Meridiane, Bucureşti, România, 1976, 64 p.

7. Irimie, C.; Dumitrescu, F.; Paleolog, A. *Arta lemnului la Romani*. Meridiane, Bucureşti, România, 1975, 53 p.

8. Madan, E. Evoluţia şi clasificarea lăzilor de zestre de pe teritoriul Republicii Moldova, sfârşitul secolului XIX-lea - mijlocul secolului al XX-lea. In: *Studii culturale*. Fox-Trading SRL, Chişinău, Republica Moldova, 2021, 2, pp. 170-178.

9. Madan, E. Particularităţile artistice ale mobilierului ţărănesc basarabean, sfârşitul sec. al XIX-lea - mijlocul sec. XX. In: *Patrimoniul cultural: cercetare, valorificare, promovare*. Institutul Patrimoniului Cultural, Chişinău, Republica Moldova, 2021, p. 98.

10. Ţăranu, Gh.; Ţăranu, R. *Stiluri de mobila si tehnica de executării decoraţiunilor*. Didactică şi Pedagogică, Bucureşti, România, 1991, 299 p.

11. Madan, E. Laviţa şi derivatele sale. Evoluţie constructivă, funcţională şi artistică. *Buletin Ştiinţific. Revista de Etnografie, Ştiinţele Naturii şi Muzeologie (Serie Nouă)* 2020, 33(46), pp. 84-101.

12. Madan, E. The artistic value of sofas from the territory of the Republic of Moldova (late 19th century - first half of the 20th century). *Academia Letters*. 2021. Available online: https://www.academia.edu/53044300/The_artistic_value_of_sofas_from_the_territory_of_the_Republic_of_Moldova_late_19th_century_first_half_of_the_20th_century_ (accessed on 16.08.2023).

13. Cojocaru, N. *Casa veche de lemn din Bucovina*. Meridiane, Bucureşti, România, 1983, 143 p.

14. Malcoci, V. *Decorul arhitectural în piatră din arta populară moldovenească (sfârşitul sec. al XIX-lea - sec. XX)*. Ştiinţa, Chişinău, Republica Moldova, 2000, 96 p.

15. Ciocanu, M. Mobilierul tradiţional din patrimoniul Muzeului Naţional de Etnografie şi Istorie Naturală din Chişinău în contextul interiorului locuinţei din Basarabia. *Anuarul Muzeului Etnografic al Moldovei*, 2011, pp. 233-264.

16. Munteanu, A. Promoting national identity in stylistics of contemporary architecture and interior design. *Journal of Social Sciences* 2020, 3(4), pp. 90-100.

17. Munteanu, A. Perception of style influences in architectural space. *Journal of Social Sciences* 2023, 6 (2), pp. 59-67.

18. Madan, E. Valoarea practică a studiului asupra mobilierului ţărănesc. In *Ştiinţele socioumanistice şi progresul tehnico-ştiinţific*: conf. şt. interuniv., 7 aprilie 2017; *Teoria şi practica integrării europene*: conf. şt. studenţească, 5 mai 2017; Universitatea Tehnică a Moldovei, Chişinău, Republica Moldova, 2017, pp. 165-170. Disponibil online: http://repository.utm.md/handle/5014/6715 (accesat la 17.08.2023).

19. Quintessence collection: Cum valorificăm bogăţia fondalului tradiţional...?! In *Mihai Stamati - Atelier de design*. Disponibil online: https://mikelesta.com/portfolio/quintessence/ (accesat la 9 iulie 2023).

20. Berezovskaia, N. Stilul tradiţional românesc reinterpretat. Cum îl aplicăm în designul interior. In *The Famous Design*. 14 iulie 2021. Disponibil online: https://thefamousdesign.ro/stilul-traditional-romanesc-reinterpretat-cum-il-aplicam-in-designul-interior/ (accesat la 10 septembrie 2022).

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

TRANSLATION AS A PEDAGOGY IN THE DEVELOPMENT OF ENGLISH SECOND LANGUAGE IN A RURAL UNIVERSITY

Phumzile Masala*, ORCID: 0009-0007-8444-5953

Mangosuthu University of Technology, 511 Griffiths Mxenge Highway, Umlazi, KwaZulu-Natal,4031, South Africa
*Corresponding author: Phumzile Masala, *masala.phumzile@mut.ac.za*

Abstract. English proficiency among black South African learners and students has been found to be generally difficult to attain despite English being used as the sole medium of instruction in schools and at universities. To mitigate the issue, this paper explores the use of translation pedagogy as an approach in enabling bilingual students to utilise their linguistic repertoire as a tool not only to enhance their English Second Language development but to also give recognition to their first language. The contribution of the study is made significant by the fact that available related research has largely been conducted at kindergarten and school level leaving a gap in the higher education environment. An observational qualitative data collection methodology was conducted in which a university lecturer presented a lesson prepared by the researcher. The participants were bilingual in a predominantly African language speaking university community in a rural area of South Africa. The use of students' African language (IsiZulu) was observed to enhance their English vocabulary which in the process saw them participating freely in both languages throughout the lesson. The main finding of the study is that English competency can be enhanced with the learners' home language in a carefully prepared lesson that draws from translation pedagogy.

Keywords: *multilingual; proficiency; medium of instruction; higher education; vocabulary.*

Rezumat. Cunoaşterea limbii engleze în rândul studenţilor şi studenţilor din Africa de Sud este în general dificil de atins, în ciuda faptului că engleza este folosită ca unic mijloc de predare în şcoli şi universităţi. Pentru a atenua problema, această lucrare explorează utilizarea pedagogiei traducerii ca abordare care le permite studenţilor bilingvi să-şi utilizeze repertoriul lingvistic ca instrument nu numai pentru a-şi îmbunătăţi dezvoltarea limbii engleze, ci şi pentru a recunoaşte prima lor limbă. Contribuţia studiului este semnificativă prin faptul că cercetările conexe disponibile au fost efectuate în mare măsură la nivel de grădiniţă şi şcoală, lăsând un gol în mediul învăţământului superior. A fost realizată o metodologie de colectare a datelor calitative observaţionale în care un lector universitar a prezentat o lecţie pregătită de cercetător. Participanţii erau bilingvi într-o comunitate universitară predominant vorbitoare de limbi africane dintr-o zonă rurală din Africa de Sud. S-a observat că utilizarea limbii africane a elevilor (IsiZulu) le îmbunătăţeşte vocabularul în

limba engleză, ceea ce ia făcut să participe liber în ambele limbi pe parcursul lecției. Principala constatare a studiului este că competența engleză poate fi îmbunătățită cu limba de acasă a cursanților într-o lecție pregătită cu atenție, care se bazează pe pedagogia traducerii.

Cuvinte cheie: *multilingv; experiență; mediu de instruire; educație înaltă; vocabular.*

1. Introduction

English Second Language (ESL) or English First Additional Language (EFAL) is the main language of instruction for many black South African students whose mother tongue or first language (L1) is an African language [1]. To tackle different subjects as part of their studies, students need to acquire a certain level of English competence. This entrenchment of English and other ex-colonial languages in African countries is due to that the knowledge systems used in education were transplanted from Europe and based on Eurocentric models [2]. Africans now find themselves under pressure to disregard their languages to acquire colonial languages like English to access major domains of education, economy, media and labour markets. Yet, many of them struggle to meet this challenge leading to severe stress which puts them at a serious academic and professional disadvantage compared to their white counterparts for whom English or Afrikaans is their mother-tongue [3-5]. This linguistically unsupportive teaching and learning environment has resulted in low academic success and high drop-out rates among African students across all school and post-secondary education fields [6,7]. As a result, the entire South African education system has been described as in crisis [8-10].

This unacceptable situation in schools has been documented by the Department of Basic Education (DBE) who reported that the 2011 Annual National Assessment (ANA) results had been deteriorating since testing began in 2008. For example, in 2008, 36% of Grade 3s scored under 35% in literacy while in 2011 the figure increased to 45%. A comparison between the 2008 Grade 3 results and the 2011 Grade 6 results also revealed a worsening performance. For instance, while 36% of 2008 Grade 3s scored under 35% in literacy, in 2011 57% of the Grade 6s scored under 35% [11]. International comparisons are even more concerning when one looks at the Progress in International Reading Literacy Study (PIRLS) for Grade 4 learners from different countries in which South Africa's literacy levels were at the bottom of the list. These low literacy levels impact on other subjects, as shown in the results of a study called Trends in International Mathematics and Science Study (TIMSS) in which Grades 5 and 9 learners performed poorly in mathematics and science [12,13].

Not surprisingly, the students' poor academic performance in South African universities is no better due to many factors but especially the language of instruction that is foreign to the masses with a disadvantaged educational background [14-17]. For example, the 2030 Reading Panel study revealed that future maths teachers registered at three universities performed unsatisfactorily on a mathematics test designed at the level of primary school children [10]. The overall concern is lack of equity in the democratic South Africa as evident in the completion rate for white students that is on average 50% higher than that for African students [18]. The situation is severe among students from historically disadvantaged universities and schools where the environment and educational quality lacks supportive resources and English proficient lecturers and educators [5, 19-22]. All this goes against the supreme policy of the country, the Republic of South Africa Constitution (1997) and other policies informed by it in education, that accords equal status to nine African languages

together with English and Afrikaans. These policies are meant to promote multilingualism in society and in education. In education there is the Language in Education Policy (Department of Education) [23] for schools and the Language Policy in Higher Education [24] for tertiary institutions that require the maintenance of home languages in the process of developing the acquisition of additional languages such as English.

Translation, as an activity that contains a bilingual approach between the source language and the target language presents opportunities for interaction between two languages. Such an approach has the potential to support competency development in English and literacy skills that can be transferred across languages [25]. In this instance, the Cummins' Interdependency Hypothesis [26] is useful in noting that the First Language and Second Language literacy skills are interdependent, with high levels of First Language proficiency helpful for Second Language acquisition. In the South African context, this assertion may provide the basis for the evaluation of the role of an approach that focuses on using the students' African language (L1) as a teaching approach to the development of ESL.

There is a gap in research that interrogates barriers experienced by students in accessing and succeeding in higher education due to the rurality of their environment [19]. Moreover, available research on translation pedagogy has largely been conducted at kindergarten and school level leaving a gap in the higher education environment [27]. The situation is further complicated by the history of language pedagogy in which the use of the mother tongue to learn a second language had been strongly discouraged [28,29]. It is a concerning sign of monoglossic ideologies on language instruction that complaints are often levelled against the use of L2 by students but ignored when teachers mix languages (code-switching) to facilitate learning [30]. Language learning and translating should not be divorced because they can be mutually enriching forms of translingual and transcultural practice in education [31]. The approach allows a shift from a teacher-centred to a learner-centred focus in language education by allowing learners to transfer knowledge from their L1 to develop L2 competencies [32].

The aim of this paper was to investigate the development and implementation of translation as a teaching pedagogy in a rural and historically disadvantaged university in South Africa where students experience challenges with English competence. In addition, the study sought to observe the strategic role of L1 on L2 development among students.

The following are the research questions on which the study focuses:

(i)   How would a translation pedagogy be structured?
(ii)   How would a translation pedagogy be implemented in an English first
         year class?
(iii)   What would be the key elements of translation as a pedagogic strategy?

2. Materials and Methods

For this study, data collection was through an empirical study which had observation of a prepared lesson as its focus in 2021. The observation was that of a lesson presented by a lecturer using translation as a pedagogy. The researcher observed a lesson of 60 minutes during which notes were taken. There were 50 students in total, with 21 being male and 29 being female. All 50 students were of African origin and IsiZulu speakers. The participants were purposefully sampled because they were at the time registered as first-year students in the selected rural university of South Africa considered to be representative of African rural

linguistic communities.   The participants and the university were convenient to the researcher.

Data analysis for this study were in a form of description of what was observed. So, the lesson as observed was described and conclusions made from what was observed. In other words, the researcher reviewed what was witnessed and synthesized it with the observations and words of the participants themselves, in this case the students and the lecturer.

In conducting the study, one of the foremost ethical considerations was not to do any harm to the participants. In this regard, the study had no possible harmful consequences to the participants. Further, the privacy and anonymity of the participants was assured as the sample that participated in the study was just a small group out of the population of around 950 students that were registered for the module. It would not be possible for anyone to know which students participated in the study. Furthermore, confidentiality was always maintained as the students' identity was not sought and could therefore logically not be divulged. Prior permission had been sought from the English Department of the university for the study to be conducted. Lastly, the informed consent was obtained from all the study participants who signed such a document. This was indeed after the purpose of the study and risks involved and eliminated were explained to them in their language.

3. Results and Discussion

The data are in the form of a series of lessons that took place in an English first year class at a rural university. The students at the university almost exclusively have an English Second Language background. This is the same for the lecturer. Since both the students and the lecturer share a mother tongue (IsiZulu), the environment was ripe for exploring the central research question of how translation can be a pedagogic strategy in an English class.

This is significant in that it shows that the existence of two or more languages in most South African schools and universities provides grounds for using translation as a pedagogy in an English Second Language class. Moreover, the fact that the students shared both languages with the lecturer means that there were no barriers to using the approach.

3.1 Presenting the Lesson

The lesson outlines that translation as a pedagogy would be structured in the following manner in an English Second Language class:

• A topic is given to students in one language and a discussion takes place on an issue relating to the topic.

• An article is then given to students in one language, and they are asked to find translations of words from the article that are flashed on the board.

• Next, students are asked to translate, in writing, parts of the article from one language to the other. A bilingual dictionary is provided as a resource.

• What follows is students being asked to exchange their translations and then provide comments on how good the translations are.

This part of the lesson answers the research question of how translation as a pedagogy would be structured in an English Second Language class. Having shown how translation as a pedagogy would be structured in an English class, it is necessary to proceed to the next research question of how it would be implemented in a classroom.

This is the beginning of the lesson. The topic "Teenage Pregnancy" is flashed on the board and students are asked to mention challenges that are associated with teenage pregnancy.

At the beginning of the lesson, the lecturer introduces the lesson. The lecturer then flashes the topic "Teenage Pregnancy" on the board using an overheard board linked to a laptop and asks students in English what they think are the challenges of teenage pregnancy. The answers are provided by turn-taking in the classroom. Sometimes, the lecturer requires students to raise their hands. Other times the lecturer nominates a student to provide the answer. This strategy seems to work in eliciting enough responses.

Students answer in both English and IsiZulu:

• The mother may experience financial difficulties in raising the child as she might not be working.

• The mother may have to drop-out of school to take care of the baby.

• There might be a threat of HIV-AIDS to both the mother and the baby.

• The father is likely to lose interest in the girl once she is a mother.

• The father is likely to have pressure to marry the girl.

• In some instances, the teenager might be forced by circumstances to abort the child, which may lead to stigma in some communities.

The class is lively as the students take turns to provide the challenges they think might present themselves. The researcher can see that the class is lively as almost all the students have their hands raised to attempt to provide an answer. Students also provide answers off the cuff without being asked, prompting the lecturer to comment: "It looks like you know a lot about teenage pregnancy! Is it from experience"? The students find this comment amusing and they all laugh. The fact that students found this activity enjoyable is in line with the idea that a "low-anxiety" environment is best for teaching and learning a second language [33].

Translation as a pedagogy, as implemented in the lesson, provides exactly that environment. Moreover, this part of the lesson seems to provide empirical support to the idea that translation as a pedagogy can be based on the communicative approach with reading, listening, speaking and writing being focussed on in the same lesson sequence in an environment the students find relaxed.

3.2 Class Discussion

A class discussion takes place on the identified challenges that are associated with teenage pregnancy. The responses that are given by students generate a lot of discussions, which take place in English:

Student A (Girl): "It is wrong that girls have to stay at home while the boys go on with their lives. I find it unfair".

Student B (Boy): "What do you want boys to do? Do you want us to come and breastfeed the baby?"

Student C: "You see, that's why you have to use contraceptives".

The discussions go on until the lecturer signals to the students to stop. At this point, the lecturer indicates that maybe it might be a good idea to have a formal debate on the challenges that teenage pregnancy causes. Such a debate may also involve the roles of boys and girls in raising a baby that is a result of teenage pregnancy.

3.3 Translating Words

In this part of the lesson, students try to find English translations for IsiZulu words. Next, students are given an English article and they are asked to find English translations from the text for IsiZulu words that are flashed on the board. The use of two languages

simultaneously as a deliberate teaching strategy is different from existing pedagogies such as code-switching which are not prefaced by an article. This lends support to the idea that translation as a pedagogy in this context is not used as "a pragmatic response to the local classroom context". It is a deliberate pedagogical approach.

The words that are given are:

"Ukubhekana", "Incindezi", "Izinkalo", "Ukopha", "Ukuphoxeka", "Ukubalisa", "Encupheni".

As the words get flashed, students' excitement is evident. Students read the article and attempt to find English translations for the IsiZulu words. The conversations among students are mainly in IsiZulu.

Student A says: "Mina ngiyawazi la magama ngesiZulu kepha anzima nge-English". This can be translated as "I know the meaning of these words in IsiZulu, but they are difficult in English".

Student B says: "Kumele ukhumbule leli li-class le-English". This can be translated as "You should remember this is an English class".

Student C says: "Unamanga awuzazi ukuthi izinkalo yini, ngisho ngesiZulu. Ucabanga ukuthi uzakuzazi njani ngesiNgesi"? This can be translated as "You are lying. You don't know what 'izinkalo' means, even in IsiZulu. How do you expect to know it in English"?

Student D says: "Mina ngizokuwabuka kwi-dictionary la magama". This can be translated as "I will look the words up in the dictionary".

Students seem to struggle with this activity. The main reason for students struggling with the activity is because the Lecturer expressly disallowed the use of a dictionary at the beginning. However, it is important to note that because students are forced to think about the translations for the words they have been given, they are forced to read the article with more intensity than they would otherwise do. These fosters reading with comprehension, a key skill in language development.

Nevertheless, it appears that students' vocabulary is limited as they come up with more or less the same answers, failing to find some of the correct answers from the article as shown in the answers they give:

- Ukubhekana- best.
- Incindezi- burdens.
- Izinkalo- crisis.
- Ukopha- soaring.
- Ukuphoxeka- disappointed.
- Ukubalisa- lamented.
- Encupheni- risk.

Students only get "ukuphoxeka- disappointed" and "ukubalisa- lamented right and "encupheni- risk". The rest of the answers are wrong. As evidenced in the earlier conversations between the students, it would seem that, although students know the IsiZulu words, they find it difficult to locate the English equivalents in the text. This would suggest that the English article has been read without understanding. If it were, students would know that the English words they have chosen are far removed from the IsiZulu words whose meaning they sought to understand. It also reveals that the article has not been read in context, as the context would have likely suggested the answers to the translations that were sought.

At this point, some students seem to realise that the answers they have provided may not be correct. Various students start to chat, in IsiZulu, about the possibility of these answers not being correct:

Student A: "Angicabangi ukuthi 'izinkalo' yi-'crisis'! Wena uthini"? This can be translated as "I don't think that 'izinkalo' means 'crisis'! What do you think?

Student B: "Mina angazi. Sesiyakubona ma sesifumana iimpendulo". This can be translated as "I do not know. Let us see when the answers are given.

Student C: "Buka nje 'incindezi'. Cha! Angekhe lisho lokho". This can be translated as "Just have a look at 'incindezi'. It cannot possible mean that (meaning the word 'burdens')".

Student D: "Ngekungcono uma bebesivumele siwabuke kwi-dictionary la magama". This can be translated as "It would have been better if we could look these words up in the dictionary".

These discussions by students, conducted in English, are valuable in an English Second Language class as they provide students with an opportunity to practice their speaking skills. This part of the lesson proves that translation as pedagogy in an English Second Language class does not have to be a teacher-centred approach.

After a period of time, the lecturer allows the students to look the words up in the English- IsiZulu dictionary. The students then come up with similar answers to the ones provided when the Lecturer ultimately writes them on the chalkboard:

- Ukubhekana- contend.
- Incindezi- beleaguered.
- Izinkalo- pelvises.
- Ukopha- haemorrhaging.
- Ukuphoxeka- disappointed.
- Ukubalisa- lamented.
- Encupheni- delicate (positions).

The lecturer then asks the students if they will remember the actual English meanings of the words whose translations they had given. One of the students answers in English:

Student A: "Sir, I think this activity has helped me to understand the English words better since I know exactly what they mean in IsiZulu".

The Lecturer follows this up with a more pointed question:

Lecturer: "So, would you say that this activity has improved your competence in English"?

Student B: "I would say so, Sir".

Lecturer: "I guess I will have to test to what extent you have improved".

This exchange seems to answer the research question whether translation can help improve the competence of South African students in English Second Language. However, as the Lecturer rightly points out, this can only be measured through another testing. Measuring whether translation does improve competence in English Second Language was not the main focus of this study. It is a topic for further research.

3.4 Translating an Extract

The lesson proceeds with students being given extracts to translate from IsiZulu into English. In the next activity, the lecturer divides the students into several groups and asks them to translate three small articles.

The class is lively as students discuss the various translations. The groups on the left of the class translate article A, the groups in the middle article B and the groups on the right article C. The use of an article as a basis for translation is a major point of difference from existing pedagogies that are used in English Second Language. It is what distinguishes the approach from any other that is currently used in South Africa. It contextualises translation as a pedagogy that would use the translation of a text, music, dance or any other intersemiotic, interlingual or intralingual activity as the basis for teaching English Second Language.

It can be noted that students are forced to think in English as they seek to translate the articles. Although students are engaged actively, they seem to find the activity challenging.

3.5 Comparing Translated Texts

In this part of the lesson, students are asked to exchange and compare their translations. The next step in the lesson involves students being asked to exchange their translations and to compare them. They are asked to rate the translations as "Good", "Not too good" and "Not Good". The class is lively as students read out each other's translations and find areas of improvement. Students comment loudly, in their groups, about translations they find hilarious. This happens in almost all the groups, thus contributing to the class being lively.

The lecturer asks three groups to read out the exchanged translations, say what rating they gave and the reasons for the rating. This provides an interesting point of debate as the original groups try to defend their translations when they are said to be "Not too good".

Lastly, groups are given back their translations that have been rated and are asked to make improvements to them. Some groups are not happy with the ratings that have been given to their translations and asks for the opinion of the Lecturer. The Lecturer offers his opinion on the translations, stating which ones he believes are "good", "not too good" and "good" as it may be the case. Students seem to accept the affirmation by the lecturer.

The lecturer then asks the students whose translations have been found to be "not too good" to try and improve their translations at their leisure.

The lesson ends at this point. The Lecturer thanks the researcher and dismisses the class.

4. Conclusions

This study investigated the role of translation as a pedagogy in an English class in a historically disadvantaged university located in a rural area of South Africa. The main finding from the study is that translation can be used as a pedagogy in an English class that has predominantly English Second Language students.

Furthermore, this approach can be used in a bilingual English Second Language class but may encounter challenges in a multilingual class. This may be due more to the design of the lesson as it would be easier to plan and implement for two languages but more challenging for more than two languages. This means that deliberate use of a pedagogy that has translation as its core teaching methodology can be successful in an English Second Language class when the multilingual factor has been accounted for. Whilst the observed classroom activities indicated success in this regard, there were however some gaps. The study came short in that it did not empirically measure the impact of the approach on individual students improved English.

So, to summarise, the study has found that translation as a pedagogy can be used in an English Second Language class, within the context of a communicative approach. There is empirical support for this conclusion as demonstrated in the lesson that was observed.

Conflicts of Interest: The author declares no conflict of interest.

References
1. Czerniewicz, L.; Trotter, H.; Haupt, G. Online teaching in response to student protests and campus shutdowns: Academics' perspectives. *International Journal of Educational Technology in Higher Education* 2019, 16(1), pp. 1-22. https://doi.org/10.1186/s41239-019-0170-1
2. Mugumya, L. From generative grammar to computational linguistics: Exploring English and linguistics scholarship at Makerere University. In J. Ahikire, L. Mugumya, E.F. Nabutanyi & P. Atekyereza (eds), *Historicising the humanities at Makerere: Trends, patterns and prospects*. Fountain Publishers: Kampala-Uganda, 2022; pp. 142-177. Available online: www.fountainpublishers.co.ug (accessed on 9 September 2023).
3. Charamba, E.; Zano, K. Effects of translanguaging as an intervention strategy in a South African Chemistry classroom. *Bilingual Research Journal* 2019, 42(3), pp. 291-307. https://doi.org/10.1080/15235882.2019.1631229
4. Council on Higher Education (CHE). South African Higher Education Reviewed: Two Decades of Democracy. Pretoria: CHE, 2016. Available online: https://www.che.ac.za/sites/default/files/publications/CHE_South%20African%20higher%20education%20reviewed%20-%20electronic.pdf (accessed on 12 September 2023).
5. Ndawo, G. The influence of language of instruction in the facilitation of academic activities: Nurse educators' experiences. *Health SA Gesondheid* 2019, 24(0), a1261. https://doi.org/10.4102/hsag.v24i0.1261
6. Makalela, L. Moving out of linguistic boxes: The effects of translanguaging strategies for multilingual classrooms. *Language and Education* 2015, 29(3), pp. 200–217. https://doi.org/10.1080/09500782.2014.994524
7. Skakane-Masango, T.P.; Mtshali, N.G.; Ngcobo, S. Exploration of the organizational conditions that influence the utilization of Student Support Services in South African Nursing Colleges. *Business Ethics and Leadership* 2023, 7(1), pp. 50-62. http://doi.org/10.21272/bel.7(1).50-62.2023.
8. Davids, N. Solving SA's literacy crisis, 2019. Available online: https://www.news.uct.ac.za/article/-2019-01-11-solving-sas-literacy-crisis (accessed on 18 September 2023).
9. Jansen, J.; Taylor, N. Educational change in South Africa 1994-2003: Case studies in large-scale education reform. Geneva: World Bank, 2003. Available online: https://documents1.worldbank.org/curated/en/129941468778149162/pdf/282500PAPER0Ed1outh0Africa01Public1.pdf (accessed on 15 September 2023).
10. Manuel, M. Shock SA education fail: Incoming teachers score 54% for primary maths, 2022. Available online: https://www.thesouthafrican.com/lifestyle/breaking-teachers-maths-students-2030-reading-panel-report-education-crisis/ (accessed on 18 September 2023).
11. Department of Basic Education (DBE). Report on the Annual National Assessments of 2011. Pretoria, Republic of South Africa, 2011. Available online: http://www.education.gov.za (accessed on 5 August 2023).
12. Mullis, I. V.; Martin, M. O. TIMSS 2019 Assessment Frameworks: ERIC, 2017, pp. 140. https://eric.ed.gov/?id=ED596167
13. Spaull, N.; Kotze, J. Starting behind and staying behind in South Africa: The case of insurmountable learning deficits in mathematics. *International Journal of Educational Development* 2015, 41, pp. 13-24. https://doi.org/10.1016/j.ijedudev.2015.01.002
14. Petersen, I. H.; Louw, J.; Dumont, K. Adjustment to university and academic performance among disadvantaged students in South Africa. *Educational psychology* 2009, 29(1), pp. 99-115. https://doi.org/10.1080/01443410802521066
15. Schreiber, B., Yu, D. Exploring student engagement practices at a South African university: Student engagement as reliable predictor of academic performance. *South African Journal of Higher Education* 2016, 30(5), pp. 157-175. https://journals.co.za/doi/pdf/10.20853/30-5-593

16. Van Rooy, B.; Coetzee-Van Rooy, S. The language issue and academic performance at a South African University. *Southern African Linguistics and Applied Language Studies* 2015, 33(1), pp. 31-46. https://doi.org/10.2989/16073614.2015.1012691

17. Wagner, F.; Wagner, R. G.; Kolanisi, U.; Makuapane, L. P.; Masango, M.; Gómez-Olivé, F. X. The relationship between depression symptoms and academic performance among first-year undergraduate students at a South African university: a cross-sectional study. *BMC Public Health* 2022, 22(1), pp. 1-9. https://doi.org/10.1186/s12889-022-14517-7

18. Council on Higher Education (CHE). A proposal for undergraduate curriculum reform in South Africa: The case for a flexible curriculum structure. Pretoria, 2013, 258 p. Available online: https://www.che.ac.za/sites/default/files/publications/Full_Report.pdf (accessedn25 September 2023).

19. Agumba, H.; Simpson, Z.; Ndofirepi, A. Towards understanding the influence of rurality on students' access to and participation in higher education. *Critical Studies in Teaching and Learning* (CriSTaL) 2023, 11(1), pp. 22-42. https://doi.org/10.14426/cristal.v11i1.643

20. Du Plessis, P.; Mestry, R. Teachers for rural schools - a challenge for South Africa. *South African Journal of Education* 2019, 39, pp. 1-9. https://doi.org/10.15700/saje.v39ns1a1774

21. Lele, M.; Gqoli, N. Challenges encountered by teachers in improving essay writing skills in rural schools of O.R. Tambo Inland District Eastern Cape Province. *International Journal of Research in Business and Social Science* (2147- 4478) 2023, 12(2), pp. 416–421. https://doi.org/10.20525/ijrbs.v12i2.2339

22. Okunlola, J. O.; Hendricks, W. Resource inequality and quality of secondary education: a study of uneven policy in rural schools of southwestern Nigeria. *EUREKA: Social and Humanities* 2023, (2), pp. 38-49. https://doi.org/10.21303/2504-5571.2023.002893

23. Department of Education (DoE). Language in Education Policy. Pretoria: Department of Education, 1997. Available online: http://www.education.gov.za/LinkClick.aspx?fileticket=XpJ7gz4rPT0% (accessed on 14 September 2023).

24. Department of Education (DoE). Language Policy for Higher Education. Pretoria: Department of Education, 2002. Available online: http://www.dhet.gov.za/.../Language%20Policy%20for%20Higher%20Education.pdf (accessed on 14 September 2023).

25. Ngcobo, S. Translanguaging in summarising skills: the need to develop biliterate students. *Journal for Language Teaching* 2018, 52(2), pp. 26-48. https://dx.doi.org/10.4314/jlt.v52i2.2

26. Cummins, J. Linguistic interdependence and the educational development of bilingual children. *Review of Educational Research* 1979, 49(2), pp. 222-251.

27. Zano, K. Translanguaging in an English First Additional Language context in the further education and training phase. *EUREKA: Social and Humanities* 2022, (3), pp. 40-48. https://doi.org/10.21303/2504-5571.2022.002448

28. Paradowski, M. B. *Exploring the L1/L2 Interface: A Study of Polish Advanced EFL Learners.* Unpublished doctoral dissertation, Institute of English Studies, University of Warsaw, 2007. Available online: https://ebin.pub/morphosyntactic-issues-in-second-language-acquisition-9781847690661.html (accessed on 12 March 2021).

29. Siregar, M. Pedagogical Translation Use by Scientific Approach in Teaching English. *Budapest International Research and Critics in Linguistics and Education (BirLE) Journal* 2019, 2(4), pp. 111-119. https://doi.org/10.33258/birle.v2i4.524

30. García, O.; Lin, A.M.Y. Translanguaging in bilingual education. In: *Bilingual and Multilingual Education,* García, O.; Lin, A.M.Y. (Eds.). Encyclopaedia of Language and Education, Dordrecht: Springer, 2016, 5, pp. 1-9. https://doi.org/10.1007/978-3-319-02324-3_9-1.

31. Laviosa, S. *Translation and Language Education: Pedagogic Approaches Explored.* London/ New York: Routledge, 2014, pp. 1-186. Available online: https://jostrans.org/issue23/rev_laviosa.pdf (accessed on 12 March 2021).

32. Hilda, N. M.; Pelokazi, N. Enhancing communicative competence in English Second Language classrooms through traditional storytelling. *International Journal of Research in Business and Social Science* (2147- 4478) 2023, 12(2), pp. 376–383. https://doi.org/10.20525/ijrbs.v12i2.2342F

33. Krashen, S. *Second Language Acquisition and Second Language Learning.* London: Pergamon Press, 1981, pp. 1-154. Available online: https://www.sdkrashen.com/content/books/sl_acquisition_and_learning.pdf (accessed on 13 July 2023).

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

REFLECTIONS CONCERNING INTERNSHIPS FOR THE CAR ELECTRICIAN-ELECTRONICS QUALIFICATION

Silviu Gîncu [1,2*], ORCID: 0000-0003-4772-4674,
Elena Movileanu [3], ORCID: 0000-0003-4664-7865

[1]*Ministry of Education and Research, 1 Piața Marii Adunări Naționale, Chisinau, Republic of Moldova*
[2]*Technical University of Moldova, 168 Stefan cel Mare Blvd., Chisinau, Republic of Moldova*
[3]*Chamber of Commerce and Industry of the Republic of Moldova, 151 Stefan cel Mare Blvd., Chisinau, Republic of Moldova*
Corresponding author: Silviu Gîncu, silviu.gincu@isa.utm.md

Abstract. Work-based learning is an essential area for both the private and public sectors, contributing to the development of the economic and social sector. In this regard, various studies and analyses are conducted to highlight the best workplace training practices. In this article, the authors aim to present the results obtained through a survey of students during their internship for the auto electrician-electronics trade. The research methods used were quantitative (242 respondents) and qualitative (43 questions) and aimed at the way of carrying out the internships for the car electrician-electronics qualification, the results obtained during the research being highlighted. The authors believe that the results presented in this article are relevant not only to the secondary technical vocational training field but also beyond.

Keywords: *apprenticeship, economic entities, internship, technical professional education, work-based learning.*

Rezumat. Învățarea la locul de muncă reprezintă un domeniu important atât pentru sectorul privat cât și pentru sectorul public și contribuie la dezvoltarea sectorului economic și social. În acest sens, sunt desfășurate diverse studii, analize, care să scoată în evidență cele mai bune practici de formare la locul de muncă. În prezentul articol, autorii își propun să scoată în evidență rezultatele obținute urmare a chestionării elevilor în perioada desfășurării stagiului de practică în producție la meseria electrician-electronist auto. Metodele de cercetare utilizate au fost cantitative (242 de respondenți) și calitative (43 de întrebări) și au vizat modul de realizare a stagiului de practică în producție a elevilor de la meseria electrician-electronist auto, fiind evidențiate rezultatele obținute în cadrul cercetării. Autorii consideră că rezultatele reflectate în prezentul articol sunt relevante pentru tot domeniu de formare profesională tehnică secundară și nu doar.

Cuvinte cheie: *învățământ profesional tehnic, învățare la locul de muncă, unități economice, stagiul de practică în producție.*

1. Introducere

În acord cu prevederile Strategiei de dezvoltare „Educația 2030" „Republica Moldova promovează o politică educațională racordată la politicile educaționale europene şi internaționale, relevantă pentru soluționarea problemelor şi nevoilor actuale ale sistemului educațional şi ale beneficiarilor acestuia" [1, p. 1].

Din contextul general al Strategiei de dezvoltare „Educația 2030", constatăm că situația economică este una complicată şi coroborat cu problemele demografice şi fenomenul migrației au un efect negativ asupra sistemului de formare profesională.

În acelaşi timp remarcăm că pe dimensiunea formării profesional tehnice, în special în ultimul deceniu au fost realizate un şir de reforme care au avut ca scop creşterea calităţii formării profesionale a forţei de muncă.

Printre principalele acţiuni de reformă se menţionează elaborarea Cadrului de referinţă al Curriculumului pentru învăţământul profesional tehnic, evaluarea externă a calităţii programelor de formare profesională tehnică, implementarea învăţământului dual, finanţarea bugetară a instituţiilor de învăţământ profesional tehnic în bază de cost per elev etc.

Toate aceste măsuri au avut ca scop asigurarea unui cadru normativ care să creeze premise pentru formarea calitativă a forţei de muncă.

Din punct de vedere practic, formarea forţei de muncă se realizează de către instituţiile de învăţământ profesional tehnic prin colaborare cu sectorul privat. În acest sens instituţiile de învăţământ profesional tehnic îşi asumă realizarea instruirii teoretice, iar sectorul privat instruirea practică. Despre rolul şi importanţa parteneriatelor dintre instituţiile de învăţământ profesional tehnic şi sectorul privat din perspectiva formării profesionale ale elevilor la locul de muncă, se menţionează în diverse cercetări/studii la nivel naţional [2-4], precum şi internaţional [5-12]. Succesul pregătirii profesionale ale elevului în mare măsură depinde de nivelul implicării acestuia în activităţi practice specifice locului de muncă.

În acest sens, „învăţarea la locul de muncă le oferă elevilor experienţe de muncă din viaţa reală, în care pot aplica abilităţi teoretice şi tehnice şi asigură dezvoltarea abilităţilor practice" [4, pag. 1]. Conform actelor normative ce reglementează formarea profesional tehnică [13-16] învăţământul profesional tehnic din Republica Moldova se realizează prin prisma a trei tipuri de programe de formare profesională, după cum urmează:

1) Programe de formare profesională tehnică secundare, care corespund nivelului trei de calificare (Cadrul Naţional al Calificărilor). Prin prisma lor se asigură formarea profesională a muncitorilor calificaţi;

2) Programe de formare profesională tehnică postsecundare şi postsecundare nonterţiare, care corespund nivelului patru şi respectiv cinci de calificare (Cadrul Naţional al Calificărilor). Prin prisma lor se asigură formarea profesională a tehnicienilor.

Este de menţionat că în contextul tendinţelor economiei de piaţă domeniile de formare profesională precum *electronică* şi *transport* sunt tot mai solicitate atât de către angajatori, cât şi de absolvenţii de gimnazii, care sunt în căutarea unei meserii în care să se poate realiza atât din punct de vedere profesional cât şi personal.

Din această perspectivă, în învăţământul profesional tehnic secundar, conform datelor din sistemul de management informaţional în învăţământul profesional tehnic, calificarea de *electrician-electronist auto* poate fi obţinută în cadrul a 10 instituţii de învăţământ profesional tehnic prin prisma programului conex, cu o durată de studii de trei ani, *electrician-electronist auto – mecanic auto*, în cadrul căruia sunt încadraţi circa 1123 de elevi, or în cadrul

programului cu durata de doi ani *electrician-electronist auto*, în cadrul căruia sunt încadraţi circa 205 elevi.

Este de menţionat că în conformitate cu prevederile Planului cadru pentru învăţământul profesional tehnic secundar [14] în procesul de formare profesională ponderea timpului orelor pentru instruirea practică prevalează orelor de instruire practică. Spre exemplu pentru programele de formare profesională tehnică secundară „coraportul între formarea teoretică şi formarea practică constituie 35 – 50 % pentru instruirea teoretică şi respectiv 65 – 50 % pentru instruirea practică, inclusiv stagiile de practică în producţie. Numărul de ore la instruire practică poate ajunge până la 70 % în dependenţă de specificul calificării" [14, pct. 14], iar în cazul învăţământului dual „timpul de instruire este repartizat în raport de 20–30 % din durata normativă a programului de studii în instituţia de învăţământ şi de 70–80 % în cadrul unităţii" [15, art. 3 alin (11)].

Spre deosebire de programele de formare profesională tehnică prin învăţământ dual, în cadrul cărora responsabilitatea pentru instruirea practică este delegată unităţilor economice, în cadrul programelor de formare profesională tehnice secundare tradiţionale instruirea practică se realizează în parteneriat cu unităţilor economice, iar „stagiile de practică în producţie definitivează formarea profesională a elevilor din învăţământul profesional tehnic secundar şi asigură formarea/dezvoltarea competenţelor profesionale, prevăzute în calificarea profesională respectivă" Potrivit [16, pct. 4].

Potrivit [16, pct. 5] stagiile de practică în producţie se realizează în cadrul întreprinderilor, atelierelor şi gospodăriilor didactice ale instituţiilor de învăţământ profesional tehnic, asociaţii publice sau private ş.a.

În acord cu prevederile [16, pct. 35] unitatea economică în vederea formării abilităţilor practice ale elevilor, în cadrul stagiilor de practică îşi asumă responsabilităţi precum:

1) crearea condiţiilor de muncă în corespundere cu conţinutul programelor de formare profesională şi asigurarea normelor de securitate şi sănătate în muncă;

2) instruirea elevilor cu privire la tehnica securităţii şi sănătăţii în muncă;

3) asigurarea elevilor cu documentaţia tehnică necesară, materiale, instrumente, aparate şi alte mijloace conform proceselor tehnologice de lucru;

4) asigurarea condiţiilor de muncă în corespundere cu cerinţele sanitaro-igienice;

5) evaluarea periodică a cunoştinţelor elevilor, etc.

În acest sens, se asigură un cadru normativ care să ofere posibilitatea elevului de a pune în practică cunoştinţele teoretice. În dependenţă de nivelul de realizare a acestora se va asigura dezvoltarea abilităţilor practice ale viitorilor muncitori calificaţi. În cadrul studiului [12] sunt prezentate concluzii prin care se menţionează că învăţarea la locul de muncă este un instrument esenţial atât pentru angajaţi, cât şi pentru unităţile economice, în adaptarea lor la un număr tot mai mare de tendinţe globale care ne remodelează locurile de muncă. Lucrătorii învaţă cel mai mult atunci când se confruntă cu sarcini concrete, sarcini noi pentru ei şi au posibilitatea de a se autoafirma pentru a depăşi dificultăţile întâlnite prin colaborare cu colegii sau mentorii lor. În acelaşi timp unităţile economice nu oferă angajaţilor oportunităţi optime de învăţare. O astfel de situaţie dăunează atât angajaţilor, cât şi companiilor.

În prezentul articol sunt prezentate unele concluzii, formulate din perspectiva autorilor urmare a chestionării elevilor care şi-au desfăşurat stagiul de practică în producţie la unităţile economice în cadrul programului de formare profesională tehnică secundară electrician-electronist auto. Având în vedere reprezentativitatea respondenţilor chestionaţi

considerăm că rezultatele obținute sunt suficiente pentru a forma o viziunea asupra calității desfășurării stagiilor de practică în producție în învățământul profesional tehnic secundar, în caz particular în domeniul formării muncitorilor calificați în domeniile *electronică* și *transport*.

Este de menționat că la nivel național nu au fost realizate/publicate analize similare, care să scoată în evidență rezultatele organizării și desfășurării stagiilor de practică în producție în învățământul profesional tehnic secundar, la nivel internațional autorii au considerat a scoate în evidență cercetări relevante formării profesională la locul de muncă [6-7, 11-12].

2. Materiale utilizate și metode aplicate

Prezentul articol este elaborat urmare a implementării unui chestionar realizat prin intermediul Google Forms. Chestionarul a inclus 43 de întrebări, structurate pe secțiuni, după cum urmează.

În cadrul secțiunii *informații generale* au fost colecta informații generale ce vizează instituțiile de învățământ profesional tehnic în care elevii își fac studiile, meseria, anul de studiu și unitatea economică în care și-au desfășurat stagiul de practică în producție.

Prin prisma secțiunii *organizarea și desfășurarea stagiului de practică în producție* s-a determinat modul în care elevii și-au identificat locul stagiului de practică, cum ei se deplasează la locul de practică, modul în care elevul a fost familiarizat cu unitatea economică.

Secțiunea *monitorizarea și evaluarea stagiului de practică în producție* a inclus întrebări și detaliate despre performanța și progresul elevilor în cadrul activităților din cadrul stagiului de practică în producție, despre colaborarea cu maistrul instructori din instituția de învățământ profesional tehnic, precum și modul de evaluare a elevilor în cadrul unității economice.

În vederea constatării progresului elevilor în ceea ce privește dezvoltarea abilităților și competențelor specifice domeniului de activitate, a provocărilor și dificultăților întâmpinate în cadrul stagiului de practică în producție a fost inclusă secțiunea *abilități și competențe*.

Secțiunea *satisfacție* a inclus un set de întrebări care să ofere informații despre gradul de mulțumire al elevilor în cadrul stagiului de practică, precum și de a utiliza informațiile colectate pentru a face ajustări și îmbunătățiri în funcție de nevoile și preferințele lor.

Chestionarea elevilor a fost realizată în perioada aprilie – iunie 2023, timp în care s-a desfășurat stagiul de practică în producție a elevilor din anul doi și trei de studii de la meseria electrician-electronist auto. Chestionați au fost 242 de elevi în timpul desfășurării stagiului de practică în producție din cadrul a 9 instituții de învățământ profesional tehnic.

Totodată în procesul de realizare a chestionării elevilor autorii au realizat o analiză a cadrului normativ în domeniul formării profesionale la nivel național [1, 13-17] și internațional [9].

3. Rezultate

Având în vedere că meseria electrician-electronist auto poate fi studiată de către elevi în cadrul unui program de doi ani sau a unui program conex cu durată de trei ani, eșantionul de respondenți a vizat 116 elevi ai anului doi de studii și 126 de elevi ai anului trei de studii. Printre cele mai esențiale rezultate obținute în cadrul chestionării se enumeră:
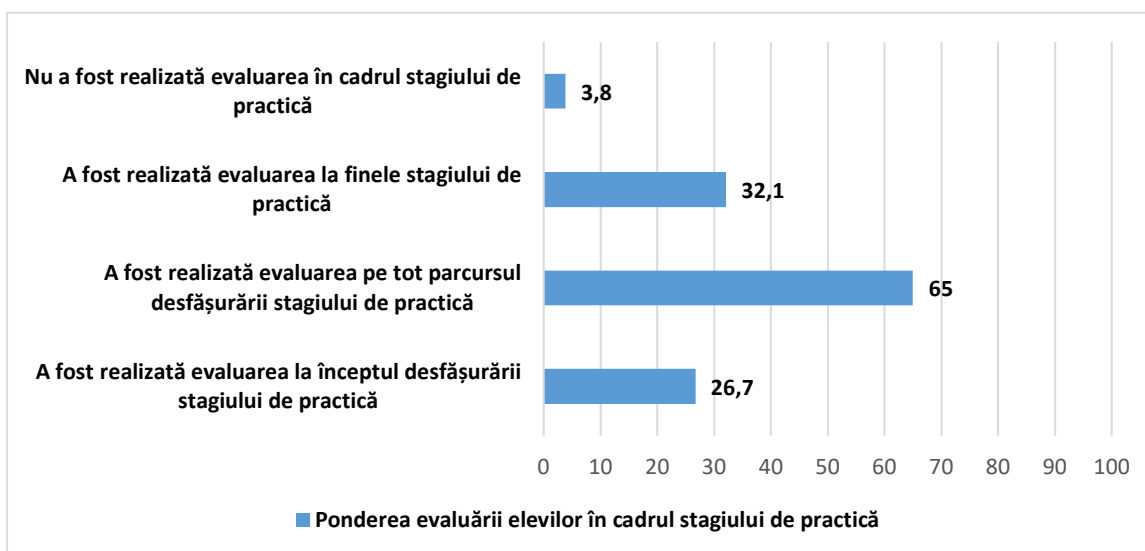
Figura 1. Evaluare competențelor profesionale ale elevilor.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.

Circa 82,8% din elevi au menționat că singuri și-au identificat locul de practică, iar 17,2% din elevi și-au desfășurat stagiul de practică în producție conform repartizării efectuate de către instituția de învățământ profesional tehnică;

În mare măsură elevii au fost familiarizați cu condițiile de desfășurare a stagiului de practică în producție. În acest sens fiind prezentat maistru-instructor din cadrul unității economice, au fost aduse la cunoștința elevilor drepturile și obligațiile acestora specifice stagiului de practică în producție, a fost adus la cunoștință regimul de muncă, regulile de securitate și precauție la locul de muncă, precum și explicate cerințele specifice și modul de organizare a activităților la locul de muncă;

Totodată, conform răspunsurilor respondenților se constată că circa 91,7% din elevi au menționat că sarcinile realizate de către aceștia în perioada stagiului de practică au fost în corespundere cu nivelul de pregătire al elevilor;
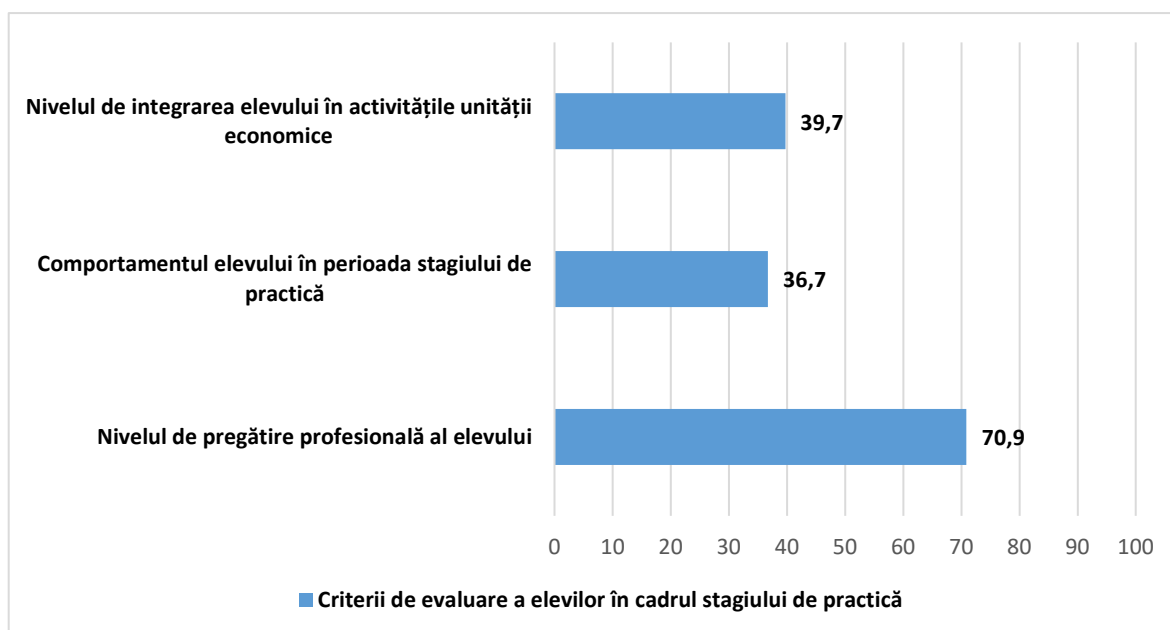

Figura 2. Criterii de evaluare a elevilor în cadrul stagiului de practică.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.
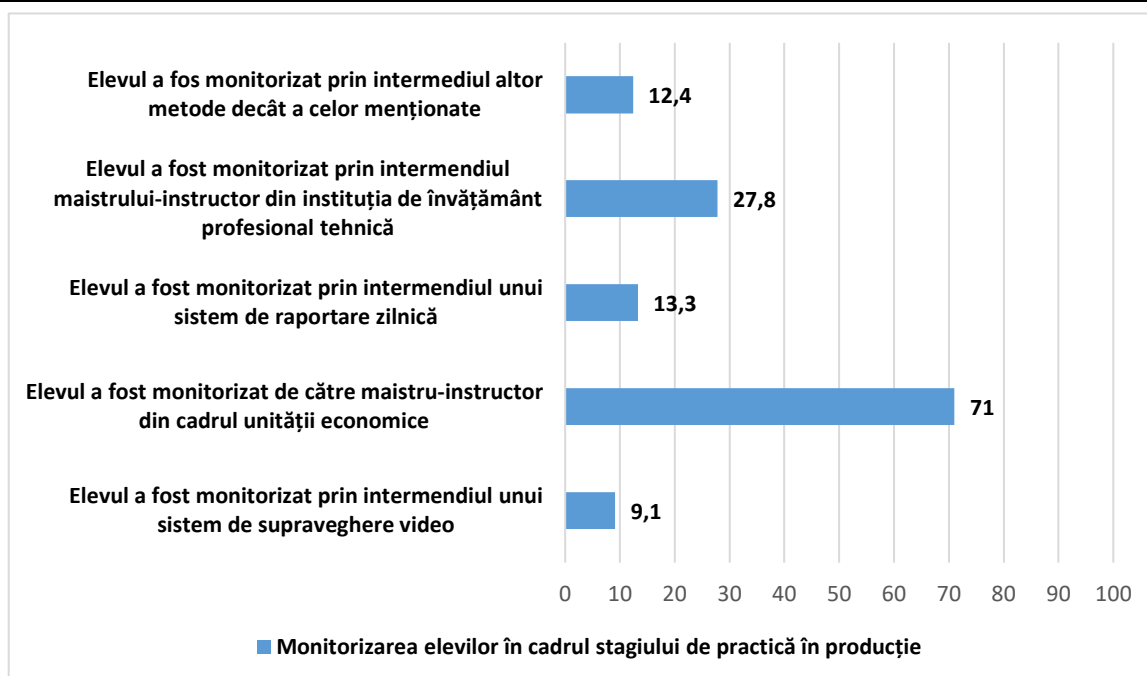
Figura 3. Monitorizarea elevilor în cadrul stagiului de practică în producție.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.

Circa 84,6% din elevi au menționat că au fost monitorizați de către maistru-instructor din instituție, acesta fiind prezent cel puțin o dată pe săptămână pe perioada stagiului de practică;

Din informația prezentată de către elevi se constată cu evaluarea competențelor profesionale ale elevilor se realizează în cadrul unităților economice, dar nu au un caracter sistematic.
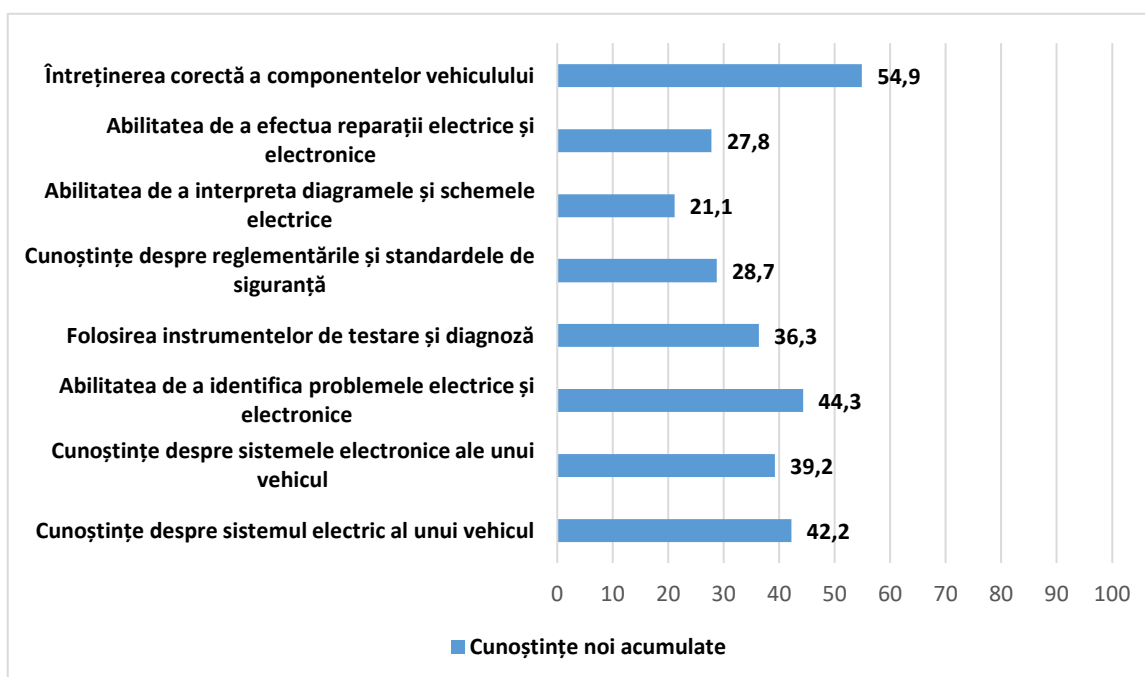

Figura 4. Cunoștințe noi acumulate de către elevi în cadrul stagiului de practică în producție.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.

În cadrul cercetării s-a constat că în procesul de evaluare, unitățile economice se focusează preponderent pe 3 criterii, iar nivelul de pregătire profesională al elevului

prevalează asupra comportamentului acestuia și asupra modului de integrare a lui în activitățile unității economice.

Cu referire la corectitudinea evaluării circa 76,2% respondenți au menționat că aceasta a fost realizată corect și obiectiv. Este de menționat că pe perioada desfășurării stagiului de practică în producție, elevii au fost monitorizați. Modalitățile de monitorizare sunt prezentate în Figura 3.

Având în vedere finalitățile de studiu prevăzute în cadrul curriculumului la meseria electrician-electronist auto, în cadrul stagiului de practică activitatea elevii au avut posibilitatea de a acumula cunoștințe și deprinderi noi, după cum urmează (Figurile 4 și 5).
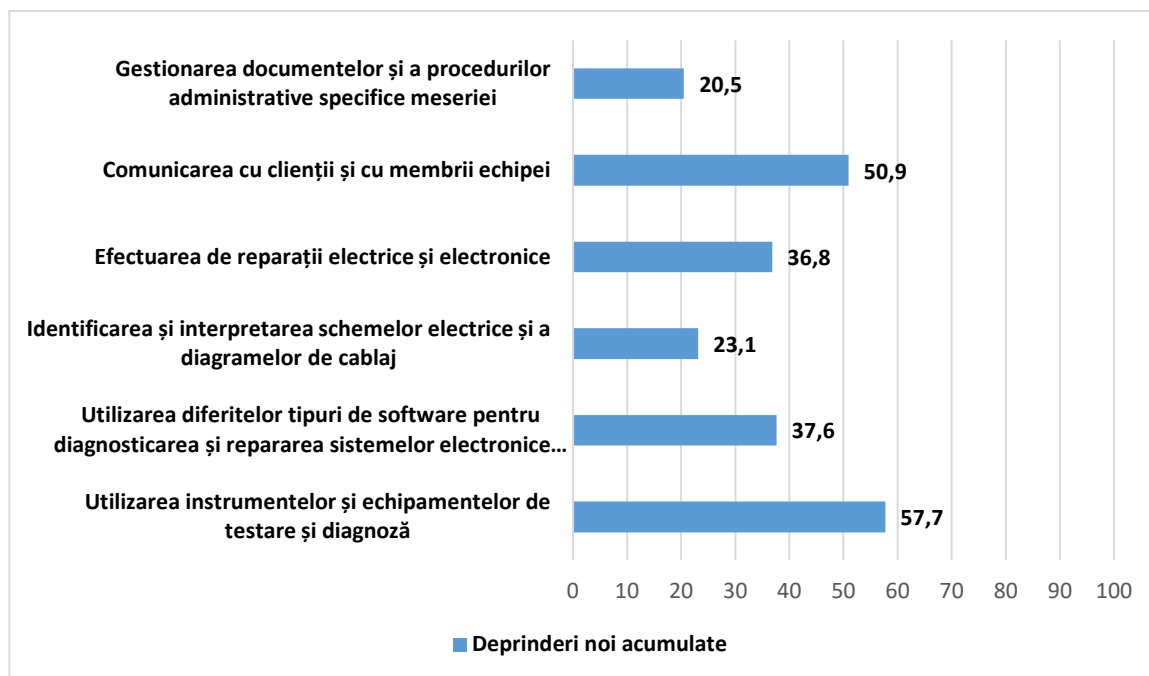

Figura 5. Deprinderi noi acumulate de către elevi în cadrul stagiului de practică în producție.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.

În mare măsură, principalele provocări cu care au întâmpinat elevii în cadrul stagiului de practică au fost: adaptarea la mediul de lucru și la cerințele specifice ale unității economice 24,2%, lipsa de experiență și cunoștințe tehnice 30,1%, gestionarea timpului și a sarcinilor de lucru 25,8% și comunicarea cu colegii 14,8%.

Este de menționat că peste 97,9% din respondenți consideră că în cadrul stagiului de practică au reușit să își dezvolte abilitățile practice.

Din punct de vedere a stării emoționale, în cadrul desfășurării stagiului de practică au avut o stare pozitivă. În contextul întrebărilor formulate în chestionar elevii au menționat, Figura 6.

Cu referire la oportunitatea de a fi angajat în cadrul unității economice în care elevii și-au desfășurat stagiul de practică în producție se menționează că circa 79,7% din respondenți și-au manifestat intenția de a fi angajat în cadrul unității economice în cadrul căreia și-a desfășurat stagiul de practică în producție.

Ca urmare a desfășurării stagiului de practică în producție circa 62,8% din elevi am menționat că sunt mulțumiți de profesia aleasă și își doresc în viitor să profeseze în domeniu, pentru circa 39,8% din elevi unitatea economică a înaintat elevilor oportunități de angajare.
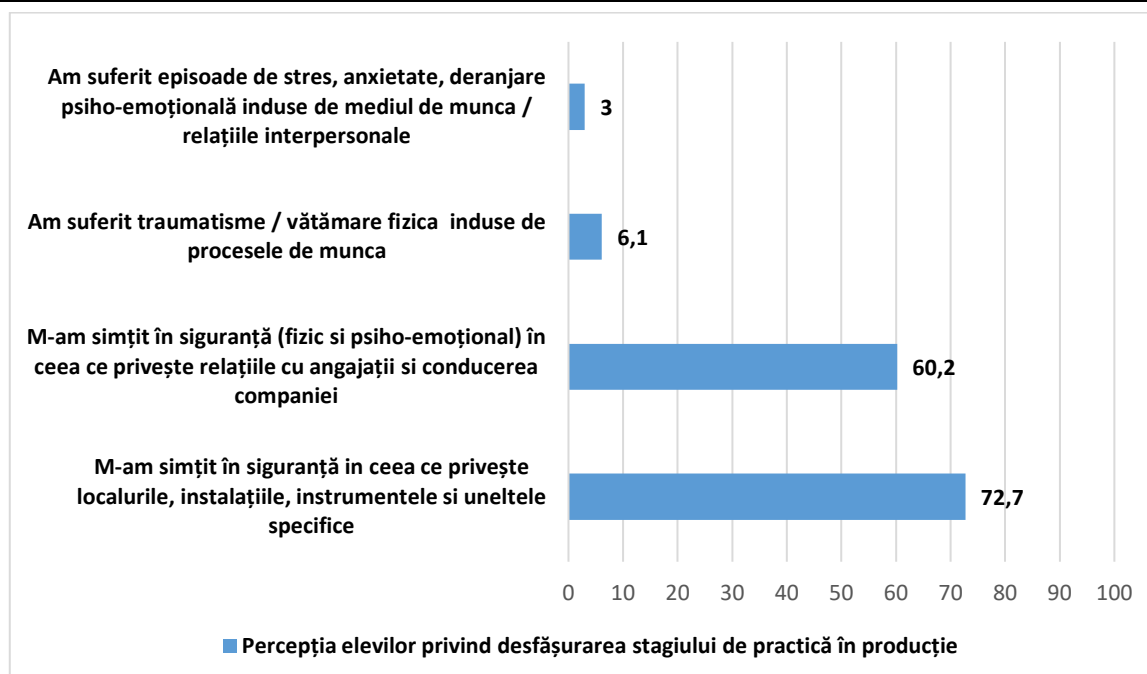
Figura 6. Percepția elevilor privind desfășurarea stagiului de practică în producție.
Sursa: elaborat de autor în baza răspunsurilor elevilor, 242 respondenți.

4. Discuții

Indiscutabil că formarea muncitorilor calificați în condiții reale de muncă este esențială în procesul de formare profesională. În condiții reale de muncă se oferă noi oportunități de formare profesională, prin dobândirea de noi cunoștințe și deprinderi practice.

Astfel, în contextul economic național și regional, politicile de pregătire a forței de muncă necesită a fi orientate către sectoare care pot să asigure formarea calitativă și temeinică a forței de muncă, precum și să ofere oportunități de realizare a tinerilor în cadrul unităților economice din Republica Moldova.

Din perspectiva asigurării forței de muncă calificată, formarea profesională la locul de muncă rămâne a fi un domeniu de interes pentru prestatorii de servicii de formare profesională, iar parteneriatele dintre instituțiile de învățământ și unitățile economice necesită mereu a fi consolidat.

Deși, fiecare domeniu de formare profesională are un specific aparte, considerăm că constatările efectuate în cadrul prezentei cercetări sunt pertinente și relevante tuturor instituțiilor de învățământ profesional tehnic și unităților economice implicate în calitate de furnizori ai stagiilor de practică în producție.

Reieșind din prevederile [16, pct. 13, pct. 33, pct. 35, pct. 39, 17] urmare a chestionării celor 242 de elevi care și-au desfășurat stagiul de practică în producție la meseria electrician-electronist auto, pentru actanții implicați în organizarea și desfășurarea stagiului de practică în producție se scot în evidență următoarele recomandări:

1) Instituția de învățământ profesional tehnic:

▪ să identifice parteneriate temeinice cu sectorul privat din perspectiva asigurării elevilor cu locuri de practică;

▪ să implementeze mecanisme eficiente de coordonare a stagiilor de practică în producție;

▪ să asigure stabilirea unei comunicări mai restrânse cu agenții economici care găzduiesc stagiile de practică prin asigurarea existenței unui canal de comunicare eficient și

deschis pentru a rezolva problemele, a primi feedback şi a coordona activităţile în mod eficient.

- să consulte în permanenţă elevii în procesul de desfăşurare a stagiului de practică;
- să asigure îmbunătăţirea condiţiilor de desfăşurare a stagiilor de practică în producţie;
- să asigure implicarea activă reprezentanţilor unităţilor economice în procesul de elaborare a curriculumului şi implementare a curriculumului.

2) Maistru instructor din cadrul instituţiei de învăţământ profesional tehnic:

- să se prezinte în mod regulat la locul de practică al elevului şi să ofere suport şi îndrumare elevilor;
- să monitorizeze activ progresul şi performanţa elevilor în cadrul stagiului de practică.
- să manifeste un interes autentic pentru dezvoltarea elevului, în caz particular cu accent pe gradul de implicare a elevilor în procesele de muncă, responsabilităţile atribuite elevilor şi satisfacţia personală a elevului în ceea ce priveşte sarcinile, atmosfera şi condiţiile de muncă.
- să se asigure că elevul în cadrul stagiului de practică în producţie primeşte ghidare şi suport adecvat din partea angajaţilor responsabili din unitatea economică.
- să menţină o comunicare deschisă şi constantă cu elevul în cadrul stagiului de practică în producţie.

3) Unitatea economică:

- să asigure implicarea activă a angajatorilor în procesul de desfăşurare a stagiului de practică prin conştientizarea importanţei şi beneficiilor de a oferi stagii de practică de calitate;
- să încurajeze colaborarea dintre maiştrii-instructori din instituţiile de învăţământ profesional tehnic şi maiştrii-instructori din unităţile economice în vederea facilitării schimbului de opinii şi expertiză în domeniu de formare profesională;
- să asigure sistemic evaluarea competenţelor elevilor în cadrul stagiilor de practică în producţie cu implicarea maiştrilor-instructori din instituţiile de învăţământ profesional tehnic şi maiştrii-instructori din unităţile economice;
- să asigure sistemic monitorizarea frecvenţei elevilor în cadrul stagiilor de practică în producţie;
- să instituie mecanisme eficiente de monitorizare a elevilor în cadrul stagiilor de practică în producţie;
- să asigure cultivarea responsabilităţii individuale a elevilor pentru procesul de învăţare, prin încurajarea acestora în stabilirea obiectivelor personale, monitorizarea progresului şi capacităţii de a-şi evalua performanţa.

4) Maistru instructor din cadrul unităţii economice:

- să ofere elevilor în cadrul stagiilor de practică în producţie mai multe oportunităţi de a se manifesta în cadrul unităţii economice. Aceasta poate include implicarea lor în activităţi relevante, participarea la întâlniri şi discuţii, prezentarea de idei sau propuneri şi luarea în considerare a contribuţiei lor;
- să încurajeze şi să valorifice participarea activă a elevilor în activităţile unităţii economice;
- să furnizeze ghidare şi sprijin în dezvoltarea carierei pentru elevi în cadrul stagiilor de practică în producţie. Ar trebui să îl ajute să-şi identifice interesele, abilităţile şi aspiraţiile

profesionale și să îi ofere informații și resurse relevante pentru ghidarea și orientare în carieră a elevului;

▪ să pună un accent deosebit pe dezvoltarea competențelor și deprinderilor elevilor în cadrul stagiilor de practică în producție;

▪ să ofere feedback constructiv și specific privind performanța și progresul elevului în cadrul stagiilor de practică în producție;

▪ să scoată în evidență punctele forte ale elevului și să identifice domeniile în care acestea se pot îmbunătăți;

▪ să se asigure că feedbackul este bine fundamentat și că oferă sugestii pentru a ajuta elevul să-și dezvolte abilitățile și competențele profesionale și după caz cele personale;

▪ să încurajeze elevul în cadrul stagiilor de practică în producție să-și dezvolte relații profesionale în cadrul unității economice.

Este de menționat că recomandările formulate se recomandă a fi luate în considerare în procesul de organizare și desfășurare a stagiilor de practică în producție nu doar în domeniul formării profesionale a specialiștilor în domeniile *electronică* și *transport* dar și în domenii conexe acestuia.

Totodată, urmare a analizei răspunsurilor respondenților s-a constat că în mare măsură instituțiile de învățământ profesional tehnic respectă prevederile legislației în procesul de organizare și desfășurare a stagiilor de practică în producție.

La nivel internațional, Comisia Europeană [9] a formulat unele recomandări pentru a asigura un cadru unic de politici în vederea asigurării calității formării specialiștilor la locul de muncă. În cadrul cercetării autorii au constat că actele normative naționale care reglementează formarea profesională sunt în acord cu recomandările Comisiei Europene, iar urmare a chestionării elevilor, s-a constat că în mare măsură formarea profesională a elevilor la meseria electrician-electronist auto în cadrul stagiului de practică în producție se realizează în acord cu prevederile legislației naționale și internaționale.

5. Concluzii

Pentru a avea o economie dezvoltată, avem nevoie de forță de muncă calificată. Aceasta poate fi asigurată doar prin colaborare cu sectorul privat. În cadrul cercetării au fost scoase în evidență unele constatări care ne permitem să afirmăm că calitatea formării forței de muncă este direct proporțională cu nivelul de implicare a sectorului privat în procesul de participare cu instituțiile de formare profesională în formarea și dezvoltarea competențelor profesionale ale elevilor.

În procesul de realizare a cercetării, autorii au constatat că cadrul normativ în domeniu este unul suficient pentru a oferi posibilitatea elevilor de a se instrui și dezvolta profesional. Totodată prevederile legislației naționale privind învățarea la locul de muncă este în acord cu prevederile legislației internaționale. În acest sens, este necesar a concentra eforturile părților implicate în implementarea calitativă a prevederilor legislației în domeniu.

Chestionarea elevilor în perioada stagiului de practică în producție este necesară a fi realizată atât la nivel instituțional, precum și la nivel național. Aceasta va permite a acționa rapid și a identifica ariile de îmbunătățire în vederea asigurării formării profesionale a elevilor.

Urmarea a chestionării elevilor s-a constat că impactul stagiului de practică în producție a elevilor este unul semnificativ și permite elevilor de a acumula cunoștințe și deprinderi noi,

iar rolul maistrului instructor din instituție și din cadrul unității economice joacă un rol important în pregătirea practică a elevilor.

Desigur, pentru a oferi locuri de practică pe de o parte instituțiile de învățământ profesional tehnic necesită a se implica mai activ cu sectorul privat în vederea sensibilizării acestora și stabilirii de parteneriate viabile, iar companiile trebuie să conștientizeze că în condițiile economiei de piață, instituțiile de învățământ profesional tehnic nu pot asigure doar la nivel de instituție un nivel corespunzător de pregătire practică a elevilor.

Având în vedere rezultatele constate și recomandările formulate se recomandă a realiza chestionare similare pentru a urmări în dinamică rezultatele chestionării elevilor la meseria electrician-electronist auto, precum și la alte meserii din alte domenii de formare profesională.

Din perspectiva formării calitative a viitorilor muncitori calificați, domeniul formării la locul de muncă rămâne a fi unul de interes sporit și se impune a desfășura studii suplimentare, în special cu sectorul privat pentru a identifica cele mai bune soluții pentru implicarea lor în procesul de formare profesională.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Strategia de dezvoltare „Educația 2030", aprobată prin Hotărârea Guvernului nr. 114/2023. În: Monitorul Oficial al Republicii Moldova, 2023 134-137 art. 289.
2. Gîncu, S. The role of cooperation agreement in dual education. *Journal of Social Sciences* 2023, 6 (2), pp. 80-88. https://doi.org/10.52326/jss.utm.2023.6(2).07.
3. Gîncu S.; Moldovanu R., Implementation of dual vocational educational and training (VET) în Republic of Moldova. *Univers pedagogic* 2019, 3 (63), pp. 34-44.
4. Movileanu, E. Experiențe privind învățarea la locul de muncă a elevilor din cadrul Colegiului Național de Comerț al ASEM. *Revistă de științe socioumane* 2021, 3 (49), pp. 79-85. https://doi.org/10.46727/jshs.2021.v49.i3.p79-85.
5. Burke, N.; Condon, N. Key competences in vocational education and training – Ireland. Cedefop ReferNet thematic perspectives series. Disponibil online: https://cumulus.cedefop.europa.eu/files/vetelib/2016/ReferNet_IE_KC.pdf (accesat la 03.11.2023).
6. Apprenticeship schemes in European countries. A cross-nation overview. Luxembourg: Publications Office of the European Union, 2018. Disponibil online: https://www.cedefop.europa.eu/files/4166_en.pdf (accesat la 02.11.2023).
7. Apprenticeships review: Greece. Modernising and expanding apprenticeships in Greece. Luxembourg: Publications Office. Thematic country review, 2018. Disponibil online: https://www.cedefop.europa.eu/files/4160_en.pdf (accesat la 03.11.2023).
8. Christiana E.; Michael J., On the labor market for full-time non-tenure-track lecturers in economics. *Economics of Education Review* 2020, 78, 102023. https://doi.org/10.1016/j.econedurev.2020.102023.
9. Proposal for a Council recommendation on a European framework for quality and effective apprenticeships. COM (2017) 563 final. Disponibil online: https://ec.europa.eu/social/BlobServlet?docId=18330&langId=en (accesat la 02.11.2023).
10. Workplace practices unlocking employee potential, European Company Survey 2019 series. Publications Office of the European Union, Luxembourg, 2020. Disponibil online: http://eurofound.link/ef20001 (accesat la 03.11.2023).
11. Fung-Mey H.; Jen-Che L.; Chin-Chun Y., The impact of labor market work and educational tracking on student educational outcomes: Evidence from Taiwan. *Economics of Education Review* 2020, 77, 101955. https://doi.org/10.1016/j.econedurev.2020.101955.

12. Kankaraš, M. *Workplace learning: determinants and consequences: insights from the 2019 European company survey.* Cedefop working paper, Publications Office, Luxembourg, 2021, 7. http://data.europa.eu/doi/10.2801/111971
13. Codul educației al Republicii Moldova, adoptat prin Legea nr.152/2014. În: Monitorul Oficial al Republicii Moldova, 2014, nr. 319-324 art. 634.
14. Planul-cadru pentru învățământul profesional tehnic secundar, aprobat prin OMEC nr. 1003/2023. Disponibil online: https://mecc.gov.md/sites/default/files/plan-cadru_secundar.pdf (accesat la 29.10.2023).
15. Legea nr. 110/2022 cu privire la învăţământul dual. În : Monitorul Oficial al Republicii Moldova, 2022 nr. 151-157 art. 273.
16. Regulamentul privind stagiile de practică în producţie în învăţământul profesional tehnic secundar, aprobat prin OMEC nr. 233/2016, cu modificările ulterioare. Disponibil online:
https://mecc.gov.md/sites/default/files/ordin_cu_anexe_actualizat.pdf (accesat la 27.10.2023).
17. Curriculum modular la meseria Electrician-electronist auto, aprobat prin OMEC nr 303/2020. Disponibil online: https://edu.gov.md/sites/default/files/716001-_electrician-electronost_auto_0.pdf (accesat la 02.11.2023).

Submission of manuscripts: jes@meridian.utm.md

THE LINGUISTIC RECONSTRUCTION OF POST-COLONIAL SOUTH AFRICA AND LESOTHO: ENGLISH DOMINANCE DILEMMA

Sandiso, Ngcobo[1*], ORCID: 0000-0002-8256-4453,

Makhulu A. Makumane[2], ORCID: 0000-0001-7904-4177,

Phumzile, Masala[1], ORCID: 0009-0007-8444-5953

[1] *Mangosuthu University of Technology, 511 Griffiths Mxenge Highway, Umlazi Township, Durban, 4066, South Africa*
[2] *National University of Lesotho, Roma, 180, Lesotho*
Corresponding author: Sandiso, Ngcobo, sandiso@mut.ac.za

Abstract. Language was one of the tools used by colonialists in destroying the heritage of African nations. Yet, there is limited research on how African nations have linguistically faired post their independence. The purpose of this paper is to assess the endeavors of two neighboring African governments, South Africa and Lesotho, in the post-colonial era to linguistically reconstruct their nations. Qualitative data were collected through a comparative analysis of these two countries' constitutions, with a focus on language rights and language in education. The data analyses were conducted using the language planning theory to evaluate how available policies enhance the position of previously marginalized African languages. The results revealed that whilst South Africa has a linguistic diversity challenge and Lesotho a language homogeneity advantage, they both still retain a colonial language, English. The international status of English has resulted in it retaining its colonial dominance as a lingua franca, a language of economy, politics and education. There is still more work that needs to be done by African nations to redress the past oppressive policies that devalued their languages. Education should be given priority as a vehicle to revitalize and intellectualize African languages and liberating Africa from its dependency on colonial languages, whilst also promoting multilingualism.

Keywords: *African languages, language planning, nationalism, multilingualism, transformation.*

Rezumat. Limba a fost unul dintre instrumentele folosite de colonialişti în distrugerea moştenirii naţiunilor africane. Cu toate acestea, există cercetări limitate asupra modului în care naţiunile africane şi-au îmbunătăţit situaţia lingvistică după independenţa lor. Scopul acestei lucrări este de a evalua eforturile a două guverne africane vecine, Africa de Sud şi Lesotho, în epoca postcolonială de a-şi reconstrui lingvistic naţiunile. Datele calitative au fost colectate printr-o analiză comparativă a constituţiilor acestor două ţări, cu accent pe drepturile lingvistice şi limba în educaţie. Analizele datelor au fost efectuate folosind teoria planificării lingvistice pentru a evalua modul în care politicile disponibile îmbunătăţesc

poziția limbilor africane marginalizate anterior. Rezultatele au arătat că, în timp ce Africa de Sud are o provocare privind diversitatea lingvistică, iar Lesotho un avantaj de omogenitate a limbii, ambele țări păstrează încă o limbă colonială, engleza. Statutul internațional al limbii engleze a făcut ca aceasta să-și păstreze dominația colonială ca *lingua franca*, o limbă a economiei, politicii și educației. Mai este încă necesară pentru națiunile africane multă muncă pentru a remedia politicile opresive din trecut, care le-au devalorizat limbile. Educația ar trebui să aibă prioritate ca vehicul de revitalizare și intelectualizare a limbilor africane și de eliberare a Africii de dependența sa de limbile coloniale, promovând în același timp multilingvismul.

Cuvinte cheie: *limbi africane, planificare lingvistică, naționalism, multilingvism, transformare.*

1. Introduction

Colonialism in Africa was engineered to take from the conquered and destroy what the people valued [1]. One such area where the full might of the colonizers was strongly felt was on Africa's rich linguistic heritage that was destroyed and replaced with the colonizers' languages [2]. The linguistic destruction was due to the colonizers' negative attitudes towards non-Europeans languages which they labelled as "jargons", "savage", and "primitive" and their speakers whom they deemed mentally inferior and uncivilized [3] coming from the "Dark Continent" characterized by tribal conflicts [4]. Hence today some parts of Africa are distinguished by the languages of their colonizers which has resulted in the so-called Francophone and Anglophone countries. Francophone countries were colonized by France and as a result use French as their common language of communication to conduct business and acquire education. A similar situation prevails in Anglophone countries which rely on English due to Britain's previous occupation.

In other countries it has not been just one of these colonizers but more at different times which has made their linguistic situations to be even far more complex. India had to suffer from the struggle involving Portuguese, French and the British who all wanted to colonize them until the English won and enforced their language [5]. Post-independence has equally witnessed this linguistic competition. In Algeria the national language which is Arabic has for many years been in rivalry with French and English for status and dominance as a language of administration and education [6]. It appears that this jostling for power has been perpetuated by politicians who seem unable to decide on promoting nationalism without clinging to a colonizers' language.

Post-independence has seen many countries trying to revitalize their national languages of communication as a weapon of freedom [7] from colonial languages. One such country is Tanzania where an African language called kiSwahili, rather than a colonizer's language, is being used as a lingua franca to deal with linguistic diversity in which there are 99 African languages [7]. Yet, other countries such as Nigeria that has about 505 indigenous languages has only permitted African languages use in pre-primary and primary education and retained English for the rest of education and business use [8]. Oloruntoba-Oju and van Pinxteren [8] argue that this political position is unacceptable because the country could still explore the multilingual solution in which at least a limited number of languages could be developed or intellectualized. The authors cite Germany that has also adopted one common language, Hochdeutsch, in the presence of 15 other languages. For Nigeria, they propose the adoption of its three major languages: Hausa, Yoruba and Igbo [8].

Indonesia is an even better example in which despite having 779 languages they still adopted Indonesian as a common indigenous language post-independence, instead of colonial English [9]. The biggest challenge for higher education institutions with doing away completely with English is that they want to remain relevant in the international space such as in sharing research work through publications. In such circumstances, English becomes an ideological choice based on practical rather than political reasons [10]. This interest in English has spread across many European countries where universities have prioritized the attraction of foreign students, staff and internationalization [11].

The presented diverse scenario from across the globe makes it important to establish what attempts have been made by some African countries to rid themselves of colonizers' languages. One area to examine are the constitutions because they are supreme laws of such African countries with a focus on language policies. A focus on language policies per se appears to be important considering the role of policy in empowering citizens and liberating them from bondages of slavery and abject poverty. Indeed, language has been instrumental in transitioning many countries from colonialism to independence [12]. However, policy without practice in the form of policy implementation would be incomplete. Hence, policy should be evaluated against implementation endeavors. In the same token, this article comparatively evaluates the language policies of two neighboring African states which are South Africa and Lesotho.

The aim is to understand these two countries' attempts at restoring the dignity of their citizens by revitalizing their languages. The question that drives this process is: what efforts have been made by African leaders to reconstruct their countries linguistically? In attempting to find answers to this question we draw from language planning theory since it guides the process of official language selection within a multilingual country.

2. Literature Review

The article is framed on language planning as used synonymously with language policy because of the connection between how the planned language will be taught and managed in a country as expressed in policy documents [13]. Hence, the term Language Policy and Planning (LPP) is often used to describe the connection between the two. In this respect, LPP focusses on the role of individuals as actors in the process of policy formulation and implementation [14]. The political leaders of African countries under scrutiny are therefore considered as actors involved in language policy.

Language planning on its own is viewed as "political and administrative activity" [15] conducted as part of "deliberate language change" [16]. This activity that is aimed at changing language status occurs "typically at the national level" [17] with the intention of addressing "social, political or educational (or a mixture of all three)" problems [18]. In support of language planning, there is language policy promulgated at political level that should be in accordance with the constitution of the said country. In this instance, the policies should indicate changes in language status of indigenous languages post colonization or post-independence. These could include decisions on national language(s), languages of instruction and the teaching of foreign languages [19]. Yet, [19] caution that some of these decisions on languages are ideologically influenced because there would be no intentions in the form of specifics to be followed in enacting policies. This may result in citizens finding ways of disregarding policies. Manan and co-workers [20] refer to conflict between policy and practice in Pakistan where learners are prohibited by teachers from using their native

languages in elite schools with the hope that it would promote fluency in English, a colonial language. This happens despite policies to the contrary. It is however not all gloom and doom as some success stories have been shared about one of the few universities worldwide that teach solely in an indigenous language, Sámi University of Applied Sciences (SUAS) in Norway [21]. Thingnes [17] attributes this success to the supportive Norwegian national language policy which states that Norwegian should be the main language of education with English only used when necessary.

Language policy informs inquiry on language management, practices and beliefs [22]. An examination of one without the other would be incomplete because policy alone would not provide insight into what motivated policy and its implementation strategies [23]. Hence, this study examines political decisions taken in the form of existing language policies about resolving language problems in the post-colonial African context of the two selected nations. The language problems emanate from the colonial era the two nations have emerged from that were dominated by colonial languages. It therefore becomes important to examine how leaders in these countries have sought to address this problem.

3. Materials and Methods

The study is a comparative and qualitative in that it undertakes an analyses of policy documents of the two African countries under review. The two countries that form the case study are South Africa and Lesotho because of their location in the Southern African Development Community (SADC) and close proximity to each other. The study is desktop in its nature.

4. Results
4.1 South Africa

South Africa previously recognized only two colonial languages in the country as official languages. These were English and Afrikaans. On the one hand, English was associated with the British colonialism. On the other hand, Afrikaans was associated with the apartheid regime of the Boer settlers that disenfranchised African citizens of the country who considered it as the language of the oppressor [24, 25]. This is due to that the Afrikaner-dominated National Party (NP) that governed South Africa between 1948 and 1994 when the country became democratic was behind the apartheid policy that enforced its use among Africans [26]. Kotze and Senekal [26] regard this stigma as one of the reasons Afrikaans came up in the October 2015 higher education protests (#AfrikaansMustFall) in South Africa because it still alienates black students in education. It is because of this history that the issue of languages in South Africa has come to be associated with power and powerlessness that remains post colonialism and post-apartheid [27].

Afrikaans itself has its roots in Dutch even though it is mainly and uniquely South African in that it is made of a mixture of languages that include African and Khoisan languages, English, Malay, Portuguese and German. At the same time, Afrikaans has influenced other South African languages, including English that borrow from it [28]. The apartheid government ensured that the language was well developed through language policies backed by exceptional funding and making it compulsory throughout education. As a result, today it stands as one of the two, after English, dominant languages of teaching and learning and the third widely spoken language at 13.5% [29].

The most dominant language is isiZulu with English ranked fourth [30]. IsiZulu dominance is evident in that it is the widely spoken language across different parts of the

country and media platforms. This commonality of isiZulu and ease of use is due to the existence of isiZulu-speakers across different parts of the country and the fact that it is associated with other Nguni languages such as isiXhosa, isiNdebele and isiSwati that share similar syntax and grammar [31]. Statista Research [32] find that isiZulu is spoken by around 25.3% of South African inside households in which case it is followed by isiXhosa (14.8%) and Afrikaans (12.2%). Moreover, it is quite common for isiZulu to be mixed with English and other languages in speech and written form by businesses, politicians, artists and the South African public at large [33, 34].

Even though English is ranked fourth it however dominates as the lingua-franca in South Africa and globally because of its high socio-economic status which allow it to be used in education, politics and economy [31]. However, a study by Posel, Hunter and Rudwick [35] find that the notion of English as an oral lingua franca in South Africa that is likely to lead to the death of African languages might have been exaggerated by previous research. Rather, the authors find that most Africans report using their languages inside and outside home. This is confirmed by Statista Research Department [32] who rank English as the sixth language commonly spoken in households at 8.1 percent, while they acknowledge it as the second (16.6%) most used language outside of homes.

Post colonialism and post democracy, the Republic of South Africa's [36] Constitution (Act No. 108 of 1996) recognizes nine African languages together with these two previously only official languages. Hence, the Constitution gave the official status to 11 languages which are English, Afrikaans, IsiZulu, IsiXhosa, Northern Sotho, Southern Sotho, Tswana, IsiNdebele, SiSwati, Xitsonga and Tshivenda. The recent development has witnessed the inclusion of sign language as the twelfth official language after the amendment of the section 6 of the Constitution of the Republic of South Africa, 1996 as per the Constitution Eighteenth Amendment Bill of 2023 [37]. The diverse official languages are in recognition of the multicultural and multilingual nature of the country which manifests itself in citizens frequently mixing these languages in speech and writing [38]. On this issue of languages, the Constitution of South Africa further states:

1) All citizens of this country have equal rights, including the right to be served by government in their own language.
2) All citizens in South Africa have equal rights to all opportunities, including the opportunity to develop themselves and their communities through education, health, housing, arts and culture, as well as access to the infrastructure of a modern society.
3) All people in South Africa have a right to develop themselves and the members of their.
   community in the official South African languages of their choice [36: sections 6, 9, 16, 29, 32].

The task of serving citizens in their languages is largely delegated to provincial governments and their municipalities who should consider the "the language needs, usage and preferences of the population" [36, sections 3(a) and 3(b)]. However, provinces would still identify English and Afrikaans alongside African languages as their official languages. For instance, the KwaZulu-Natal (KZN Provincial Language Policy [39, section 2.1.1], identifies isiZulu, isiXhosa, English and Afrikaans as its official languages. More so, English would tend to be the official language of administration that would be used for publications (KZN

Provincial Language Policy [39, section 2.4.5.3]. Webb [40] viewed the constitution's stand on multilingualism in the form of 11 official languages as an indication of avoidance and vagueness. The South African government, like most African leaders, was avoiding committing itself to one national language which would be African [41]. Moreover, lack of clarity on the implementation plan through the use of vague terms [40]. This tendency has also been found to be evident in some of the institutions in the country. Maseko and Siziba [42] find that most universities' language policies, especially the North-West University and Stellenbosch University, are vague and adopt escapist strategies on the development of African languages which they marginalize by placing conditions on their usage in education whilst perpetuating the dominance of English and Afrikaans. Such practices contribute to the institutionalization of ex-colonial languages, especially English, which continue to dominate education, politics and the economy whilst marginalizing African languages [43, 44].

The recognition of African languages' worth in the Constitution was further cemented in educational policies of South Africa. These were specifically the Bill of Rights in the Constitution [36, sections 30 and 31] which assures citizens that they have the right 'to receive education in the official languages or language of their choice where that is practicable' (paragraph 3.1.2). The concern noted above as raised by Webb [40] about the use of vague and non-committal terms is apparent in the use of "where that is practicable". Hence, it would not be surprising to find that the language policies are also developed in the same fashion. The two policies derived from the Constitution that require scrutiny are the Department of Education [45] Language-in- Education Policy (LiEP) for schools and the Department of Higher Education and Training [46] Language Policy for Higher Education (LPHE).

Firstly, the LiEP [45] begins by boldly stating that it seeks "to promote multilingualism" (1.2.1) that would assist "facilitate communication across the barriers of color" (1.2.3). This would be done by maintaining "home language(s) while providing access to and the effective acquisition of additional language(s)" (para. 1.2.5). However, the policy makes it clear that "the language of learning and teaching is vested on the individual" (paragraph 1.2.6) who "must choose the language" (para. 3.4.2). On the one hand, the policy instructs the use of home language from grade 1 to 3. On the other, from grade 4 parents can choose the language of instruction for their children. This is what Makena and Matiso [47] refer to as the sudden transition from the known to the unknown language leading to many Africans struggling academically because they cannot cope with the use of the ex-colonial language in education [31]. Posel and Casale [48] argue that it is due to this language option in the policy that many African parents are choosing English because of the perception that it is critical for employment and for use as an international language.

Secondly, the LPHE (2002) equally acknowledges the damage caused by "English and Afrikaans as the dominant [ex-colonial] languages of instruction" (15.1) in as far as not supportive of "the majority of [African] students entering higher education" (5) as they deny them "access and success" (5). However, the LPHE surprisingly require that African languages should still be developed as media of instruction "alongside English and Afrikaans" (21). Interestingly, the Language Policy Framework for Public Higher Education Institution (DHET, [49, pp. 12-13], the revised version of the LPHE 2002, acknowledges that not enough has been done "to avoid racial discrimination, unjust exclusion" of African students and calls on universities "to value all indigenous languages as sources of knowledge". This is in line with the concern raised by Makalela [50, pp. 150-151], who is critical of the lack of political will

by universities to implement policies which end up gathering dust giving ex-colonial languages a vantage point over African languages. Similarly, Cele [51] does not mince words in stating that the policy implementation process has failed to bring about transformation and social inclusion. This lack of implementation can be attributed to university leaders who have ignored policy from the government. It is therefore important that universities adopt a transformative approach when it comes to policy implementation [52].

4.2 Lesotho

Historically, Lesotho has been considered a monolingual country, with Sesotho, a language used by the majority of the population, giving the country this monolingual status [53, 54]. However, it suffices to mention that following Lesotho's independence from Britain in 1966, Lesotho officially became a bilingual country, with Sesotho, a native language, and English, a coloniser's language, both awarded the status of being official languages [55, 56]. The Constitution of Lesotho, Section 3(1) boldly states that these two languages are declared official and that any official document that is presented in any of the two languages should be considered valid [57].

In the same token, the revision of the language policy in 2009 by the Ministry of Education and Training (MOET) saw both Sesotho and English being used as mediums of instruction in schools at different levels, with the former used from Grade 1 to Grade 3 and the latter from Grade 4 up to the tertiary level [58]. Nevertheless, Kolobe and Matsoso [56] posit that the Curriculum and Assessment Policy (CAP) document insists that mother tongue should be used as a medium of instruction from Grade 1 to Grade 3, and that erroneously, this statement was interpreted by many to be referring to Sesotho as being the mother tongue. Indeed, the revision of the policy in 2009 through CAP duly recognises the existence of other languages spoken by minority groups such as IsiPhuthi, IsiXhosa and IsiNdebele, which are seen to give Lesotho a linguistic and cultural variance that was previously overlooked. However, the minority languages are not currently used as mediums of instruction despite the fact that Lesotho's strategic plan of 2005-2015 by the [59] reiterates that children from minority groups would cease to be marginalised in order to afford them access to knowledge in their mother tongue. Kolobe and Matsoso [56], in their study, aver that only Sesotho is used as a medium of instruction, and this suggests that the other three ethnic languages are side-lined, thereby compromising the quality of education offered to learners.

The revision of the language policy once again in 2019 should be seen as an attempt to remedy the mishap regarding the misconception of the 2009 CAP and to (re)construct Lesotho, in the post-colonial era, such that it recognizes minority groups. The MOET [60, pp. 2] states that:

> A recent diagnostic language situation in Lesotho reflects a definite existence of IsiXhosa, Sephuthi and IsiNdebele ethnic languages in the rural areas of the mountainous Kingdom of Lesotho.

This quote suggests that the Lesotho Education Language Policy (LELP) is a step towards ensuring that other minority languages are included in the school curriculum in view of promoting access to education and effective communication whilst instigating dialogues that push for the officialising of these languages in Lesotho [60]. Nevertheless, despite MOET's efforts to bolster the use of the ethnic languages and to restore their dominance,

recent studies [55, 56] paint a different picture. Kolobe and Matsoso [56] insist that English remains a pre-eminent language that is seen as a language of prestige. This latter assertion was earlier posited by Kamwangamalu [53], who indicated that English is viewed as the language of power, status and the language of the elite. In addition, Kamwangamalu [53] postulates that parents in Lesotho preferred English over Sesotho as the medium of instruction even in the lower grades, as the latter is not seen to have economic value in the linguistic sphere. In the same line of thought, Makumane and Fru [55, pp. 14,15] attest that learners in their study were of the view that English is "an advancement tool that can be used for better prospects [...] and makes them feel part of an educated citizenry as English is considered a marker of education in Lesotho".

5. Discussion

South Africa and Lesotho were subjected to colonialism and linguistic oppression by two colonizers. For South Africa, it was the Dutch and the English. For Lesotho, it was the French and the English. In both instances, the English won, and their language still dominates despite independence and democracy for the two countries. This should however be understood in the context where English has established itself as global and national language of communication with a strong footprint in the economy and digital space. Language planning and status planning have enabled the countries to make efforts in freeing themselves from the linguistic bondage of colonialism. Policies are firm on bringing about nationalism but ideological practices fueled by ambiguities in policies perpetuate the dominance of English.

The constitution of South Africa promotes multilingualism across all spheres of governance in recognition of various languages in the country which is in line with its multilingual nature. Yet, there is some contradiction when the education policies either limit the period of mother tongue education or are vague on implementation strategies that should enforce multilingualism. Lesotho is in a better position to implement nationalism in society and in education due to the dominance of one African language across the country. However, the approach taken by politicians was to settle for bilingualism in which English was put on par with Sesotho. Furthermore, French and a limited number of minority languages are promoted in education. This is a gesture, like in South Africa, that promotes multilingualism and recognizes Lesotho's rich multi-cultural heritage.

6. Conclusions

Both countries are applauded for their efforts to promote linguistic reconstruction and nationalism policies in their post-independence era. Whilst these policies might not be firm on required changes, implementation strategies and practices in their societies appear to move towards nationalism and multilingualism. This is even though some pockets of society, including leaders, are struggling to decolonise their minds. There is hope that Africa would one day be totally free of colonialism. Lesotho is likely to emerge as the early winner because of the already dominant use of Sesotho across many parts of the kingdom. The bit of a challenge is in the capital Maseru where English is to some extent dominant among citizens. South Africa might, like Tanzania, make progress if it settles for isiZulu because of its popularity not only in South Africa but also among some Lesotho citizens due to closeness of the two countries.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Lephakga, T. Colonial institutionalisation of poverty among blacks in South Africa. *Studia Historiae Ecclesiasticae* 2017, 43(2), pp. 1-15. http://dx.doi.org/10.17159/2412-4265/2016/1273

2. Sekhar, G. R. Colonialism and imperialism and its impact on English language. *Asian Journal of Multidimensional Research* (AJMR) 2012, 1(4), pp. 111-120. https://www.indianjournals.com/ijor.aspx?target=ijor:ajmr&volume=1&issue=4&article=009

3. Mufwene, S. S. Linguistic hybridization in the emergence of Creoles. *The Cambridge Journal of Postcolonial Literary Inquiry* 2022, 10 (1), pp. 74–89; doi:10.1017/pli.2022.32

4. Andjembe Etogho, E. B.; Eben, S. E. M.; Dalton, A. L. French neocolonialism in Africa: Historical overview and summary of current events. *American Journal of Economics and Sociology* 2022, 81(5), pp. 829-849. https://doi.org/10.1111/ajes.12493

5. Hashmi, M. U. Linguistic colonization: A comparison between the British in India and the Soviets in Central Asia. *International Journal of Russian Studies* 2020, 2, 9. www.ijors.net_issue9_2_2020_article_8_hashmi.pdf

6. Khelloul, S.; Benmaghrouzi, F. Z. The Linguistic History and the Ideological Inhibitions in Foreign Language Context in the Post-Independence Algeria. *Arab World English Journal* 2020, 11 (2), pp. 187 -201. DOI: https://dx.doi.org/10.24093/awej/vol11no2.13

7. Masala, P. Improved communication as a catalyst for the minibus taxi industry's changed negative image and increased profits in South Africa: Drivers' views: None. *International Journal of Research in Business and Social Science* (2147-4478) 2023a, 12(6), pp. 343-350. https://doi.org/10.20525/ijrbs.v12i6.2706

8. Oloruntoba-Oju, T.; van Pinxteren, B. Issues in introducing indigenous languages in higher education in Africa: The example of Nigeria. *Language Problems and Language Planning* 2022, 24(2), pp. 1-23. https://doi.org/10.1075/lplp.22005.olo

9. Suwarno, B. Acquisition planning for regional indigenous heritage languages in Indonesia. *SAGE Open* 2020, 10(3), pp. 1-15. https://doi.org/10.1177/2158244020948843

10. Soler-Carbonell, J.; Saarinen, T.; Kibbermann, K. (2017). Multilayered perspectives on language policy in higher education: Finland, Estonia, and Latvia in comparison. *Journal of Multilingual and Multicultural Development* 2017, 38:4, pp. 301-314, https://doi.org/10.1080/01434632.2016.1198356

11. Dafouz, E.; Camacho, M.; Urquia, E. 'Surely they can't do as well': a comparison of business students' academic performance in English-medium and Spanish-as-first-language-medium programmes. *Language and Education* 2014, 28:3, pp. 223-236, https://doi.org/10.1080/09500782.2013.808661

12. Kamwangamalu, N.M. The Language Planning Situation in South Africa. *Current Issues in Language Planning* 2001, 2(4), pp. 361-445. https://doi.org/10.1080/14664200108668031

13. Wright, S. *Language policy and language planning: From nationalism to globalisation.* Springer, United States, 2016; pp. 1-328. https://link.springer.com/book/10.1007/978-1-137-57647-7

14. Bouchard, J.; Glasgow, G. P. (Eds.). *Agency in Language Policy and Planning: Critical Inquiries.* Routledge, 2018, 322 p.

15. Jernudd, B.; Das Gupta, J. Towards a theory of language planning. In: Can language be planned? J. Rubin & B. Jernudd (Eds.), University of Hawaii Press, Honolulu, 1971, pp. 195-216.

16. Rubin, J.; Jernudd, B. (Eds.). *Can language be planned*? University of Hawaii Press, Honolulu, 1971; 373 p.

17. Fishman, J. A. (Ed.). *Advances in language planning.* Mouton, 1974; 585 p.

18. Kennedy, C. (ed.) *Language planning and language education.* Allen and Unwin, London, 1984.; 590 p.

19. Hancock, A.; Hancock, J. On the outside, looking in: learning community languages and Scotland's 1 + 2 Language Strategy. *Current Issues in Language Planning* 2021, 22(3), pp. 328-347. https://doi.org/10.1080/14664208.2020.1867415

20. Manan, S. A.; Channa, L. A.; David, M. K.; Amin, M. Negotiating English-only gatekeepers: teachers' agency through a public sphere lens. *Current Issues in Language Planning* 2021, 22(3), pp. 290-307. https://doi.org/10.1080/14664208.2020.1839219

21. Thingnes, J.S. Making linguistic choices at a Sámi University: negotiating visions and demands. *Current Issues in Language Planning* 2020, 21:2, pp. 153-174, https://doi.org/10.1080/14664208.2019.1671712

22. Spolsky, B. *Language Policy.* Cambridge University Press, Cambridge, 2004; 250 p. https://doi.org/10.1017/CBO9780511615245

23. Tesseur, W. Translation as inclusion? An analysis of international NGOs' translation policy documents. *Language Problems and Language Planning* 2021, 45(3), pp. 261 – 283. https://doi.org/10.1075/lplp.21002.tes

24. Szpiech, R.; Shapero, J.; Coetzee, A. W.; García-Amaya, L.; Alberto, P.; Langland, V.; Johandes, E.; Henriksen, N. Afrikaans in Patagonia: Language shift and cultural integration in a rural immigrant community. *International Journal of the Sociology of Language*, 2020, 2(66), pp. 33-54. https://doi.org/10.1515/ijsl-2020-2110

25. van Zyl, A. *Afrikaans Language Monument: A contested monument for a contested language.* Handbook of the changing world language map. Springer, Cham (1st edition). 2020, pp. 885-899. https://link.springer.com/referenceworkentry/10.1007/978-3-030-02438-3_96

26. Kotze, E.; Senekal, B. Not just a language with white faces: Analysing #taalmonument on Instagram using machine learning. *The Journal for Transdisciplinary Research in Southern Africa* 2020, 16(1), a871. https://doi.org/10.4102/td.v16i1.871

27. Seethal, C. The state of languages in South Africa. In: *Language, Society and the State in a Changing World*, Brunn, S.D., Kehrein, R. (Eds); Springer, Cham, 2023, pp. 169-185. https://doi.org/10.1007/978-3-031-18146-7_7

28. Jiemuratova, G. The notion of the Afrikaans language. *Na peresechenii jazykov i kul'tur*, 2021, 368.

29. Liebenberg, P.; van der Linde, J.; Schimper, I.; de Wet, F.; Graham, M.; Bornman, J. Describing the spoken language skills of typically developing Afrikaans-speaking children using language sample analysis: A pilot study. *Language, Speech, and Hearing Services in Schools* 2023, 54(2), pp. 518-534. https://doi.org/10.1044/2022_LSHSS-22-00077

30. Statistics South Africa. *General household survey 2018*, 2019. Available online: http://www.statssa.gov.za/ (accessed on 11 August 2023).

31. Ngcobo, S.; Mvuyana, B.Y.C. Communication and governance in a linguistically diverse human settlement in South Africa. *Journal of Local Government Research and Innovation* 2022, 3(0), a83. https://doi.org/10.4102/jolgri.v3i0.83

32. Statista Research Department. *Distribution of languages spoken inside and outside of households South Africa 2018 survey*, 2023. Available onlinehttps://www.statista.com/statistics/1114302/distribution-of-languages-spoken-inside-and-outside-of-households-in-south-africa/ (accessed on 14 August 2023).

33. Myeni, B. D.; Sibiya, N. Code switching in contemporary isiZulu performance poetry. *Literator* 2021, 42(1), pp. 1-8. https://dx.doi.org/10.4102/lit.v42i1.1747

34. Ngcobo, S. Written mixed language variety in multilingual South African media: intellectualisation of African languages (isiZulu). *Alternation Journal: Special Edition* 2014, 13(3), pp. 36–54.

35. Posel, D.; Hunter, M.; Rudwick, S. Revisiting the prevalence of English: language use outside the home in South Africa. *Journal of Multilingual and Multicultural Development* 2022, 43(8), pp. 774-786. https://doi.org/10.1080/01434632.2020.1778707

36. Republic of South Africa (RSA). *Constitution of the Republic of South Africa* (Act 108 of 1996), Government Printers, Pretoria, 1996. Available online: http://www.gov.za/documents/constitution/constitution-republic-southAfrica-1996-1 (accessed on 14 August 2023).

37. SAnews. *National Assembly approves sign language as official language*, 2023. Available online: https://www.sanews.gov.za/south-africa/national-assembly-approves-sign-language-official-language (accessed on 14 August 2023).

38. Winter, P.; Rabé, M.; Bornman, J.; Wet, F. D.; Graham, M. A.; Linde, J. V. D. Code-switching patterns in natural spoken language in a group of young Afrikaans-speaking children: An exploratory study. *Tydskrif vir Geesteswetenskappe* 2023, 63(1), pp. 45-64. http://dx.doi.org/10.17159/2224-7912/2023/v63n1a3

39. KZN Provincial Language Policy. 2009. Available online: https://www.kzndac. gov.za/wp-content/uploads/2020/11/KZN-Provincial-Language-Policy-English.pdf (accessed on 09 July 2023).

40. Webb, V. Multilingualism in democratic South Africa: The over-estimation of language policy. *International Journal of Educational Development* 1999, 19(4-5), pp. 351-366. https://doi.org/10.1016/S0738-0593(99)00033-4

41. Kadenge, M.; Mugari, V. The current politics of African languages in Zimbabwe. *Per Linguam: a Journal of Language Learning= Per Linguam: Tydskrif vir Taalaanleer* 2015, 31(2), pp. 21-34. https://hdl.handle.net/10520/EJC179378

42. Maseko, B.; Siziba, L. P. Continuities or change?: A synchronic and diachronic analysis of documented language policies of selected universities in South Africa. *Journal of Language Teaching and Research* 2023, 14(2), pp. 304-313. https://doi.org/10.17507/jltr.1402.05

43. Hendricks, M.; Nkomo, D. The institutionalization and integration of English in a multilingual South African Context. In: *Englishes in Africa,* Akinlotan, M. Ed.; New York, 2023, 178. https://doi.org/10.3726/b19008

44. Probyn, M. Pedagogical translanguaging and the construction of science knowledge in a multilingual South African classroom: challenging monoglossic/post-colonial orthodoxies. *Classroom Discourse* 2019, 10(3-4), pp. 216-236. https://doi.org/10.1080/19463014.2019.1628792

45. Department of Education (DoE). *Language in Education Policy*. Pretoria: Government Press, 1997. Available online:
https://www.education.gov.za/Portals/0/Documents/Policies/GET/LanguageEducationPolicy1997.pdf (accessed on 11 July 2023).

46. Department of Higher Education and Training (DHET). Language Policy for Higher Education. Pretoria: Government Press, 2002. Available online: https://www.dhet.gov.za/HED%20Policies/Language%20Policy%20for%20Higher%20Education.pdf (accessed on 11 July 2023).

47. Makena, B.; Matiso, N. H. Home dialect: A deficit towards enhanced additional language learning. *International Journal of Research in Business and Social Science* (2147- 4478) 2022, 11(8), pp. 298–303. https://doi.org/10.20525/ijrbs.v11i8.2033

48. Posel, D.; Casale, D. Language proficiency and language policy in South Africa: Findings from new data. *International Journal of Educational Development* 2011, 31(5), pp. 449-457. https://doi.org/10.1016/j.ijedudev.2010.09.003

49. Department of Higher Education and Training (DHET). *Language Policy Framework for Public Higher Education Institutions*, 2020. Available online: https://www.gov.za/sites/default/files/gcis_document/202011/43860gon1160.pdf (accessed on 11 July 2023).

50. Makalela, L. To be and to know: Towards a decolonized multilingual university. In: *Language and Institutional Identity in the Post-Apartheid South African Higher Education: Perspectives on Policy and Practice*, Springer International Publishing, Cham, 2022, pp. 149-161. https://link.springer.com/chapter/10.1007/978-3-030-85961-9_9

51. Cele, N. Understanding language policy as a tool for access and social inclusion in South African Higher Education: a critical policy analysis perspective. *South African Journal of Higher Education* 2021, 35(6), pp. 25-46. https://dx.doi.org/10.20853/35-6-3730

52. Masala, P. The minibus taxi industry's communication strategies in dealing with linguistic diversity on the way to business leadership: The case of South Africa. *Business Ethics and Leadership* 2023, 7(3), pp. 50-61. https://doi.org/10.61093/bel.7(3), pp. 50-61.

53. Kamwangamalu, N. M. Effects of policy on English-medium instruction in Africa. *World Englishes* 2013, 2(3), pp. 325-337. https://doi.org/10.1111/weng.12034

54. Unicef. Montoring education participation: Framework for monitoring children and adolescents who are out of school or at risk of dropping out, 2016. Available online: http://repositorio.minedu.gob.pe/handle/20.500.12799/5356 (accessed on 4 September 2023).

55. Makumane, M. A.; Fru, R. N. Learners' attitudes towards multilingualism: the case of French in Lesotho. *African Identities* 2021, pp. 1-19. https://doi.org/10.1080/14725843.2021.2008305

56. Kolobe, M.; Matsoso L. Effects of Language Status on Assessment and Educational Development of Basotho Learners from Minority Languages' Backgrounds. *International Journal of Language Education* 2020, 4(3), pp. 378-388.

57. Government of Lesotho (GoL). *Constitution of Lesotho*. Government Printer, 1993.

58. Ministry of Education and Training (MOET). *Curriculum and Assessment Policy Education for Individual and Social Development*. Maseru: Ministry of Education and Training, 2009. Available online: https://www.gov.ls/directory/ministry-of-education-and-training/ (accessed on 4 September 2023).

59. Ministry of Education and Training (MOET). *Education Sector Strategic Plan 2016-2026*. Maseru: Ministry of Education and Training, 2015. Available online: https://www.gov.ls/directory/ministry-of-education-and-training/ (accessed on 4 September 2023).

60. Ministry of Education and Training (MOET). *Lesotho Language Policy*. Maseru: Ministry of Education and Training, 2019. Available online: https://www.gov.ls/directory/ministry-of-education-and-training/ (accessed on 4 September 2023).

Submission of manuscripts: jes@meridian.utm.md

CAUSES OF THE SPREAD OF PRIVATE TUTORING PHENOMENON
A FIELD STUDY AT A CENTER IN ALGERIA

Kamel Aouissi*, ORCID: 0000-0002-7740-1035

University of Ghardaia Labratory of Southern Algeria Laboratory for Research in History and Islamic Civilization, Ghardaia, 47000, Algeria
Corresponding author: Kamel Aouissi, aouissi.kamel@univ-ghardaia.dz

Abstract. This research discusses the phenomenon of private tutoring, which has become a significant threat to the education system by creating academic inequalities and hindering students' equal opportunities for university enrollment. The study explores the prevalence of private tutoring at the secondary level in Ghardaia and investigates the reasons behind its widespread adoption. It also examines whether educational elements, such as teachers and the curriculum, influence the prevalence of private tutoring. Additionally, the research explores the role of families in encouraging their children to adopt this educational pattern. The descriptive-analytical methodology was employed, utilizing a questionnaire with 23 items distributed across three axes: reasons related to the student, reasons related to the teacher and curriculum, and reasons related to the family. The questionnaire was administered to a sample of individuals in Ghardaia. After analyzing the responses, the study found that the majority of the sample attributes the spread of private tutoring largely to reasons associated with the family, significant encouragement from families for their children to join private tutoring, and perceived teacher inadequacy in academic achievement. The dense curriculum was also identified as a crucial factor leading students to opt for private tutoring.

Keywords: *Private tutoring, Teacher, Student.*

Rezumat. Această cercetare discută fenomenul meditațiilor private, care a devenit o amenințare semnificativă la adresa sistemului de educație, creând inegalități academice și împiedicând oportunitățile egale pentru înscrierea la universitate. Studiul explorează prevalența meditațiilor private la nivelul învățământului secundar în Ghardaia și investighează motivele adoptării lor răspândite. De asemenea, examinează dacă elemente educaționale precum profesorii și programa școlară influențează prevalența meditațiilor private. În plus, cercetarea explorează rolul familiilor în încurajarea copiilor să adopte acest model educațional. S-a folosit o metodologie descriptiv-analitică, cu un chestionar format din 23 de întrebări distribuite în trei axe: motive legate de elev, motive legate de profesor și programul școlar, și motive legate de familie. Chestionarul a fost administrat unei mostre de indivizi din Ghardaia. După analizarea răspunsurilor, studiul a constatat că majoritatea

participanților atribuie răspândirea meditațiilor private în mare măsură motivelor legate de familie, încurajarea semnificativă din partea familiilor pentru ca copiii să li se alăture la meditații private și percepția unei inadecvări din partea profesorilor în ceea ce privește realizările academice. De asemenea, programa școlară densă a fost identificată ca factor crucial care determină elevii să opteze pentru meditații private.

Cuvinte cheie: *Lecții private, profesor, student*

1. Introduction

In recent years, the phenomenon of private tutoring has spread tremendously, posing a specific threat to the formal educational process. It has extended to include all levels of education, reaching even the preparatory stage. Consequently, it has become a genuine educational problem that has troubled not only the officials in the sector but also Algerian families. This phenomenon is commonly referred to as the private tutoring phenomenon.

However, opinions about this phenomenon vary. Some see it as a positive phenomenon, a reaction to the failures experienced by the Algerian educational system in terms of teacher training, the basic structure of educational institutions, the weakness of pedagogical resources, and the overcrowding in schools, which have become more like camps with over 40 students per class. This has led to a decline in academic achievement for students. On the other hand, another perspective views this phenomenon as entirely negative, resulting from the greed and avarice of some sector workers to gain more money and improve their living standards. This drives them to lure students into this pattern of lessons using all means and methods, representing a symbolic form of violence practiced by teachers on learners [1].

Moreover, the observer of Algerian society finds that this phenomenon has intensified specifically after the educational reforms introduced by the Algerian Ministry of Education, known as the "Second Generation Reforms." These reforms impacted teaching methods, curricula, increased the workload for teachers, complicated educational subjects, and added program density. This prompted parents to allow their children to attend private tutoring sessions to improve their academic performance, neglecting the pursuit of their self-improvement...

In this context, private tutoring has become the sole refuge for students and parents alike to achieve the highest grades in various exams, whether they are regular or official, not for the acquisition of knowledge or the development of students' experiences and skills but rather to follow ready-made solutions. This has led them to deviate from academic integrity by relying on memorization and failure, and adopting pre-packaged solutions [2].

Faced with this reality imposed by the private tutoring phenomenon as parallel education to formal education, our study aims to dig as much as possible into the nature of these lessons and the factors that have led to their widespread adoption. During our field study at the Basma Training Center, we observed a tremendous increase in the number of students attending private tutoring sessions at all levels and not limited to scientific streams. Even literary streams were included. Private tutoring was not confined to academically weak students but also extended to high-achieving ones. We also noticed that it covered various subjects, reflecting the complexity of the situation that has imposed itself.

As a phenomenon, the negative effects of private tutoring have become apparent, particularly in undermining the value of official schools as symbols and important educational institutions in the imagination of Algerian society. The role of these schools has

transformed from being a significant institution that awards certificates to learners to a marginal role [3]. Private tutoring has become foundational, translating into students escaping from official support classes introduced by the Ministry since the academic year 2007/2008, aimed at preparing final year students for the Baccalaureate. However, this decision did not manage to curb the spread of private tutoring. Despite the Ministry imposing penalties on teachers engaging in this unofficial activity, the phenomenon continued to grow day by day. Faced with this reality, we pose several questions, focusing on the following:

Primary Question: What are the school factors that drive students to opt for private tutoring?

First Sub-Hypothesis: The more the school lacks suitable conditions for students, the more these students turn to private tutoring.

The second Sub-Hypothesis: The more the socio-educational environment is unsuitable for studying, the more students tend to prefer private tutoring.

2. Study Concepts
Concept of Private Tutoring

All lessons provided by a teacher outside the classroom on a regular and repetitive basis, in exchange for payment or material compensation taken by the teacher for delivering this material [4]. It is also defined as any educational effort received individually or due to external conditions carried out by the teacher individually or collectively outside the school building and is in a specific part of the curriculum that is not understood by the student [5].

Concept of the Student

The person prepared for a specific educational stage controlled by cognitive, temporal, and linguistic levels that the teacher aspires to teach. This individual should consider the learner's abilities, interests, habits, and readiness regarding the goal they seek to achieve. The student should possess the capabilities, interests, and habits necessary to acquire skills and habits [6].

Concept of School Curricula

These are all the educational courses taught to all learners. These courses contain information taught by their teachers inside the classrooms, and these lessons are regular in routine schedules [7].

Concept of School Environment

Jenny Coulomb suggests that the concept of the school environment takes specific angles, such as the class or school climate. The class climate is determined by the relationships of students with each other and with their teachers, and the school climate is determined by the relationships of the teachers with each other and with the administration [8].

3. Materials and Methods
Research Methodology

The researcher employed a specific methodology to study the phenomenon scientifically, using the quantitative approach, which is known as "a set of procedures for measuring phenomena [9]. This method aims to identify the characteristics of the phenomenon, analyze it, and extract its essence. It helps reveal the causal relationship between variables and gives them a numerical character [10].

Exploratory Research

This stage is one of the initial phases in any scientific research, sometimes referred to in methodological books as the exploratory stage. It involves collecting theoretical information related to the research topic. It is crucial as it enriches the study in terms of sources, references, and previous studies. We visited the Basmah Training Center to collect field data and statistical figures about the center's establishment, nature of contracts with teachers, and the number of students. Simultaneously, we conducted interviews with students to explore certain indicators and dimensions posed in the problem statement. After these exploratory steps, we distributed questionnaires to students. The research sample consisted of 115 students, and the data collection occurred between May 7, 2023, and May 14, 2023. We collected and processed the data using the statistical program SPSS V22.

Sample and Sampling Method

We chose a non-random sample, specifically purposive or intentional sampling. This type has the advantage of providing sufficient information and evidence about the research community without requiring complex statistical analysis procedures used by random samples [11].

Sample Characteristics

The sample characteristics are essential information in any research, providing valuable statistical data that reveal various insights about the participants. In tables and graphs, we will illustrate many indicators related to the research sample, such as gender, department, and specialization, Table 1 [12].

Table 1

represents a pie chart of the number of students according to gender

Variables	Categories	Frequency	Percent, %
	Male	51	44.34
Gender	Female	64	55.65
	Total	115	100.0

It is evident from the relative circle that our sample is almost gender-balanced. We find that the percentage of females reached 55.7%, while the percentage of males did not exceed 44.3%. Perhaps this is what we noticed during our presence at the Basma Center, as the dense presence of the female element is apparent. However, our sample is characterized by a kind of moderation, which will be reflected in the questions of our questionnaire.

4. Results

4.1. Socio-school environment and private lessons: The duality of family and school, what impact

The school environment is of paramount importance in the educational system. It is the second most important factor in the upbringing of individuals, after the family. It is the foundation upon which individuals are raised, formed, and prepared to be good and integrated members of their community, and to contribute to their homelands in all aspects [13]. It is also the only official place where teachers and learners interact, and where learners acquire the facts and information that enable them to realize what needs to be done to develop their community. Based on this, providing the appropriate atmosphere within the school may contribute significantly to achieving the goals that this noble educational institution seeks [14]. This is what we will explore through the following tables.

Illustrates the school's provision of a good school environment and its relationship to the duration of students' engagement in private lessons

Provision of the school and a suitable environment	Duration of following private lessons			Total
	Less than two years	From 2-4 years	More than 4 years	
YES	18.3%	15.4%	18.3%	100%
NO	9.1%	**18.2%**	9.1%	100%
Total	17.4%	15.7%	17.4%	100%

Table 2 consists of two variables: the school's provision of a suitable study environment in general and its impact over the period during which the student receives private lessons outside of school. According to the table, 90.4% state that their school provides a suitable atmosphere for studying, supported by 66.3% of those who joined private lessons less than two years ago. In contrast, 9.6% of those who see the learning environment in their institution as unsuitable have a very low percentage, not exceeding 9.6%, supported by a significant percentage representing 72.7% of those who joined private lessons only two years ago. Based on this, it is observed that as long as the atmosphere for studying in the institution is suitable, students are less likely to enroll in private lessons 66.3%. Conversely, if the institution does not provide a suitable environment, students tend to turn to private lessons by 72.7%. This is also evident in the 18.2% of students who stated that the school does not provide them with a suitable learning environment; they have been engaged in private lessons for more than 3 years.

When calculating the Pearson correlation coefficient, we found -0.60, representing a strong inverse relationship. The school's function on the education side lies in providing educational means and a suitable atmosphere for studying. The lack of satisfaction with the need for this atmosphere may negatively affect the student's performance and academic achievement, forcing them to seek an alternative to the official, traditional education system to succeed academically. They often resort to support centers.

Among the indicators of the learning environment in the institution and its availability, we find the classrooms and their capacity for accommodating students. Does this impact students' tendency to enroll in private lessons? This is what we will observe in the following Table 3.

Table 3 illustrates the relationship between the number of students in the class and their opinions regarding their resorting to private lessons. Within this cross-sectional table, we notice that 41.2% stated that the reason for turning to private lessons is because they do not comprehend the lesson well in the class, and their class size reaches 40 students. Following this, a lower percentage of 36.2% mentioned that their goal is to succeed in the Baccalaureate, and they are not concerned about the number of students in the class.

Therefore, they stated that their class does not exceed 30 students, while those who stated that the number of students in the class is more than 40 tend to resort to private lessons to obtain new ideas and innovative problem-solving approaches related to official exams, such as the Baccalaureate certificate.

Number of students in the class and the student's resort to private lessons

| The number of students in the class | The reasons for students turning to private lessons | | | Total |
	Lack of understanding of the lesson in school	Success in the Baccalaureate exam	New methods and ideas in problem-solving	
Less than 30 students	29.3%	**36.2%**	34.5%	100%
31-39 students	**41.2%**	23.5%	**35.3%**	100%
More than 40 students	32.5%	32.5%	35%	100%
Total	32.2%	33%	34.8%	100%

What distinguishes this latter category, which seeks new ideas and innovative solutions despite the large number, is that the teacher is not entirely in control of the classroom. The teacher does not provide new solutions as they aim to complete the lesson, constrained by the limited time allocated for teaching, spent mostly on explanation only or to control the class from certain behaviors exhibited by the students.

Furthermore, the lack of discipline within the class and the teacher's inability to control it can result in various behaviors that could shatter the student's future, such as disruption in the class, continuous truancy, and consistent absenteeism. Perhaps this last indicator, which the student performs, might be a contributing factor to the desire for private lessons. The following table illustrates the nature of the matter.

Classroom Chaos and Student Inclination towards Private Lessons for Confidence Enhancement

| Classroom Chaos | Student Inclination towards Private Lessons for Confidence Enhancement | | Total |
	YES	NO	
YES	92.3%	7.69%	100%
NO	83.78%	16.21%	100%
Total	89.56%	10.43%	100%

Table 4 represents the purpose behind a student's enrollment in private lessons, which is to enhance their confidence and acquire personal and intellectual skills in solving integrative situations and exercises proposed in the Baccalaureate certificate. It also explores how chaos in the classroom and lack of class organization contribute to pushing students towards private lessons.

We observe that the largest percentage, 92.3%, represents students who stated that their regular study class is characterized by chaos and lack of organization. Those who say that their goal is to enhance self-confidence are the ones driven to private lessons. In contrast, a much lower percentage of 83.78% consists of those who stated that there is no chaos in the class they study. Therefore, examining the cells within the table, it becomes apparent that the more chaos there is in the class, the more students tend to turn to private lessons to enhance their confidence. Conversely, the more organized and controlled the class

is by the teacher, the less inclined students are towards private lessons. This is consistent with some responses from the surveyed students in the questionnaire technology, where some mentioned that the private lesson teacher, in addition to teaching and explaining the lesson, provides advice on how to pass the Baccalaureate and prepares well for this certificate. This enhances their confidence, which is lacking in public institutions due to the limited time and the teacher's focus on explaining the lesson or controlling the class.

The role of private centers is not limited to private lessons but extends to caring for the student psychologically, evaluating their abilities and readiness by providing psychologists and pedagogical support from teachers or former students who were in the center and achieved good grades. This is to transfer their experiences and provide various strategies for success in the Baccalaureate.

All of this encourages students to join private lessons. This teaching style is lacking in official secondary institutions, and this deficiency undermines the student's confidence in these institutions compared to private centers.

Given this reality, the school, as an educational institution, needs to consider the other institutions that contribute to socialization, such as the family and peer group or classmates in the school environment. Do these institutions influence the student's inclination towards private lessons? This will be explored in the following section:

Table 5

Family Encouragement for the Student and the Period of Enrolling in Private Lessons

Family Encouragement	Period of Enrolling in Private Lessons			Total
	From the Beginning	**In the Middle**	**At the end of the school year**	
YES	82.8%	12.1%	5.1%	86.1%
NO	68.8%	31.3%	0%	13.9%
Total	80.9%	14.8%	4.3%	100%

The family is considered the strong fortress for every child until reaching advanced years of age, always cherished, especially if it consistently seeks to support them. Table 5 illustrates the extent of family encouragement from all economic and psychological aspects to be enrolled in these private lessons. It is observed that the largest percentage is 86.1% of students who stated that their parents strongly support them for private lessons, supported by a percentage of 82.8% who started private lessons from the beginning. Then, this percentage begins to decrease as we move towards shorter periods representing the end of the school year. We find that 12.1% start from the middle of the school year, and it decreases to only 5.1% at the end of the year. In contrast, we find a percentage of 13.9% of students who mentioned that they do not receive any encouragement or support from their families, and this is supported by a percentage of 68.8% who enroll in private lessons, a relatively low percentage compared to students who receive encouragement from their families.

It seems clear that the family is also a significant and motivating factor for students, providing psychological support for their children to join these centers and be part of informal education. Here, the family plays a crucial role in changing the socio-educational imagination for formal education, which, although free, recognized, and legal, seems less convincing.

Families prefer private lessons for their children to obtain certificates. The support the student receives from the family strongly encourages private lessons, as the family grants a kind of legitimacy and acceptance for this type of education.

The tangible evidence of this encouragement lies in the qualitative development of the student from an academic perspective. Does the student truly benefit from and comprehend these private lessons? Table 6 illustrates this relationship.

Table 6

Family Encouragement for the Student and the Ability to Comprehend Private Lessons

Family Encouragement	Ability to Comprehend Private Lessons		Total
	YES	**NO**	
YES	**98%**	2%	100%
NO	**68.8%**	**31.3%**	100%
Total	93.9%	6.1%	100%

In Table 6, the strength of family support for the student becomes apparent, affecting their academic achievement and comprehension of private lessons. It is evident that 98% of those who receive encouragement from their family members, including siblings, aunts, and even extended family, can comprehend the lessons., this percentage decreases to 68.8% for those who do not receive encouragement from their families. Notably, 31.3% of those who lack family encouragement struggle to comprehend private lessons. This percentage further decreases to 2% for those who receive encouragement but find it challenging to understand the lessons.

This table significantly reinforces the findings of the previous one, highlighting the role of the family as an external motivator pushing students towards private lessons. Although lacking legal recognition, the family's decision to encourage their children for private lessons serves as a social source of motivation. Families are in dire need to establish a social status in society, wishing their children to hold important roles in life to fulfill their societal roles. In return, the family feels a sense of comfort, achieving self-fulfillment as advocated by Abraham Maslow's hierarchy of needs.

In conclusion, the family's role in the prevalence of private lessons is evident, and their encouragement for this type of education stems from a social need that they aim to fulfill through various means. Some families make financial sacrifices or take loans to provide private lessons for their children. Additionally, even if the student excels, the family's lack of conviction in formal education, combined with social conformity, leads them to opt for private lessons. This demonstrates the significant impact of family dynamics on a student's educational path.

Peer Group and Private Lessons: What Impact?

From our studies in the sociology of education regarding peer groups, it is established that they play a crucial functional role in the details of an individual's life. Among these roles is satisfying the social and psychological needs of individuals, such as the need for respect, appreciation, and psychological well-being. In other words, the peer group represents a source of socio-psychological support for individuals based on their belonging and loyalty to the group. Participation in shared interests and concerns is a primary focus of peer groups. Therefore, we will attempt to understand the extent of their impact on students' decisions, particularly those related to private lessons. The following table documents this relationship statistically.

Encouragement of a Peer for Private Lessons and its Impact on Self-Confidence

Peer Encouragement for You	Inclination toward Private Lessons and Boosting Self-Confidence		Total
	YES	**NO**	
YES	**96.3%**	3.7%	100%
NO	**87.5%**	**12.5%**	100%
Total	89.6%	10.4%	100%

Table 7 shows that the highest percentage is 96.3% of the respondents who stated that they receive strong encouragement and motivation from their peers, who are already attending private lessons. This percentage decreases to 87.5% for students who claimed not to receive any encouragement or hint from their classmates to pursue private lessons. Additionally, there is a significant percentage of 12.5% within this latter category who are not interested in private lessons at all.

Thus, the general trend from the table indicates that the more encouragement and support a student receives from classmates for private lessons, the more inclined they are towards private lessons. This inclination is associated with a sense of confidence, comfort, and reassurance that positively affects their academic performance. Conversely, when there is no encouragement, and no peer is urging them to take private lessons, their inclination towards private lessons decreases. This highlights the influential role of peer relationships in a student's decision to engage in private lessons. Many respondents enrolled in centers offering private lessons based on invitations from their peers, and witnessing their peers excel in specific subjects through private lessons also motivated them to join such educational programs.

Illustrates the relationship between a teacher's inability to master the subject matter in school and its impact on students' inclination towards private lessons

Teacher's Academic Proficiency	Teacher's Mastery			Total
	Beginning of Private Lessons	**Middle of Private Lessons**	**End of Private Lessons**	
YES	**78.2%**	16.8%	4.95%	100%
NO	**57.14 %**	**42.85 %**	00%	100%
Total	75.6 %	20%	04.3%	100%

Table 8 indicates that a teacher's mastery of the subject matter is positively correlated with students' enrollment in private lessons. When the teacher is proficient, there is a higher percentage 78.2% of students joining private lessons compared to cases where the teacher lacks mastery 57.14%.

Through the table, it is evident that the inability of the teacher is what compelled them to resort to private lessons, constituting the highest percentage at 87.8%. This is represented by the highest percentage of 78.2% among those who attend private lessons from the beginning of the year, followed by a percentage of 12.2% who stated that there is no correlation between the teacher's proficiency and their resort to private lessons. This latter percentage is represented by those who start private lessons from the beginning of the year. The overall trend from the table indicates that the more the teacher is incapable of mastering the subject matter, the more students turn to private lessons. The percentage is highest 8.2% when they start private lessons from the beginning of the year and decreases when there is no correlation between the teacher's proficiency and their decision to attend private lessons. According to the students, they initiate private lessons from the beginning of the school year to catch up on lessons more effectively and prevent accumulation. They also mentioned the innovative and easy methods in private lessons that aid in understanding complex subjects. Furthermore, the choice is influenced by the teacher's previous knowledge and competence, whether from teaching in previous years or from feedback from former students who have studied with the same teacher.

In summary, the general trend recorded in the table is that the more the teacher is proficient in the subject, the less inclination there is for students to opt for private lessons. Conversely, the inclination increases when students feel that their school teacher is less competent than the teacher in private lessons. This is evident in the fact that the period of initiation into private lessons tends to start from the beginning when the school teacher is perceived as less proficient.

Curriculum: Nature and Its Impact on Students' Inclination Towards Private Lessons

The Algerian educational system has witnessed many reforms in curricula and teaching methods. The goal was to keep pace with the global development of educational systems, where the student has moved from being a recipient to a producer of knowledge. However, experts in education believe that this change in the system has been accompanied by a large density in the teaching materials in terms of the size and content of the material. Therefore, we find that many students are looking for a solution to this problem, and we find that many of them have chosen to attend private lessons. The following tables confirm this hypothesis [15].

Table 9

The table below demonstrates the intensity of the curriculum and study programs and their correlation with students' inclination towards private lessons for improved academic performance

Curriculum and study programs	Inclination Towards Private Lessons		Total
	YES	**NO**	
YES	90.1 %	9.9%	100%
NO	75%	25%	100%
Total	89.6%	10.4%	100%

Through Table 9, we can observe that the highest category comprises those who answered yes, with a percentage of 90.1%, indicating strong support for the notion that the

curriculum and study programs are dense. Those who stated that the density of the curriculum and study programs was a reason for their inclination towards private lessons to enhance their self-confidence. Following this, a percentage of 75% responded that they do not perceive the curriculum and study programs as dense, asserting that the curriculum and program density are not reasons for their inclination towards private lessons.

The overall trend from this table indicates that the more intensive the curriculum and study programs are, the greater the inclination towards private lessons by students. According to their statements, this is attributed to the density of the curriculum, a problem that characterized the reforms of the second generation. It compels teachers to finish lessons, even at the expense of students, prompting them to take private lessons to meet the requirements of the curriculum.

Table 10

A table showing the respondents' views on the density of the curriculum and study programs and their affiliation with private lessons.

Nature of Study Programs	Enrollment period for private lessons			Total
	Beginning of Private Lessons	Middle of Private Lessons	End of Private Lessons	
YES	81.1 %	14.4%	4.5%	100%
NO	75.0%	25.0%	0%	100%
Total	80.9%	14.8%	4.3%	100%

The general trend indicates that as the curriculum becomes more intensive, students tend to opt for private lessons at the beginning of the school year, with a percentage of 81.1%. This gradually decreases to 25% for students who stated that the density of the curriculum is not a reason for attending private lessons in the middle of the school year. Hence, the curriculum plays a significant role in students' engagement with private lessons from the early stages of the academic year. This is attributed to the fact that the school curriculum may not align with the individual learning abilities and cognitive capacities of students, affecting their comprehension of lessons. Consequently, students turn to private lessons as a solution to this problem, aiming to overcome difficulties and succeed in the baccalaureate exam.

Through the field investigation we conducted on the phenomenon of private lessons and its prevalence in the school environment, we reached several conclusions, including:

- The more conducive the study environment in the institution, the less students enroll in private lessons. Conversely, if the institution does not provide a suitable environment, students tend to opt for private lessons. This indicates that the school environment is a significant factor in reducing the phenomenon of private lessons.
- Lack of control in the classroom by a teacher who lacks a strong personality and the inability to manage behaviors in the class, with disruptions from some students, can lead to a student's rejection of learning in the classroom. Instead, they turn to private lessons where they feel more secure and comfortable due to conducive learning conditions.
- Irregular attendance and frequent absences from school due to certain circumstances may drive students to seek private lessons to compensate for missed material. While classroom teachers may not repeat lessons missed by students, private tutors offer more flexibility and answer all questions without hesitation.

- Families, particularly mothers, play a significant role in motivating their children to join private lessons, providing financial and emotional support. Families perceive the school as not entirely satisfying in terms of academic training for their children, and they find better quality education and discipline in centers offering private lessons, prompting them to invest in their children's private education even if the cost is higher than their capacity.

- Peer encouragement for private lessons has a considerable impact on a student's inclination towards them. When classmates encourage private lessons, the researched student is more likely to feel confident, comfortable, and at ease in private lessons, reflecting positively on their academic performance. Conversely, a lack of encouragement from peers results in less interest in private lessons.

- A higher desire for private lessons to achieve a good GPA, enabling access to desired specialties in university, was reported by 92.6% of students. This percentage drops to 89.8% for students who do not find motivation or support from their peers.

- Two types of students were identified: those who choose private lessons with the same teacher from their school class to gain favor in grading and better understanding of solutions presented in class, and those who prefer a different teacher with higher expertise in the subject compared to their class teacher.

- The density of private lesson curricula and programs correlates with increased student interest in private lessons. This is attributed to the fact that the intensity of school programs, influenced by second-generation reforms, compels teachers to complete lessons at the expense of students. Despite the allocation of support in some complex subjects and materials, students reject this support and resort to private lessons, even at high costs.

5.Conclusions

The school is a focal point of interest for all segments of society, as it is a structure that works to maintain social order by creating equal opportunities for all its members to integrate into society and become socially responsible, in accordance with the morals, customs, and traditions of the community. However, the challenges it faces due to societal developments have shaken its status day by day. The phenomenon of private lessons is a contemporary problem that has proven its existence and widespread impact on society, threatening the functional and symbolic role of the school and the educational system in particular.

Through this study, we have found that responsibility does not solely lie with the educational system, but there are other stakeholders within this educational space who have contributed to the spread of the phenomenon of private lessons. Among these actors are students, teachers, classmates, and even families. Therefore, it is crucial for the relevant educational authorities and those in charge of the educational field to work more seriously to limit or at least regulate this societal phenomenon. This is in order to restore the stereotypical image of the school as the main structure that contributes to building and developing society, working towards its continuity by equipping students with the educational skills and experiences that help them build and develop their community.

In conclusion, the results obtained from this field study are just a first step towards further expanding research into this phenomenon, delving deeper into the roots of this societal issue that is affecting Algerian families and even those managing the country's educational system. We also hope to continue this research with variables that may be related

to the economic aspect of the phenomenon, as this is what distinguishes sociological research, which always calls for exploration through field and statistical studies, understanding it from the perspective of the reality experienced by Algerian society.

Conflicts of Interest: The author declares no conflict of interest.

References

1. Bouanaqa, A.; Qarqazi, W. Private lessons and the extent of their impact on the characteristics of educational isolation. *Journal of Social Research*, 2017, 1(13), 159.
2. Halima, K. For private lessons between leaders and the responsibility of teachers - a comparative study on students in the second stage of education. *Studies and Research* 2017, 8(26), 257.
3. Talha, M. Private Lessons: Reasons, Impacts of Practice, and Remedies. *Development Journal* 2015, 12, 44.
4. Shouki, B. Private Lessons in General Secondary Education: Their Size and Causes. *Educational Studies* 1994, 10, pp. 207-255.
5. Ibrahim, M.A. *Educational Encyclopedia*. Alam Al-Kutub for Publishing Distribution and Printing, Egypt, 2007, 1829 p.
6. Shahata, H.; El-Nagga, Z. Dictionary of Educational and Psychological Terms. Dar Al-Masriah Al-Lubnaniah, Cairo, Egypt, 2003, pp. 7-10.
7. Ghandoori, S. The Concept of Authority Among Teachers and Its Relationship to Psychological Distress. *International Specialized Educational Journal* 2014, 3(12), pp. 202-204.
8. Mahmoud, S.D. *Concepts of the Curriculum and Integrated Development in the Knowledge Society*. World of Books, Egypt, 2006, p. 37.
9. Kamal, B. School Climate and Its Relationship to Psychological and Social Harmony Among Adolescents in Middle School. Master's Thesis, University of Oran, Algeria, 2012, p. 32.
10. Angres, M. *Methodology of Scientific Research in the Humanities*. 2nd ed; Dar El Qasaba, Algeria, 2006, pp. 100-105.
11. Deliou, F. *Studies in Methodology*. Algerian University Publications Diwan, Algeria, 2000, pp. 69-70.
12. Imad, A. *Social Research (Methodology, Stages, Techniques)*. Jusoor Press Publications, Lebanon, 2002, p. 73.
13. Mohamed, A. *The Impact of the School Environment on Academic Achievement of Students*. World Publishing House, Riyadh, Saudi Arabia, 2023, p. 30.
14. Abdullah, A. *The Role of the School Environment in Achieving Academic Success for Students*. Saudi Publishing House, Riyadh, Saudi Arabia, 2022, p. 25.
15. Fawziya, E. Factors of the spread of private lessons in secondary education: A field study in the province of Guelma. Master's thesis, Faculty of Humanities and Social Sciences, University of Guelma, Algeria, 2012.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS CC BY

THE FEATURES OF AESTHETIC EDUCATION FOR THE DEVELOPMENT OF VISUAL LANGUAGE OF ARCHITECTURE STUDENTS

Mariana Hadji-Bandalac*, ORCID: 0000-0001-7833-8077

Technical University of Moldova, 168 Ștefan cel Mare Blvd., Chisinau, Republic of Moldova
*Corresponding author: Mariana Hadji-Bandalac, *bandalac.hadji@arh.utm.md*

Abstract. This work emphasizes some theoretical and practical provisions of aesthetic education, which have an important role in the development of visual language of architecture students. The principle of integrating scientific knowledge and creative skills ensures the success of the architecture student, valuing language as a tool used in free expression. One of the solutions refers to the analysis of the architectural context and project development based on visual language skills, and brainstorming, an idea-generating activity, can be taken as a method. Another solution would be to encourage students to take responsibility for the transmission of visual language from the perspective of aesthetic values. Taking on the role of a future architect by developing analytical skills and conveying aesthetic values, the student gains experience in modelling space and effectively conveying visual images of architectural edifices.

Keywords: *aesthetic education, theory of aesthetic education, practice of aesthetic education, development of visual language, architecture students.*

Rezumat. În lucrare se examinează unele opinii teoretice şi practice ale educaţiei estetice, care au un rol important în dezvoltarea limbajului vizual al studenţilor-arhitecţi. Principiul integrării cunoştinţelor ştiinţifice şi al abilităţilor creative asigură succesul studentului-arhitect, punând în valoare limbajul ca instrument folosit în exprimarea valorilor estetice. Una dintre soluții se referă la analiza contextului arhitectural şi dezvoltarea proiectelor pe baza abilităţilor de limbaj vizual, iar brainstorming-ul, o activitate generatoare de idei, poate fi luată ca metodă. O altă soluţie ar fi încurajarea elevilor să-şi asume responsabilitatea pentru transmiterea limbajului vizual din perspectiva valorilor estetice. Asumând rolul unui viitor arhitect prin dezvoltarea abilităţilor analitice şi transmiterea valorilor estetice, studentul dobândeşte experienţă în modelarea spaţiului şi transmiterea eficientă a imaginilor vizuale ale clădirilor arhitecturale.

Cuvinte-cheie: *educaţie estetică, teoria educaţiei estetice, practica educaţiei estetice, dezvoltarea limbajului vizual, studenţi-arhitecţi.*

1. Introduction

This study investigates practices that analyse the predominant range of visual tools used by architecture students, as well as the appropriate methods of developing visual language. The problem of developing the visual language, necessary in the free and professional expression of architecture students, is becoming more and more topical. The importance given to the specific methods of aesthetic education, used in the educational process, should include not only the training of some skills, but also the development of the visual language, being a tool of great value in the intellectual and professional training of architecture students.

In the view of Eftenie M., professor at the University of Architecture and Urban Planning „Ion Mincu" from Bucharest (UAUIM), the improvement of means of communication and the use of visual language in architecture *makes it necessary to establish a common code* with a possibility *of overcoming the language gap* [1].

In specialized literature, the architecture is defined as the art of creating aesthetic, harmonious places and spaces for people, at the same time, being approached as *a form of visual language* [2 – 4]. The meaning of a building arises from and depends on the understanding of its parts and its whole. Elsewhere, the visual language of architecture indicates the function of buildings in society: either individual, public or cultural, fixing the position within the complex, depending on the site nature. We find that the language gives shape to groups of buildings, highlighting a stylistic change from one era to another, which remains to be known through the plastic character of each architectural edifice and its urban location. At the same time, the architectural signs through the monumentality and plasticity of the building, through the details, elements, emblems and various architectural symbols inform us what type of building we are looking at.

Visual language and its nature as a form of communication is considered *a product of evolution*, and the whole system – *the fruit of the creative ability of the person himself* [5]. In this vein, the architecture students can inform themselves, create and express the phenomena of the built space.

Initiating the architecture students in the theory of aesthetics helps the acquisition of basic theoretical as well as practical knowledge, assisting them to receive and appreciate aesthetic values. In our opinion, the formation and development of the visual language of architecture students can be achieved by capitalizing on the theoretical and practical features of aesthetic education.

2. Theories and methods

According to the dictionary, the word *aesthetics* originating from the Greek language *aisthetikos* means *the study of sensory experience* [6]. It should be noted that contemporary aesthetics is concerned with the analysis of certain concepts related to art, such as artwork, symbolic shapes, artistic image, meaning, aesthetic values (the beautiful, the ugly, the comic) and others.

Depending on the disciplines, subjects and themes of the educational process for architectural students, the aesthetic methods as ways of research, theory, learning, achievement proposed by the scientific literature are the next: *observation, discovery, exercise, didactic game, case study, document study, problematization, demonstration, pragmatic training, brainstorming, etc., expository or conversational methods, methods centered on sensory exploration, on investigation* [7, 8].

According to Cerghit I., the method represents *a way of active assimilation of a system of new knowledge, skills and abilities, etc.; a way that makes the educated rediscover the truth and finding the necessary solutions in solving the theoretical and practical problems they face in the learning process* [9].

In the view of the Cristea S., *the methodology specific to aesthetic education capitalizes on the training resources of the educational process designed, realized and developed within the university disciplines directly (philosophy, plastic arts, literature, socio-human sciences, etc.) or indirectly (mathematics, physics, biology, etc.)* [10]; *specific artistic and extracurricular subjects* [11].

We also subscribe, without any hesitation, that the main source of aesthetic development is art, an idea also supported by Saleev V. [12], Cucoș C. [13], Adorno Th. [14], Read H. and others [15].

In the same vein, we support the idea that the formation and development of the visual language will help the architecture student *to synthesize through the specific means of art the essence of an era, to crystallize and fix in the built works the defining elements of civilization, promoting quality architecture, building real lasting, defining cultural landmarks* [16].

Aesthetic education in higher education in the Republic of Moldova, at the architecture specialty is privileged through the lens of artistic disciplines and activities, with the aim of developing imagination and creative potential, developing the ability to observe, forming aesthetic sensibility and artistic options, etc. Conceived in this way, aesthetics is a formative intellectual activity, because its object of study is the *Aesthetic Man (Homo aestheticus)*, part of - *the Emotional Man (Homo emotionalis)*, as stated by Aslam C., *the man who lives and who aims to live even more intensely by producing special kinds of artefacts, called art objects* [17].

According to Saleev V., aesthetic activity represents *a specific type of practical activity* (creation of artwork, folklore, design, etc.), *spiritual* (aesthetic contemplation, aesthetic perception, aesthetic judgment) and *creative* (utilization of visual language) [12]. Therefore, the aesthetic education of the architecture student is a process that takes place under the influence of art and the disciplines that are part of the given field. In the framework of practical educational activities, *Drawing, Painting, Sculpture,* and theoretical - *Basics of composition and Colorism*, the student manifests his creative attitude, representing the architectural phenomenon through the lens of his own visual language, not knowing the objective reality of the space. Two aspects appear in aesthetic education: a) in the university environment (in the given case the student is put in contact with aesthetic phenomena in the fields of art) and b) outside the institution (actions in the built space). So, through various case studies, numerous outings in the plein air, the future architect approaches the aesthetics of buildings and architectural space, and by continuously experimenting, he becomes more and more literate in the use of visual language aiming at the variety of architectural forms. Spatial and architectural analysis facilitates the identification of syntactic structure, so that the representation of architectural objects and forms can be rendered by the architecture student as a phrase in a certain visual language. This formative process is achieved by capitalizing on techniques for the formation and development of visual language that can be modified according to one's own aesthetic tastes. For architecture students, the goals of aesthetic education are important, which include the formation and development of visual perception (perception of form and aesthetic content), the development of aesthetic attitude and sensitivity. We think that a first step in this direction consists in the implementation of group creative activities (workshops, master-classes, exhibitions, creative camps, etc.), and the next step concerns the involvement of students in individual creative activities (exercises

in visual aesthetic perception), activities to create new ideas through graphic images, self-development, etc.). More than that, for example, familiarizing the student with *the architectural heritage of the Republic of Moldova* promotes both the formation and development of the visual language (symbolic content, plastic, artistic, technical means) and the promotion of aesthetic values (sensitivity to the preferences given to certain forms traditional, capitalizing on harmony and complex aesthetic order aiming at architectural significance).

In the view of the Ţărnă E. [18], *the language of space must be intercepted simultaneously according to 5 dimensions: size, height, closeness-distance, inside-outside, degree of intimacy,* which is characteristic of sensing architectural forms.

In the same vein, the author Saint-Martin F. claims that the formation and development of visual language is a complex and different approach, teaching us a semiological analysis that must necessarily be done through direct contact with the work, which will activate the state psychic and emotional of the individual through the energy of tones, colours, proportions and mathematical sizes [19]. These approaches are based on the phenomenon of visual perception, moving from the contemplation of the work to its understanding. The process of formation and development of visual language is called "visual lecture" by Matei D., Barbosa O., Mocanu T., Tănase Al., meaning being able to ensure the active transmission of coded information at the level of perception aesthetics "as an exclusively individual act in an intersubjective language" [20].

Hagan C., argues that through drawing we *develop an extended language of visual communication of thoughts, ideas and issues, which, being exhibited on a two-dimensional surface and through the choice of subject itself, acts as a catalyst for research in other subject areas* [21].

In this context, the position of Cerghit I., which brings to attention the method based on real experience – *the case study*, and its three characteristic types:

➢   the situation method (in the given case, the student receives complete information about the architectural phenomenon or about a certain subject that needs to be studied);

➢   the incident method (the student receives incomplete information to solve the problem of the architectural phenomenon or the proposed subject);

➢   the individual study (the architecture student is proposed concrete tasks to solve without receiving any information) [22].

Noticing the importance of the stated approaches, we must mention that the value of aesthetic education for the formation and development of visual language also belongs to the *traditional method, which is replaced by a rigorous sociological investigation of the procedures and intellectual foundations of sign systems inextricably linked to both the set of values, as well as the whole of reality, representing the amount of all relationships between subject and object, past, future, experiences, emotions, fantasies, etc.*, as the Romanian philosopher L. Grünberg states [20].

3. Materials and methods

The research experiment carried out in the academic years 2019-2020, on an experimental batch of 60 architecture students, cycle I, years of study II (55%), III (45%), within the Architecture program, Faculty of Urbanism and Architecture, Technical University of Moldova (UTM) allowed us to obtain information real aiming at the degree of development of the visual language in the context of the knowledge of aesthetic values. A questionnaire with 10 items was used as a study method. The evaluation questionnaire proposed to

architecture students allows to ascertain the level of development of the visual language in the context of the knowledge of aesthetic values. The students were asked to think about each aesthetic value separately and make a differentiation, checking with a "V" next to the sentence, in the box with the number corresponding to the level of confirmation: 1 – totally agree; 2 - neutral; 3 - disagree. Corresponding to those addressed, the total of each subscale is made, and the lowest score obtained indicates the high level of visual language development.

The students' answers to the following items indicate the comparative results according to the university level at which the architect-students are:

1) contemplating the sublime architectural edifices, different innovative ideas come to my mind for the creation of new architectural forms;

2) any sensation created by architectural harmony and beauty reveals different aesthetic sides of the visual language used;

3) the ideal of architectural beauty arouses aesthetic judgments;

4) the aesthetic is easier to perceive in architecture.

4. Research and results

The interpretation of the experimental results following the implementation of the questionnaire allowed highlighting the level of development of the visual language in the context of the knowledge of aesthetic values by the architecture students, Figure 1. Therefore, after applying the given questionnaire, it is observed that the architecture students have a low level of visual language development in the context of knowing aesthetic values, taking into account that the majority of the architecture students in the control group responded to these four items, scoring the variant of two - neutral. As we can see from Figure 1, for item 1 we recorded 65.0%, for item 2 – 50%, for item 3 – 58.3%, for item 4 – 15%.
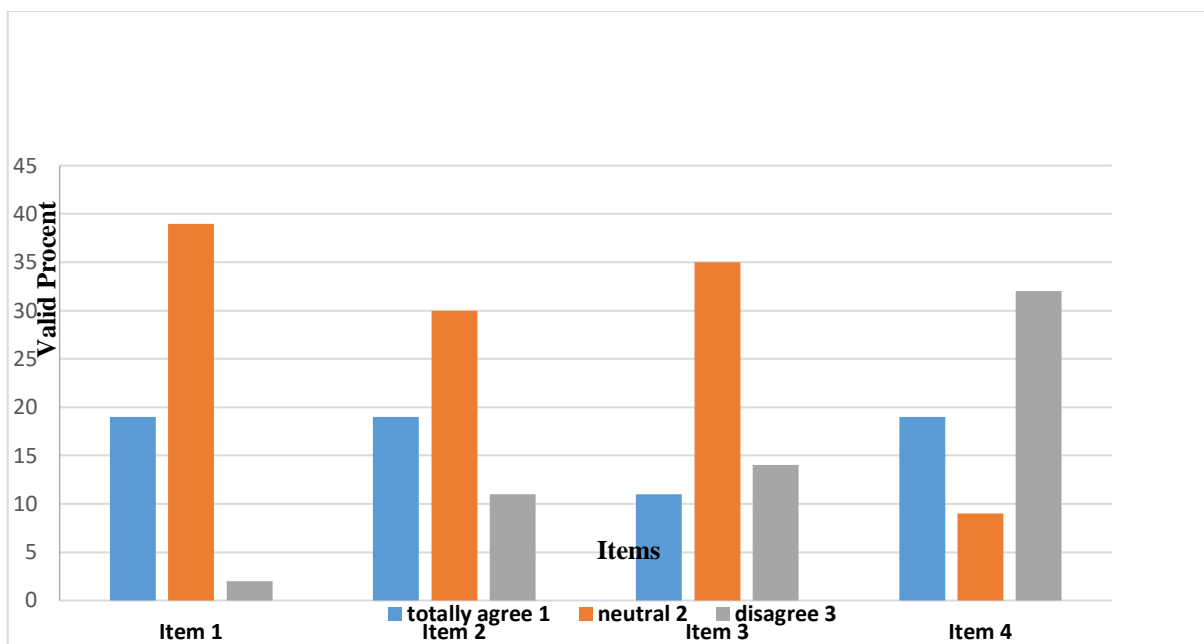
Figure 1. Comparative results regarding the level of visual language development in the context of knowing aesthetic values.

Starting from artistic disciplines as sources of content in aesthetic education, the next step is to find how practical methods are chosen and organized to provide the most effective instructional program for the purpose of visual language development. Next, we present the

case study aimed at the development of the visual language of architecture students, taking as an example the following buildings proposed as subjects of analysis: the Triumphal Arch in Chişinău, the Metropolitan Cathedral "Naşterea Domnului", the National Theatre "Mihai Eminescu", the Organ Hall, the Central Post Office, the Chişinău City Hall. The architecture students must resort to a structured and specialized approach, taking into account the following stages:

1. *Initial stage* – survey of the edifice and the architectural space with all the changes made over time, the function of the construction (analysis of the proposed subject, degree of representativeness, selection and structuring of information about the object of study).

2. *Experimental stage* – graphic practice using the plastic, artistic and technical means of the visual language (identification of the visual language and the architectural context).

3. *Conceptual stage* – presenting the diversity of conceptual ideas through visual images, arguing the present study.

By studying the architectural edifices that are framed in the natural space of Chisinau, the architecture student, going out into the open air, explores both the aesthetic forms and the problems of reality. At the same time, it examines architectural variations and changes to illustrate the qualities of the visual language used, Figure 2.

Analysing the built object, the architecture students must recognize architectural symbols, taking into account the following objectives:

- to comparatively analyse the changes of the construction made over time;
- to identify the architectural character and style depending on the area, era, country, culture, etc.;
- to analyse the representative elements of architectural forms;
- to discover the mathematical relationships of shapes;
- to compare various proportions, sizes, etc.;
- to recognize the combinations between the plastic means (shape, line and colour) and the artistic ones of the visual language;
- appreciate linear perspective and aerial perspective;
- specify the position of the architectural object in a certain space;
- to identify the material and work techniques;
- to determine architectural similarities and differences;
- to recognize the architectural context and be aware of the symbolic importance;
- to determine the problems regarding the architectural construction;
- to graphically represent the solution;
- to evaluate the message sent through the visual language in relation to the reception of aesthetic values.

The results of the case study allowed us to identify the level of knowledge of the visual language of the architecture students: high level – 11.7% (7 students clarified the problem according to the objectives described above), medium level – 23.3% (14 students completed only the theoretical part, not being sure in the graphic representation of the building), low level - 65.0% (39 students did not respect the requirements formulated by the teacher, the rules of graphic representation of the building, did not apply various procedures for using the elements visual language). Both the results of the questionnaire and the case study attest the low level of visual language development of the architecture students.
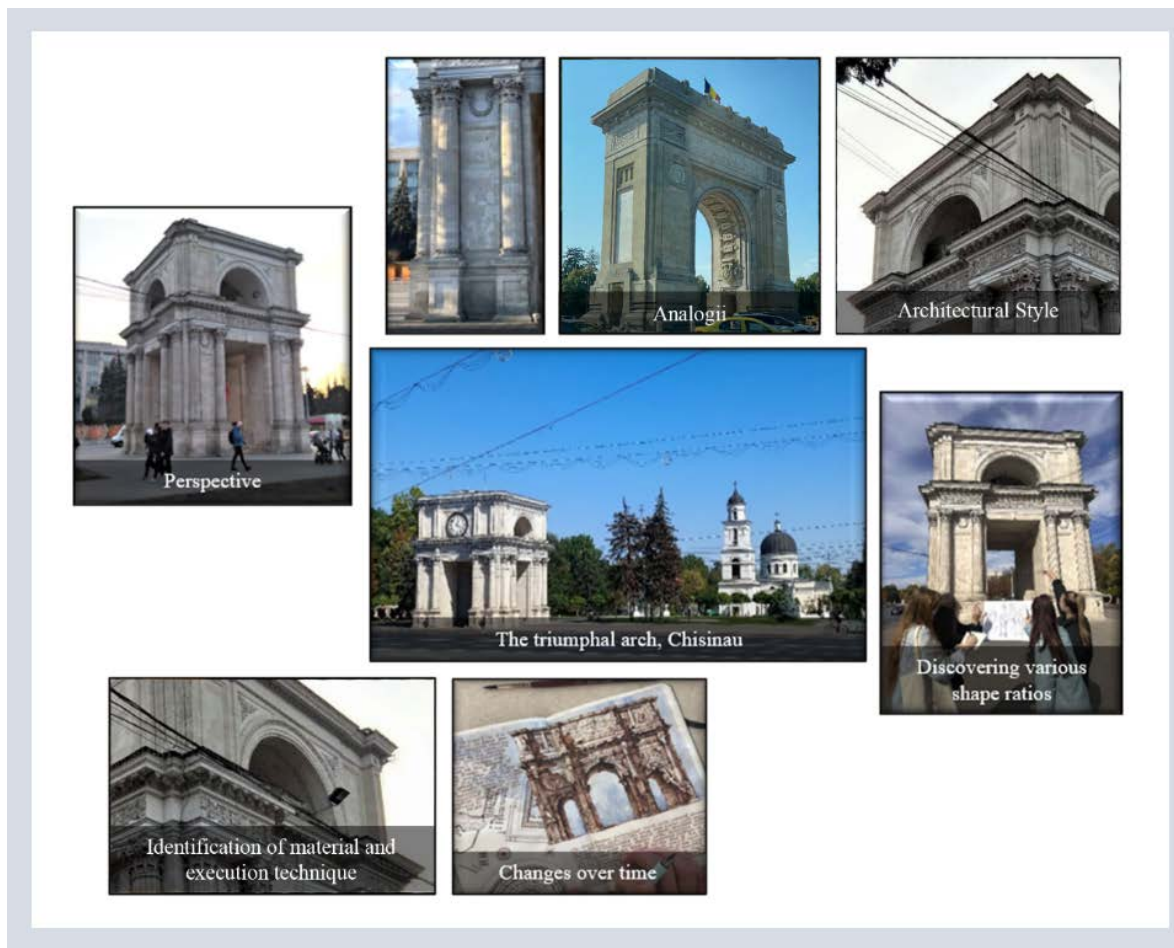
Figure 2. Representative images regarding the development of visual language in architecture students.
(Case Study).

At the same time, the basis of these practical activities focused on analysis and observation stimulates attention, interest in the architectural object or phenomenon of the architecture students, who must be trained to "see the object" (not simply look at it), to observe it directed with a specific purpose.

Following the investigations and the case study carried out regarding the architectural space, students consciously perceive the form and context of language, object function, volume, structure, texture, similarities, differences between objects and cultural values. At the same time, they get to know the elements of the building's visual language (line, shape, colour, etc.), with the technical and artistic means used (proportion, symmetry, asymmetry, rhythm, balance, etc.). This process encompasses a series of photo fixations of the architectural construction as an extensive visual representation.

We specify that the students in the experimental group had the chance to practice the object evaluation model according to the author Saleev V. [12, p. 9], which considers aesthetics as a holistic system, including the three main sections: 1) *the nature of the aesthetic evaluation object*; 2) *the nature of the subject of aesthetic attitude, the structure of aesthetics and the forms of aesthetic consciousness*; 3) *the nature of artistic value, activity and artistic appreciation*, Figure 3.
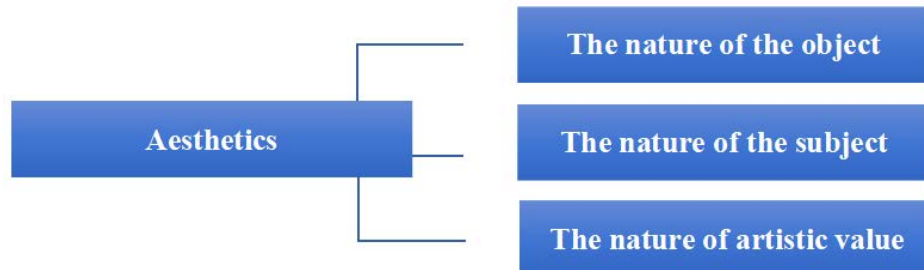
Figure 3. Object evaluation and the three main sections of aesthetics.

In particular, we are of the opinion that the study of the quality of the development of visual language of the architecture students depends on the solution of the creative and graphic process, which we represent through the diagram in Figure 4.
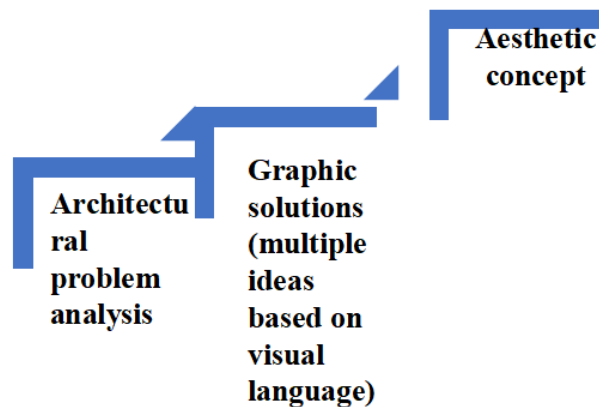

Figure 4. Aesthetic experience.

Generalizing the ideas presented, we mention that aesthetic education includes the experience of visual language development. In agreement with what has been reported, we support the idea that this process enhances the creation of the architectural object, contributes to the appreciation and awareness of aesthetics. Therefore, future architects resort to the analysis of historical and cultural tradition, applying the knowledge gained to characterize the architecture of a people or an era, etc. From the researched literature, we conclude that aesthetic education must be included in the process of professional training of architecture students.

4. Conclusions and recommendations

One of the solutions we propose relates to the analysis of the architectural context and the development of the project based on the visual language skills, and brainstorming, an idea-generating activity, can be taken as a method. For example, the architecture student exposes the problem related to the architectural edifice and generates discussions based on the drawing, stating ideas that would solve the unclear aspects of the existing architectural edifice. We note in particular, that both the design of visual images (sketches, croquis, drawings, studies, drafts, etc.) and the collaboration through creative experimentation of an aesthetic reality are important for architecture students.

We also mention that architecture students use drawing as a means of aesthetic expression, which stimulates reflection, evoking a constructive critical analysis, but also a synthesis of everything they observe. In this regard, through drawing the architecture students express their thoughts, ideas, problems, exposing the architectural subject under discussion, which acts as a catalyst for the development of visual language.

Another solution proposed by us relates to encouraging students to assume responsibility in the transmission of visual language from the perspective of aesthetic values. Assuming the role of a future architect by developing analytical skills and transmitting aesthetic values, the student gains experience in modelling space and effectively transmitting visual images of architectural edifices.

Moving from the sphere of methods to that of professional training perspectives, we conclude that the architecture students have to produce aesthetic architectural edifices. In this regard, we find relevant the disciplines: *Study of form, Painting, Sculpture, Basics of composition and Colourism, Creative Practice,* etc., which will help them gain experience regarding the formation and development of visual language.

Conflicts of Interest: The author declares no conflict of interest.

References
1. Eftenie, M. *Psychology of urban built space.* The 2nd edition. University Publishing House „Ion Mincu", Bucharest, Romania, 2006, 146 p.
2. Madeja, S.; Onuska, S. *Through the arts to the aesthetic: the cemprel aesthetic education curriculum.* CEMREL, Inc., USA, 1977, 156 p.
3. Dumitrescu, C. *Communication and identity in design, architecture and urbanism.* University Publishing House „Ion Mincu", Bucharest, Romania, 2008, 258 p.
4. Dumitrescu, C. *Communication theory and practice for architects and designers.* University Publishing House „Ion Mincu", Bucharest, Romania, 2008, 184 p.
5. Brazgovskaya, E. *In the labyrinth of semiotics: Essays and sketches on general semiotics and semiotics of art.* Armchair scientist, Moscow-Yekaterinburg, 2018, 224 p. [in Russian].
6. Flew, A. *Dictionary of philosophy and logic.* Humanitas, Bucharest, Romania, 1999, 379 p.
7. Cristea, M. *The educational system and personality. Aesthetic dimension.* Didactic and Pedagogically Publishing, Bucharest, Romania, 1994, 159 p.
8. Cucoș, C. *Aesthetic education.* Polirom, Iasi, Romania, 2014, 224 p.
9. Cerghit, I. *Methods of education.* Polirom, Iasi, Romania, 2006. p. 18.
10. Cristea, S. *Fundamentals of pedagogy.* Polirom, Iasi, Romania, 2010, 399 p.
11. Hadji-Bandalac, M. *Contributions to the education of aesthetic values.* Course notes. Tehnica- UTM, Chisinau, Moldova, 2023, 144 p.
12. Saleev, V. *Basics of aesthetics.* Belarusian State Academy of Arts, Minsk, Belarus, 2008, pp. 37-38 [in Russian].
13. Cucoș, C *Aesthetic education.* Polirom, Iasi, Romania, 2014; 224 p.
14. Adorno, T.W. *Aesthetic Theory.* Paralela 45, Pitesti, Romania, 2005, 500 p.
15. Read, H. *Image and idea. The function of art in the development of human consciousness.* Publishing House Univers, Bucharest, Romania, 1970, pp. 10-11.
16. Dumitrescu, C. *Communication theory and practice for architects and designers.* University Publishing House „Ion Mincu", Bucharest, Romania, 2008, 184 p.
17. Aslam, C. *Paradigms in the history of philosophical aesthetics. From Antiquity to the Renaissance.* European Institute, Iasi, Romania, 2013, 368 p.
18. Țărnă, E. *Communication basics.* Second Edition. Prut International, Chisinau, Moldova, 2017, 408 p.
19. Saint-Martin, F. *Sémiologie du langage visuel.* Presses de l'Université du Québec, 1994. p. 12.
20. Matei, D.; Barbarosa, O.; Mocanu, T.; Tănase, A. *The concept of reality in art. Studies of aesthetics and art theory.* Meridiane, Bucharest, Romania, 1972, p. 79.
21. Hagan, C.B.A.R. *Between brushstrokes.* UMI, Canada, 1997, 511 p.
22. Negreț-Dobridor, I.; Pănișoară, I.-O. *Learning science: from theory to practice.* Polirom, Iasi, Romania, 2005, 256 p.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

PRIMARY ASSESSMENT OF CYBERBULLYING IN THE REPUBLIC OF MOLDOVA

Arina Alexei*, ORCID: 0000-0003-4138-957X

Technical University of Moldova, 168 Stefan cel Mare Blvd., Chisinau, Republic of Moldova
*Corresponding author: Arina Alexei, *arina.alexei@tse.utm.md*

Abstract. Cyberbullying, along with other risks associated with the use of social networks, is an emerging problem of the 21st century. The purpose of the research was the primary evaluation of the cyberbullying phenomenon and the determination of its specificity in the context of the Republic of Moldova. To achieve the purpose of the research and confirm or reject the research hypotheses, a cross-sectional study was carried out in 4 high schools in the country. The 489 students (56.2% girls and 43.8% boys), aged between 10-17 years, were recruited from these locations. The results of the study reflected a high rate of victimization among children of 53.4%, significant differences according to the gender of the victim were not identified, there was little variation between the victimization of boys (54.7%) and girls (52.4%). Social networks are the environments where students were most often victims of the phenomenon, receiving annoying or offensive messages, in 67.3% of cases from people they know, including: friends, colleagues or friends of their friends. The primary assessment of the phenomenon will allow the present study to be used as a reference for future research.

Keywords: *Cyberbullying, phenomenon, frequency, high school, Republic of Moldova, victimization.*

Rezumat. Cyberbullying reprezintă un fenomen, care deopotrivă cu alte riscuri asociate utilizării rețelelor de socializare reprezintă o problemă emergentă a sec. XXI. Scopul cercetării a fost evaluarea primară a fenomenului de cyberbullying și determinarea specificului acestuia în contextul Republicii Moldova. Pentru atingerea scopului cercetării și confirmarea sau respingerea ipotezelor de cercetare a fost realizat un studiu transversal în 4 licee din țară. Din aceste locații au fost recrutați cei 489 elevi (56,2% fete și 43,8% băieți), cu vârste cuprinse între 10-17 ani. Rezultatele studiului au reflectat o rată înaltă de victimizare în rândurile copiilor de 53,4%, diferențe semnificative după sexul victimei nu au fost identificate, existând o variație mică între victimizarea băieților (54,7%) și cea a fetelor (52,4%). Rețelele de socializare sunt mediile în care cel mai des elevii au fost victime ale fenomenului, primind mesaje supărătoare sau jignitoare, în 67,3% cazuri de la persoane cunoscute, printre care: prieteni, colegi sau prieteni ai prietenilor lor. Evaluarea primară a fenomenului va permite utilizarea prezentului studiu drept referință pentru cercetările viitoare.

Cuvinte cheie: *Cyberbullying, fenomen, frecvență, liceu, Republica Moldova, victimizare.*

1. Introducere

Cyberbullyingul reprezintă o problemă emergentă la nivel internaţional datorită utilizării Internetului şi a reţelelor de socializare, care produc efecte negative precum este impactul devastator pe care îl au asupra vieţii sociale, cu precădere în cazul copiilor şi adolescenţilor. Studii extinse, care au evaluat nivelul de utilizare al Internetului printre adolescenţii din întreaga lume, au arătat că cel puţin 95% din adolescenţi sunt utilizatori activi ai Internetului [1], aproximativ 1/3 din numărul total al utilizatorilor Internetului sunt copii şi adolescenţi [2]. Un studiu realizat recent în 6 licee din Republica Moldova, a arătat că 90,6% din elevii claselor gimnaziale sunt prezenţi online, având un cont creat pe reţelele de socializare [3], 88,3% elevi accesând zilnic Internetul şi petrecând în mediul online 1-2 ore într-o zi de şcoală (26,2%) şi mai mult de 4 ore într-o zi de vacanţă (37,8%).

Fenomenul de cyberbullying a apărut încă în anii 90, când acesta a fost identificat pentru prima oară [4], reprezentând la acel moment o altă dimensiune a fenomenului de bullying, care fusese evidenţiat cu 20 de ani mai devreme. Studii ştiinţifice relevante evaluării şi analizei cyberbullying-ului au apărut abia la începutul anilor 2000, iar în ultimii ani numărul acestora a crescut în mod exponenţial [4]. Cu toate că iniţial cyberbullying era perceput drept o altă formă de bullying, fiind definit ca o agresiune ce are loc în mediul electronic, ulterior s-au conturat alte particularităţi ale cyberbullying-ului, care îl fac diferit de bullying-ul tradiţional. Iată de ce mai mulţi cercetători la nivel internaţional recomandă realizarea studiilor care să se concentreze exclusiv pe fenomenul de cyberbullying [4, 5, 6], pentru a putea evalua obiectiv fenomenul, argumentând necesitatea mai multor studii în acest domeniu.

Studii relevante fenomenului de cyberbullying au fost realizate în Germania [7], Tailanda [8], Canada [9], SUA [10] etc. Elevii din Republica Moldova, nu sunt o excepţie, iar studii relevante sunt absolut necesare pentru a înţelege mai bine, care este nivelul de conştientizare, particularităţile acestui fenomen în contextul naţional, alte studii orientate pe specificul cyberbullying-ului în Republica Moldova nu au fost încă realizate, astfel devine imposibilă analiza evoluţiei fenomenului fără a avea un studiu de referinţă în care să fie expuse cunoştinţele, atitudinile şi practicile adolescenţilor din Republica Moldova cu referire la cyberbullying. Astfel, scopul prezentului studiu ştiinţific este evaluarea primară a fenomenului de cyberbullying şi determinarea specificului acestuia în contextul Republicii Moldova. Au fost formulate trei ipoteze ale cercetării:

- H1:. Elevii din Republica Moldova înţeleg la ce se referă fenomenul de cyberbullying.
- H2: La nivelul şcolilor studiate gradul de percepţie al fenomenului de cyberbullying între elevi este scăzut.
- H3: Implicarea ca victimă în incidentele de cyberbullying nu depinde de gen.

Rezultatele obţinute vor contribui la susţinerea intervenţiilor de prevenire şi combatere a acestui fenomen prin recomandări bazate pe necesităţile reale ale adolescenţilor din Republica Moldova.

2. Fenomenul de cyberbullying

Internetul în secolul XXI este cea mai utilizată tehnologie de comunicaţii, prezentând multiple beneficii, aşa ca accesul instant la informaţie, comunicare online, realizarea activităţilor educative, desfăşurarea activităţilor profesionale, tranzacţii financiare, servicii guvernamentale şi sociale, atât pentru persoanele fizice cât şi pentru persoanele juridice [11]. Însă pe lângă toate beneficiile pe care le prezintă, s-au identificat între timp diverse riscuri asociate utilizării Internetului, printre cele cu impact major social sunt denigrarea online,

publicarea informaţiilor sensibile, războiul informaţional, ameninţările cibernetice care afectează deopotrivă tehnologiile de comunicaţii, sistemele informaţionale şi oamenii. Una din cele mai mari ameninţări cibernetice la adresa fiinţei umane este cyberbullying-ul, care afectează cu precădere copiii şi tinerii. Din punct de vedere etimologic, termenul cyberbullying-ul este format prin combinaţia cuvintelor: cyber şi bullying.

Cuvântul "cyber" a apărut pentru prima oară în lucrarea lui Norbert Wiener: "Cybernetics; or control and communication in the animal and the machine" [12], care l-a descris ca interacţiunea dintre om şi maşină, sistemul rezultat creând un mediu alternativ de interacţiune. Sensul etimologic al termenului "cyber", conform înregistrărilor făcute de Wiener [12] este cuvântul grecesc "kybernetes", care semnifică controlul asupra acţiunilor şi provine de la cuvântul grecesc "steersman", semnificând "cel care conduce" [13]. Astfel se poate conclude că termenul "cyber" se referă la interacţiunea dintre factorul uman cu tehnologiile şi sistemele informaţionale [11], prin urmare fiecare dintre aceste 3 elemente care formează mediul cibernetic prezintă riscuri de securitate majore. Cel de-al doilea cuvânt este bullyingul, care apare atunci când o persoană este expusă în mod repetat la acţiuni negative de către alţii ce durează o lungă perioadă de timp [14]. Cu toate că încă nu există un consens în ceea ce priveşte definiţiile bullyingului, totuşi există 3 criterii de bază: apare în mod repetat, deliberat şi există un dezechilibru de putere în detrimentul victimelor, victimele întâmpină dificultăţi de a se descurca cu situaţia creată [15].

Astfel, este foarte important de a defini cyberbullying-ul pentru a se asigura corectitudinea şi înţelegerea corectă a informaţiilor prezentate. În literatura de specialitate, se atestă dificultăţi atunci când se încearcă de a defini fenomenul, care este relativ nou în comparaţie cu bullying-ul, astfel cyberbullying-ul nu este încă definit exact şi nu poate fi măsurat [16]. În acest sens, au fost analizate mai multe articole ştiinţifice, publicate de cercetători de-a lungul anilor, pentru a identifica cuvintele cheie care pot defini fenomenul de cyberbullying. Astfel, cyberbullying-ul a fost definit ca şi acţiune de rănire a altei persoane utilizând facilităţile tehnologiei informaţiei şi comunicaţiilor [17]; o altă definiţie de care s-au condus cercetătorii [5] descrie fenomenul ca postarea electronică a mesajelor răutăcioase despre o altă persoană, deseori realizată anonim; mulţi cercetători definesc cyberbullying-ul ca formă de bullying înfăptuită prin mediile electronice [18], iar cyberbullying-ul în rândul copiilor şi adolescenţilor ca şi vătămare intenţionată şi repetată, de unul sau mai mulţi făptuitori, care apare în mediul cibernetic, prin utilizarea computerelor şi a altor dispozitive capabile să comunice prin acest mediu [15, 19], o altă definiţie a cyberbullying-ul prezintă fenomenul ca "rău repetat şi intenţionat" provocat de utilizarea dispozitivelor electronice [20], sau ca şi agresiune repetată sau batjocură intenţionată ce are ca scop rănirea altei persoane, utilizând dispozitivele electronice în timpul jocurilor sau comunicării online [10]. După cum se poate observa din definiţiile prezentate, cuvintele cheie se referă la bullying, vătămare, agresiune, răutate, rănire realizată prin mediul cibernetic, cu aşa particularităţi ca: intenţionat, repetitiv, anonim. Altă particularitate specifică cyberbullying-ului este dezechilibrul de putere [4], doar că în cazul cyberbullying-ului această particularitate este diferită, referindu-se mai degrabă la abilităţile de utilizare ale TIC decât la puterea fizică, ca în cazul bullying-ului, sau şi mai complex referindu-se la amploarea pe care o poate avea fenomenul în cazul implicării mai multor persoane simultan, prin redistribuirea conţinuturilor jignitoare.

Condiţiile în care apare cyberbullying-ul se extind de la reţeaua de la şcoală la comunităţile online create cu diferite scopuri [21]. Unul din riscurile majore pe care îl prezintă

cyberbullying-ul versus bullying, este că bullying-ul se limitează doar la contextul de la şcoală sau a unui cerc restrâns de persoane, pe când cyberbullying-ul nu este limitat de spaţiu [4, 5], numărul de făptaşi care pot distribui informaţiile vătămătoare este nelimitat, iar în acest sens repetitivitatea nu se referă atât la acţiunea repetată de unii şi aceeaşi făptuitori ci la replicarea informaţiilor vătămătoare de către persoane care nu au fost iniţiatorii acestor acţiuni însă s-au implicat pe parcurs.

Studii anterioare au arătat că în general adolescenţii nu prea fac diferenţă dintre bullying şi cyberbullying [22], de asemenea, într-un studiu recent publicat care a evaluat fenomenele de bullying şi cyberbullying din Germania s-a determinat că există o asociere pozitivă puternică între aceste două fenomene, deoarece tinerii care au acumulat un scor sporit la bullying în şcoală au prezentat scoruri sporite şi la cyberbullying [6]. Este clar că mediul este cel care face diferenţa esenţială dintre aceste două fenomene, dar şi anumite caracteristici definitorii.

Mediile în care are loc cyberbullying-ul sunt: email-ul, grupurile create pe reţelele de socializare, mesajele instant transmise în privat prin reţelele de socializare, sms-uri, apeluri telefonice, jocurile online, site-urile web.

În literatura de specialitate au fost definite 7 tipuri de cyberbullying [5]:

- transmiterea de mesaje vulgare, jignitoare către o persoană sau grup;
- hărţuirea online exprimată prin trimiterea în mod repetat a mesajelor jignitoare şi urmărirea online a victimei;
- denigrarea care se referă la transmiterea mesajelor jignitoare sau false despre o persoană către alţii;
- impersonarea reprezintă un mix de elemente de hărţuire şi denigrare în care făptuitorul preia identitatea altei persoane şi transmite mesaje jignitoare sau false din numele acelei persoane;
- excluderea se referă la lăsarea intenţionată pe dinafara unui grup online a unei persoane cu scopul stigmatizării persoanei excluse;
- divulgarea - distribuirea secretelor personale sau a imaginilor online a unei persoane fără permisiunea acesteia;
- înşelătoria are loc atunci când agresorul convinge victima să îi destăinuie informaţii sensibile pe care ulterior le distribuie altor persoane.

Alte tipuri de cyberbullying descrise în literatură sunt [5]: uzurparea identităţii online a victimei cu scop de amuzament sau pentru a-i distruge reputaţia; trolling – insultarea online a persoanelor pentru a-i determina să răspundă provocărilor, furtul identităţii online pentru a beneficia de anumite servicii potenţial jenante aşa ca informaţii şi noutăţi de la asociaţiile LGBT sau alte subiecte sensibile în societate aferente bolilor cu transmisie sexuală etc; phishing-ul prin care se determină persoanele să comunice informaţiile personale sau financiare; ameninţări de publicare a pozelor sau video-urilor în caz că persoana nu îndeplineşte anumite condiţii; sexting trimiterea de mesaje/poze/video cu caracter sexual etc.

Efectele avute de fenomenul de cyberbullying asupra persoanelor sunt grave şi diverse, includ probleme psihologice, emoţionale şi sociale, aşa ca:

- Emoţiile negative cu care se confruntă victimele cyberbullying-ului printre care: furia, neputinţa, tristeţea şi frica [23], ce pot avea impact major, victimele simţindu-se neajutorate deoarece nu pot opri agresiunea;

- Problemele psihologice des întâlnite sunt: depresia, anxietatea, sentimentul de singurătate, stimă de sine scăzută, comportament suicidal manifestat pentru a scăpa de tortură [24], stres, auto-percepție scăzută [5];
- Problemele sociale experimentate de victimele cyberbullying-ului sunt: performanța academică joasă, probleme familiare, consumul substanțelor interzise și al alcoolului, violență școlară, comportament nepotrivit [2, 5, 24, 25].

Astfel, în studiul publicat de Fondul Națiunilor Unite pentru Copii (UNICEF) se conclude că "niciun copil nu este absolut în siguranță în lumea digitală" [26].

3. Metode și instrumente de cercetare

Metodologia de cercetare s-a bazat pe evaluarea cantitativă a fenomenului de cyberbullying, ceea ce a permis de a descrie numeric atitudinile, comportamentele și opiniile unui eșantion de respondenți, de a evalua cantitativ un anumit fenomen social, ce poate fi considerat drept dovadă puternică. Pentru a colecta datele cantitative a fost selectată metoda cantitativă "ancheta sociologică" pe bază de chestionar, descrisă anterior de Pichot [27], ca fiind teste compuse dintr-un anumit număr de întrebări, prezentate subiecților, cu scopul de a determina opiniile, preferințele, sentimentele, interesele, comportamentele în anumite circumstanțe. Un test este considerat de încredere în cazul când se răspunde la întrebări în același mod în diverse ocazii [28].

Pentru ancheta pe bază de chestionar au fost respectate următoarele etape:

- stabilirea obiectului de cercetare, documentarea, determinarea subiecților și eșantionarea;
- selectarea tehnicilor și redactarea chestionarului, aplicarea pre-testului și colectarea opiniei evaluatorilor;
- realizarea cercetării (completarea chestionarului de către subiecții studiului);
- prelucrarea datelor colectate;
- analiza și interpretarea datelor.

Participanții la studiu au fost recrutați în 4 licee din Republica Moldova, 2 instituții fiind din municipiul Chișinău, o instituție din orașul Strășeni și o instituție din mediul rural. Recrutarea subiecților a fost realizată în mai multe etape, la etapa inițială bazându-se pe eșantionarea de conveniență, către directorii acestor instituții au fost transmise email-uri și prezentate solicitări în scris pentru realizarea studiului. Ulterior au fost realizate ședințe cu diriginții claselor V-X, care au fost selectate în mod aleatoriu la recomandarea directorilor adjuncți pe educație, din numărul claselor existente în liceu, pentru a li se explica care este scopul și obiectivele studiului științific. Selectarea subiecților a fost realizată în baza declarației semnate de tutorele legal al minorului, prin care se solicita acordul de participare la studiu.

Astfel studiul dat conține date cantitative importante, la nivel național, despre fenomenul de cyberbullying în rândul elevilor din clasele V-X din Republica Moldova.

Datele cantitative au fost obținute prin utilizarea metodei "ancheta sociologică" în bază de chestionarul online, ce conținea întrebări deschise, închise cu selecție unică și cu selecție multiplă. Conținutul chestionarului a fost analizat de 2 sociologi (unul independent și unul contractat de către organizația finanțatoare) și 4 psihologi din instituțiile participante la studiu, pentru ca întrebările să fie formulate în mod accesibil, conform particularităților de vârstă, ulterior au fost realizate mici ajustări întrebărilor din chestionar. Toate întrebările au

fost condiționate și obligatorii pe platforma KoboToolbox. Completarea sondajului online a avut loc în clasă, la ora de informatică sau diriginție, asistată de către un profesor sau psiholog și de cercetător, pentru a se asigura completitudinea răspunsurilor înregistrate de elevi. Avantajele sondajului online constau în timpul redus pentru colectarea datelor de la un număr mare de respondenți, în flexibilitatea tipurilor de întrebări și protejarea confidențialității respondentului prin reducerea influenței intervievatorului și a dezirabilității sociale [29]. Elevii au fost încurajați să adreseze întrebări în caz că au ceva neclarități. Subiecții au fost asigurați în prealabil despre confidențialitatea și anonimitatea răspunsurilor pe care le vor da, la rezultatele înregistrate având acces doar cercetătorul care realizează acest chestionar. Odată ce datele au fost colectate, au fost încărcate în baza de date pentru prelucrarea și analiza statistică.

Sondajul online nu a colectat date de identificare personală a elevilor, conform standardelor etice de cercetare propuse de UNICEF. Participarea la sondaj a fost voluntară, prin consimțământul informat, respectând anonimatul și confidențialitatea datelor. Elevii au fost informați în prealabil cu privire la anonimatul participării și respectarea dreptului de a se retrage din studiu în orice moment.

Participanții la studiu au fost informați despre scopul studiului științific și rolul fiecăruia din ei în evaluarea fenomenului de cyberbullying în Republica Moldova, însă nu au fost expuse prea multe detalii, care pot avea ca efect distorsionarea răspunsurile înregistrate și subminarea validității acestora [28]. În final, au fost completate 489 chestionare online (214 băieți și 275 fete) de către elevii claselor V-X, în perioada aprilie-mai 2023. Structura socio-demografică a eșantionului de elevi poate fi analizată în Tabelul 1.

Tabelul 1

Structura socio-demografică a eșantionului de adolescenți

Date despre respondenți		Frecvența răspunsurilor	Procentul valid, %
Genul	Fată	214	43,8
	Băiat	275	56,2
Vârsta	10 ani	6	1,2
	11 ani	47	9,6
	12 ani	115	23,5
	13 ani	88	18,0
	14 ani	78	16,0
	15 ani	69	14,1
	16 ani	75	15,3
Clase	V	66	13,5
	VI	108	22,1
	VII	85	17,4
	VIII	81	16,6
	IX	70	14,3
	X	79	16,2

Media academică	9-10	106	21,7
	8-9	151	30,9
	7-8	107	21,9
	6-7	55	11,2
	5-6	12	2,5
	Nu țin minte / Nu vreau să răspund	58	11,9
	Total	**489**	**100**

Au fost adresate 2 întrebări generice (cu selecție multiplă) despre dispozitivele electronice utilizate de către elevi pentru accesul la Internet și care sunt cele mai comune aplicații și platforme de comunicații utilizate de către aceștia, rezultatele obținute pot fi analizate în Tabelul 2. Scopul a fost de a determina dispozitivele și platformele online mai frecvent utilizate de către elevii din Republica Moldova.

Tabelul 2

Dispozitivele electronice și aplicațiile frecvent utilizate de către elevi

Tipul dispozitivelor și a aplicațiilor		Frecvența răspunsurilor	Procentul valid, %
Dispozitive	Telefon mobil	476	52,7
	Laptop	172	19,0
	Calculator	121	13,4
	Tabletă	84	9,3
	Consolă de joc	31	3,4
	Alt dispozitiv	19	2,1
	Total	**903**	**100**
Aplicații și platforme de comunicații	Viber	419	15,7
	Youtube	403	15,1
	Instagram	366	13,8
	Tik tok	339	12,7
	Snapchat	204	7,7
	Telegram	178	6,7
	Discord	167	6,3
	WhatsApp	164	6,2
	Facebook	161	6,1
	Twitter	76	2,9
	Altele	68	2,6
	BeReal	65	2,4
	Google Chat	27	1,0
	Skype	15	0,6
	Tinder	9	0,3
	Total	**2661**	**100**

Conform rezultatelor înregistrate, dispozitivele electronice cel mai des utilizate de către elevi sunt telefoanele (52,7%), laptopurile (19%) și calculatoarele (13,4%). Cele mai utilizate 5 aplicații web sunt: Viber (15,7%), Youtube (15,1%), Instagram (13,8%), Tik tok (12,7%) și Snapchat (7,7%).

Datele cantitative obținute au fost prelucrate utilizând software-ul dedicat IBM SPSS v.22.

3. Rezultate

Cu scopul de a demonstra prima ipoteză a cercetării H1, subiecții studiului au trebuit să definească fenomenul de cyberbullying, pentru aceasta a fost adresată o întrebare de tip deschis, răspunsurile au fost ulterior codificate corespunzător, cu o atenție deosebită. Rezultatele au arătat că elevii au auzit până acum de acest termen (93,5% au dat răspuns afirmativ) și în cea mai mare parte înțeleg la ce se referă acest termen, rezultatele pot fi analizate în Tabelul 3.

Tabelul 3

Definiția dată de subiecții studiului termenului de ”cyberbullying”

Tipuri de cyberbullying experimentat	Frecvența răspunsurilor	Procentul valid, %
Bullying online	193	39,5
Hărțuire online	102	20,9
Jignire online	49	10,0
Batjocură online	43	8,8
Agresiune online	33	6,7
Violență online	23	4,7
Nu cunoaște răspunsul	13	2,7
Violență verbală online	7	1,4
Înjosire online	5	1,0
Amenințare online	4	0,8
Comportament indecent	4	0,8
Na	4	0,8
Bârfe online	3	0,6
Discriminare online	3	0,6
Atac psihologic online	2	0,4
Încălcare drepturi	1	0,2
Total	**489**	**100,0**

Rezultate semnificative au înregistrat următorii termeni: bullying online (39,5%), hărțuire online (20,9%), jignire online (10%), batjocură online (8,8%) și agresiune online (6,7%), toți acești termeni sunt utilizați în diverse studii științifice pentru a defini termenul ”cyberbullying”.

Întrebați unde anume au auzit pentru prima oară de termenul de cyberbullying, cea mai mare parte a respondenților a răspuns că în cadrul orelor de diriginție (41,1%), din Internet (29,3%), în cadrul altor ore la școală (10,7%), dintr-o altă sursă decât cele enumerate (6,8%) și de la părinți (5,5%).

La întrebarea care se referă la frecvența incidentelor de CB în anturajul lor, cei mai mulți au selectat frecvența moderată (30,7%), sau maximă (21,3%), cu toate acestea fiecare al 5-lea elev consideră că cazuri de cyberbullying nu au loc niciodată în comunitatea lor. Procentul mare al celor ce au selectat frecvența moderată sau maximă, totuși permite de a afirma, la etapa inițială, că fenomenul de cyberbullying are loc frecvent în Republica Moldova.
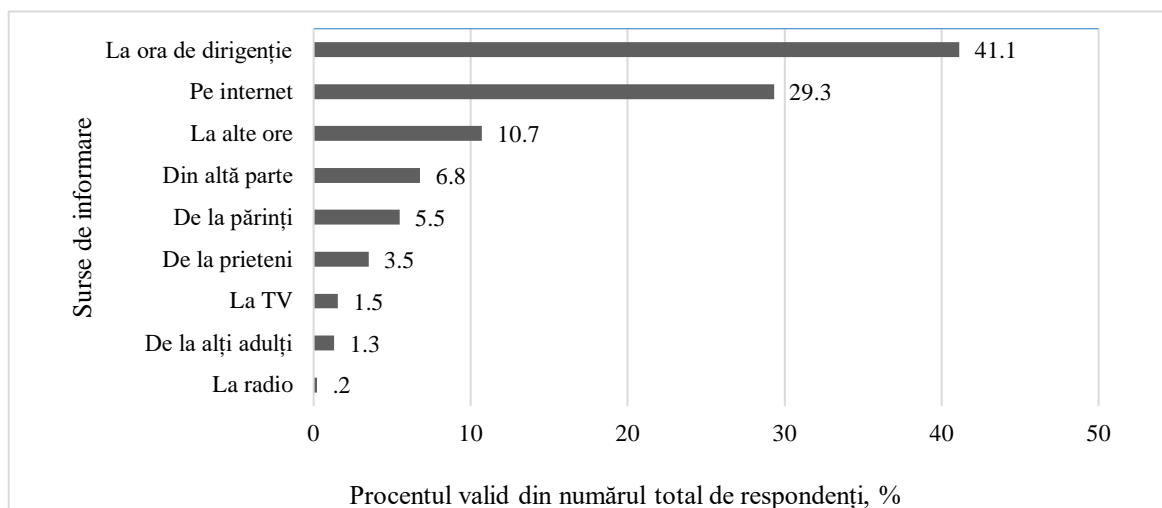
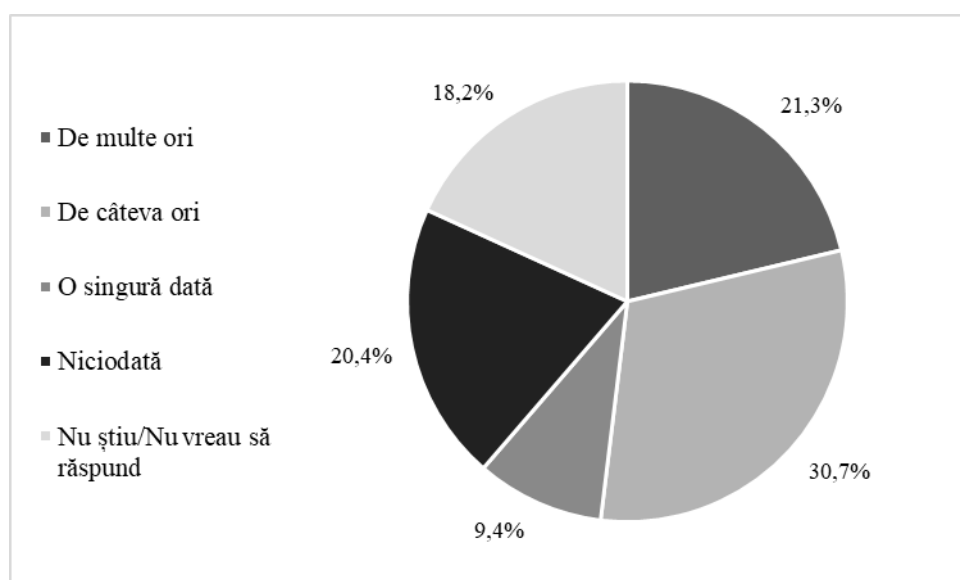**Figura 1.** Sursele de informare despre cyberbullying.

Figura 2. Frecvența incidentelor de cyberbullying în opinia respondenților.
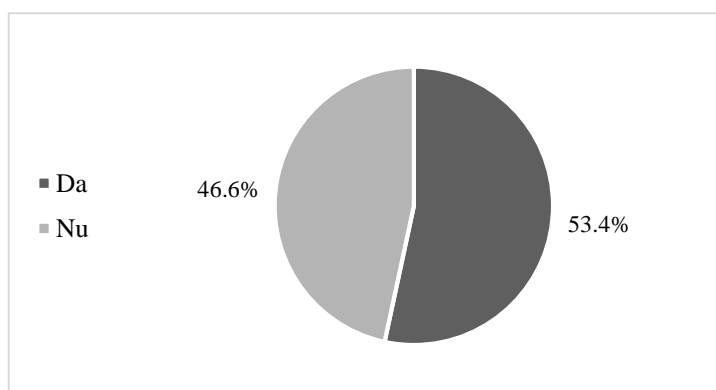

Figura 3. Nivelul de victimizare al subiecților studiului.

Ulterior, s-a urmărit identificarea victimelor, martorilor și agresorilor. Astfel, la întrebarea prin care se evalua numărul victimelor fenomenului de cyberbullying, 53,4% din respondenți au răspuns afirmativ.

Pentru stabilirea relației dintre sexul respondentului și nivelul de victimizare, a fost realizată analiza de corespondență, între variabilele menționate (Q2. Eu sunt: și Q11. Ți s-a

întâmplat ca cineva să te jignească în timp ce vorbeai (discutai, conversai, comentai) pe Internet?), se poate observa (figura 4) că nivelul de victimizare al băieților este mai mare (54,7%) față de cel al fetelor (52,4%).
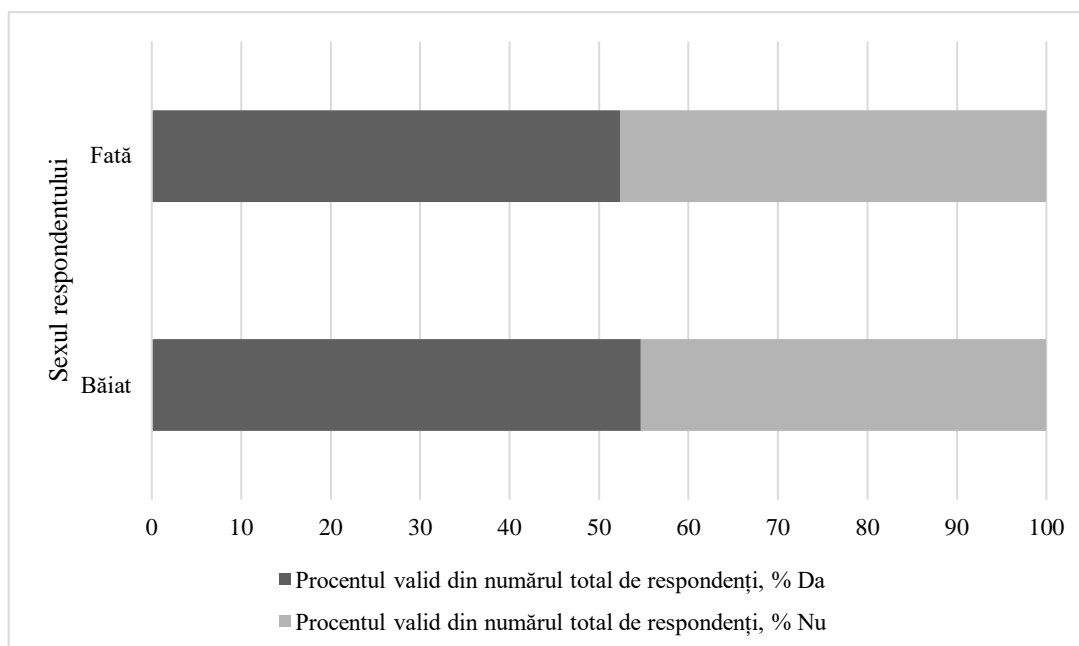
Figura 4. Analiza corelației dintre sexul respondentului și victimizarea acestuia.

Subiecții au trebuit să selecteze dintr-o serie de afirmații pe acelea care li s-au întâmplat cel puțin o dată, astfel 22,9% au selectat că li s-au transmis mesaje supărătoare sau jignitoare, 18,8% din respondenți nu au fost niciodată victime ale cyberbullying-ului, 9,5% au fost excluși din grupuri sau alte forme de activitate online, despre 7,2% au fost postate mesaje supărătoare, 6,9% au fost jigniți prin apeluri telefonice, pozele sau video-urile postate de 6,4% au fost comentate jignitor, 6,3% au fost amenințați pe Internet, iar în 5,1% cazuri au fost create special grupuri pe rețelele de socializare în care se discuta urât despre subiect.

Pentru e evalua frecvența victimizării, subiecții au fost întrebați cât de des li s-a întâmplat să fie jigniți pe Internet, 31,7% au răspuns că li s-a întâmplat de câteva ori, 9,0% au afirmat că s-a întâmplat de multe ori și cu 17,6% s-a întâmplat o singură dată.
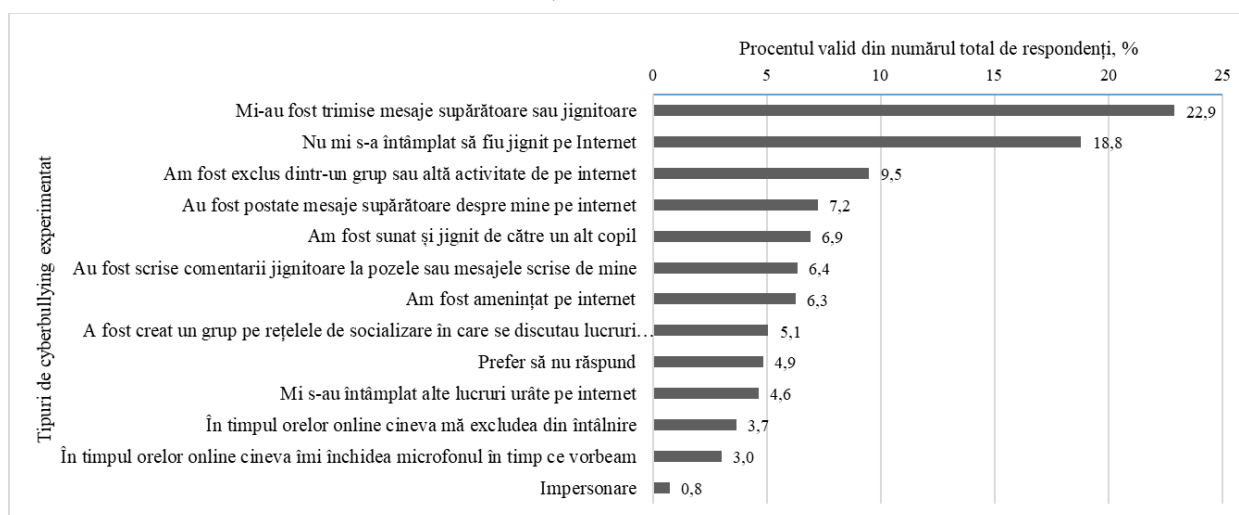
Figura 5. Identificarea tipurilor de cyberbullying frecvent experimentate.
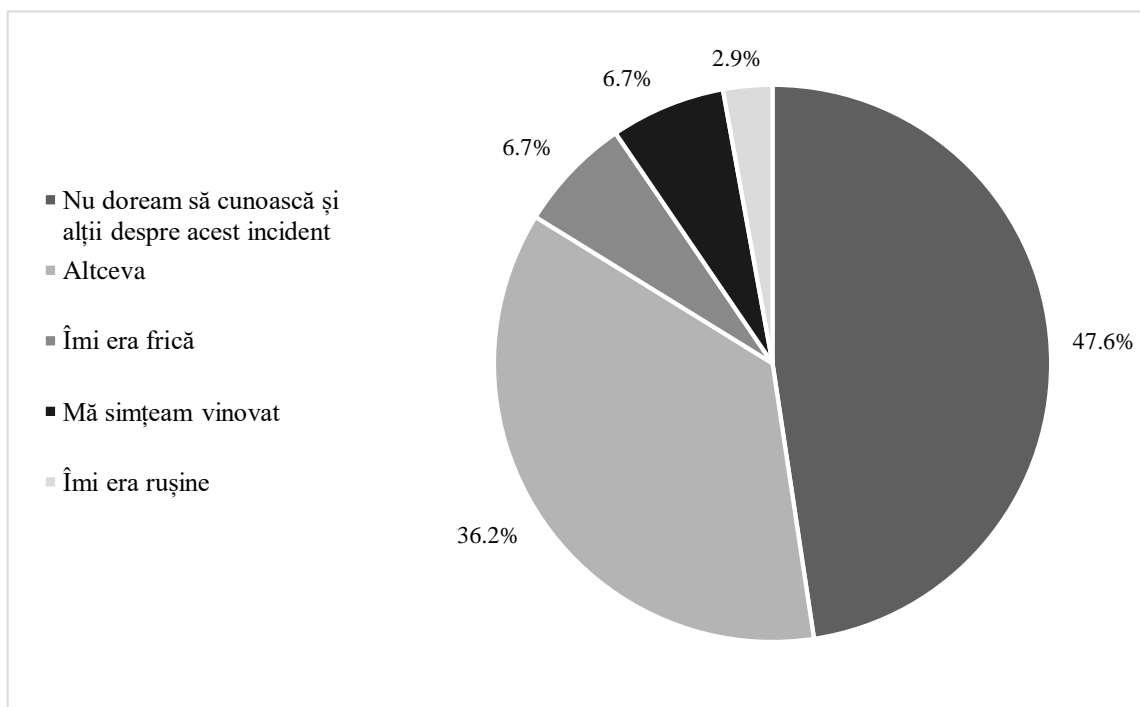
Figura 6. Frecvența victimizării în rândul subiecților.

Efectuând o analiză de corespondență dintre sexul respondentului și frecvența victimizării (Q2. Eu sunt: și Q13. Cât de des s-a întâmplat să fii jignit pe Internet?), se poate observa că băieții într-o proporție mai mare au experimentat cyberbullying-ul decât fetele (Figura 7).
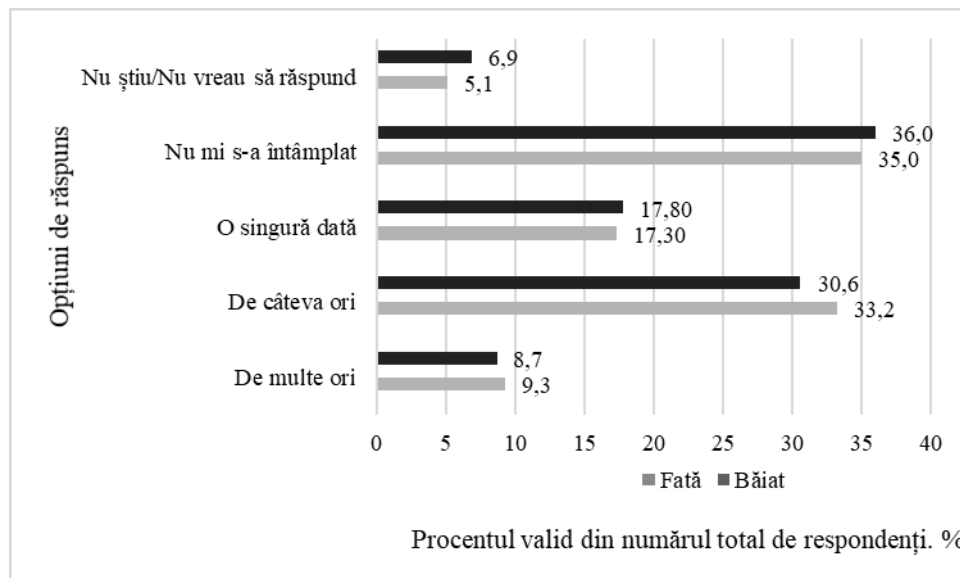

Figura 7. Analiza corelației dintre sexul respondentului și frecvența victimizării.

Cel mai frecvent, supuși cyberbullying-ului subiecții au fost pe rețelele de socializare (Facebook, Tik tok, Instagram) 37,6%, prin mesaje private (Viber, Telegram, Messenger, Skype) 19,4%, în jocurile online 19,5%, în grupurile create pe rețelele de socializare 14,1%, iar 9,6% au selectat o altă cale (Figura 8).

Deci rețelele de socializare reprezintă un risc sporit pentru adolescenți, activitatea lor pe aceste platforme ar trebui să fie controlată, la fel și timpul petrecut pe acestea.
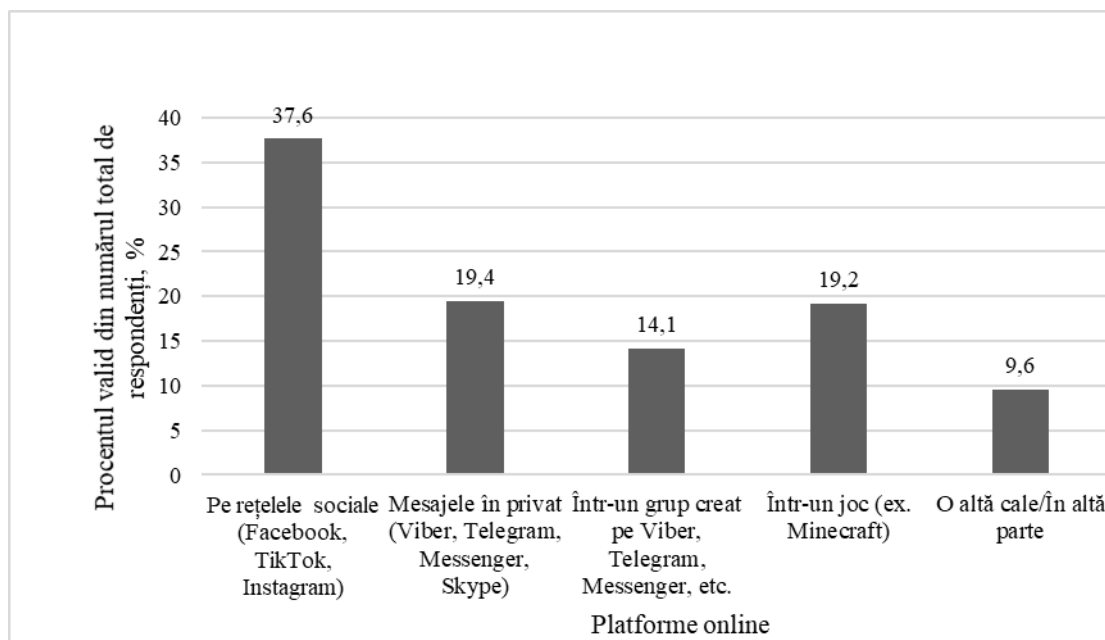
Figura 8. Aplicații/platforme de comunicare pe care au loc
mai frecvent incidentele de cyberbullying.

Pentru a cunoaște dacă agresorii fac parte din persoanele cunoscute de victime, respondenților le-a fost adresată o întrebare cu alegere multiplă, iar rezultatele (Figura 9) au reflectat că 1/3 din incidentele de cyberbullying au fost inițiate de persoane necunoscute victimelor (32,6%), în celelalte cazuri agresori au fost colegii de clasă 25,4%, în 21,5% cazuri au fost prietenii victimelor şi în 14,3% cazuri au fost prieteni ai prietenilor victimelor.
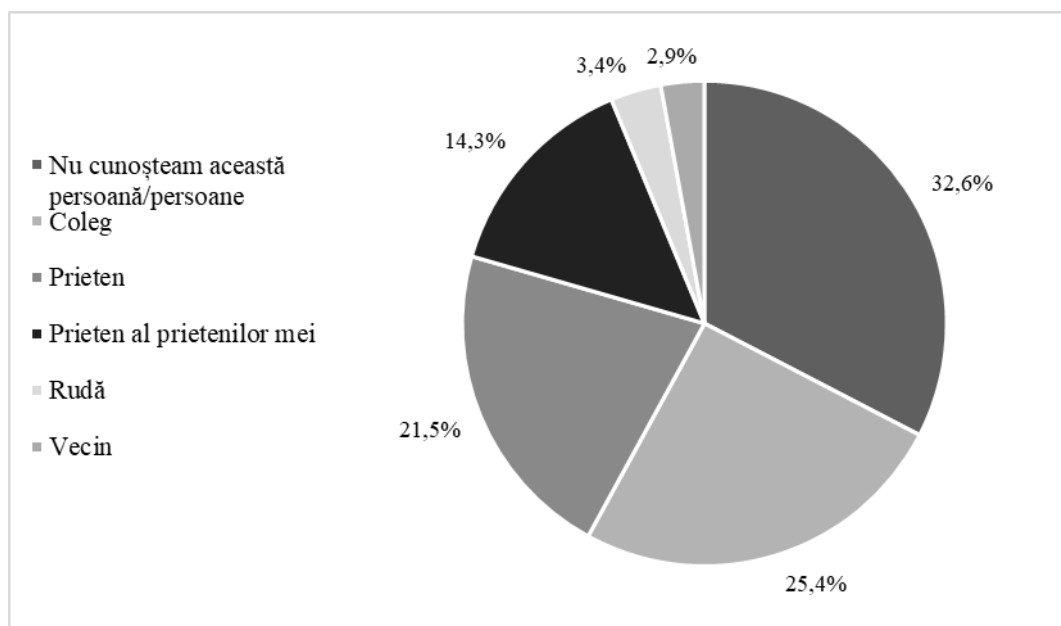
Figura 9. Profilul agresorului.

Concluzia este că aproximativ 2/3 din elevii care au experimentat fenomenul de cyberbullying cunoșteau persoana care îi agresa.

4. Discuții

Scopul prezentului studiu a fost de a explora experiențele elevilor din Republica Moldova aferente fenomenului de cyberbullying. Prelucrarea datelor cantitative obținute au permis de a evalua nivelul de răspândire a cyberbullying-ului în Republica Moldova și de a realiza obiectivele propuse inițial.

Subiecții studiului cunosc în cea mai mare parte despre cyberbullying (93,5%), doar un mic număr de elevi nu au mai auzit până în momentul completării chestionarului despre acest fenomen (6,5%). Cea mai mare parte din respondenți au aflat despre cyberbullying la orele de diriginție (41,1%) sau din Internet (29,3%). Frecvența cu care au loc incidentele de cyberbullying în cercul lor de prieteni sau la școală este apreciată de 52% dintre respondenți ca având loc destul de des.

Răspunsurile la întrebarea deschisă unde respondenții au definit termenul de cyberbullying au permis conturarea următoarei concluzii și anume că elevii înțeleg foarte bine la ce se referă termenul de cyberbullying, aproximativ 92% au menționat în definițiile proprii unul din următorii termeni: bullying online, agresiune online, hărțuire online, batjocură online, violență online; cuvinte cheie ce se regăsesc în definițiile date de cercetători și prezentate în partea teoretică a studiului. Astfel, a fost confirmată ipoteza H1, conform căreia se afirmă că elevii înțeleg la ce se referă termenul de ”cyberbullying”.

Conform unui studiu științific, prin care se evalua situația globală a răspândirii fenomenului de cyberbullying, prevalența victimizării variază de la 13,99% la 57,5%, iar prevalența agresorilor de la 6,0% la 46,3% [2]. Rezultatele obținute în prezentul studiu arată o rată a victimizării în Republica Moldova de 53,4% (261 din 489 respondenți au răspuns afirmativ), ceea ce reprezintă un scor foarte înalt, la nivel global. Aceste cifre indică o proporție semnificativă de răspândire a cyberbullying în Republica Moldova, numărul copiilor care se confruntă cu hărțuirea / agresiunea / violența / batjocura în mediul online este mare, deși intenția inițială de a accesa Internetul este de cele mai dese ori una bună, pentru a se bucura de beneficiile jocurilor online și a comunica cu prietenii, pentru a distribui și împărtăși cu alții momentele fericite ale zilei. Astfel, H2 nu s-a confirmat, nivelul de răspândire a cyberbullying-ului în școlile din Republica Moldova este unul foarte înalt, conform mediilor globale de referință.

Rezultatele analizei de corespondență nu au arătat diferențe semnificative după sexul victimei, existând o variație mică între victimizarea băieților (54,7%) și a fetelor (52,4%), ca de altfel și în alte studii științifice [10, 30], cu toate că există și studii în care s-a identificat că fetele sunt mai afectate de cyberbullying, atât ca victime ale fenomenului de cyberbullying cât și ca agresori [31, 33]. Ipoteza H3 a fost confirmată, victimizarea și frecvența victimizării nu depinde de gen.

Pentru contextul Republicii Moldova, rețelele de socializare reprezintă mediul în care cel mai des s-au întâmplat incidente de cyberbullying (37,6%), fiind cele mai populare platforme de comunicare online printre copii. În aproximativ 67,3% cazuri agresorii au fost persoane cunoscute victimelor, preponderent fiind prieteni, colegi sau prieteni ai prietenilor lor. Tipuri comune de cyberbullying experimentate de către subiecți au fost: trimiterea de mesaje false/jignitoare, excluderea din grupurile de pe rețelele de socializare, amenințările online, comentarea răutăcioasă a pozelor/video și crearea grupurilor în care se discută despre alți copii.

5. Concluzii

Cyberbulying-ul este fenomenul care afectează tot mai mult tinerii la nivel internaţional, atât timp cât comunicarea ca şi necesitate socială pentru fiinţa umană a migrat de-a lungul timpului din mediul offline în online. Din lucrările ştiinţifice analizate se poate conclude că începând cu anii 2000, când au apărut primele studii aferente fenomenului de cyberbullying, numărul persoanelor afectate creşte continuu.

Elevii din Republica Moldova accesează Internetul frecvent, de altfel la fel ca şi la nivel internaţional, iar spectrul activităţilor desfăşurate în mediul online este tot mai mare. Viaţa cotidiană a tinerilor a trecut în mare parte în mediul virtual, care aduce beneficii incontestabile, dar şi consecinţe a căror complexitate nu este încă pe deplin studiată.

Datele cantitative obţinute în urma prezentului studiu au permis de a determina nivelul de răspândire a cyberbullying-ului în Republica Moldova, care este unul foarte înalt, rata victimizării fiind mai mare de 50%. Studii anterioare au demonstrat că o abordare cuprinzătoare şi de lungă durată a educaţiei anti-cyberbullying este mult mai eficientă decât acţiunile episodice luate la nivel de şcoală.

O abordare cuprinzătoare a procesului de educaţie anti-agresiune implică suportul legal şi politici implementate de către Ministerul Educaţiei şi Cercetării al RM, actualizare curriculum şcolar şi predarea care promovează un climat şcolar protectiv şi empatic, instruirea continuă a cadrelor didactice, mecanisme fiabile de raportare a cazurilor de cyberbullying, monitorizare şi evaluare sistematică a politicilor şi practicilor implementate. Pentru ca toate aceste componente să funcţioneze este important ca fiecare entitate să îşi îndeplinească atribuţiile: comunităţile şcolare, Guvernul Republicii Moldova, organizaţiile societăţii civile şi desigur părinţii.

Cu toate că rezultatele acestui studiu au oferit date importante despre cyberbullying, nu este totuşi lipsit de limitări. Concluziile studiului se bazează pe un eşantion de convenienţă, dintr-o zonă geografică limitată, în plus dimensiunea eşantionului cu toate că este una reprezentativă, ar trebui să fie extinsă. Una din direcţiile viitoare de cercetare ar fi utilizarea aceluiaşi sondaj pentru chestionarea mai multor elevi, pentru confirmarea constatărilor studiului pe un eşantion mult mai mare. Alte direcţii ce pot fi abordate în cercetările viitoare sunt identificarea diferenţelor semnificative statistic între experienţele aferente fenomenului de cyberbullying ale elevilor din mediul rural, versus mediul urban; de asemenea, este important de a cerceta mai aprofundat care sunt consecinţele psihologice ale fenomenului de cyberbullying atât la victime, agresori sau martori.

Rezultatele obţinute în urma cercetărilor necesită a fi comparate ulterior, peste o anumită perioadă de timp cu rezultate ale cercetărilor similare, pentru a vedea cum evoluează lucrurile.

Referințe

1. Machimbarrena, J. M.; Garaigordobil, M. Prevalence of Bullying and Cyberbullying in the Last Stage of Primary Education in the Basque Country. Spanish Journal of Psychology 2018, 21, E48.

2. Zhu, C.; Huang, S.; Evans, R.; Zhang, W. Cyberbullying Among Adolescents and Children: A Comprehensive Review of the Global Situation, Risk Factors, and Preventive Measures. Front Public Health 2021, 9, https://doi.org/10.3389/fpubh.2021.634909.

3. Cheianu-Andrei, D. Impactul pilotării standardelor pentru protecţia şi siguranţa copiilor/elevilor în mediul online. Sociopolis Consultancy, 2022, pp. 36-39.

4. Baldry, A.C.; Blaya, C; Farrington, D. P. International Perspectives on Cyberbullying. Springer International Publishing, Cham, 2018, pp.326, doi: 10.1007/978-3-319-73263-3.

5. Peled, Y. Cyberbullying and its influence on academic, social, and emotional development of undergraduate students. Heliyon, Mar. 2019, 5(3), pp. e01393, doi: 10.1016/j.heliyon.2019.e01393.

6. Schütz, J.; Bäker, N.; Koglin, U. Bullying in school and cyberbullying among adolescents without and with special educational needs in emotional–social development and in learning in Germany. Psychology in the School Sep. 2022, 59(9), pp. 1737–1754, doi: 10.1002/pits.22722.

7. Schütz, J.; Schipper, N.; Koglin, U. Bullying in school and cyberbullying among adolescents without and with special educational needs in emotional-social development and in learning in Germany. Psychology in the School 2022, 59(9), pp. 1737-1754, doi: 10.1002/pits.22722.

8. Thumronglaohapun, S.; Maneeton, B.; Maneeton, N.; Limpiti, S.; Manojai, N.; Chaijaruwanich, J.; Kummaraka, U.; Kardkasem, R.; Muangmool, T.; Kawilapat, S.; Juntaping, K.; Traisathit, P.; Srikummoon, P. Awareness, perception and perpetration of cyberbullying by high school students and undergraduates in Thailand. PLoS One 2022, 17(4), pp. e0267702, doi: 10.1371/journal.pone.0267702.

9. Li, Q. Cyberbullying in High Schools: A Study of Students' Behaviors and Beliefs about This New Phenomenon. J Aggress Maltreat Trauma 2010, 19(4), pp. 372–392, doi: 10.1080/10926771003788979.

10. Patchin, J.; Hinduja, S. Cyberbullying Among Tweens in the United States: Prevalence, Impact, and Helping Behaviors. J Early Adolesc 2022, 42(3), pp. 414–430, doi: 10.1177/02724316211036740.

11. Alexei, Ar.; Alexei, An. The difference between Cyber Security vs Information Security. Journal of Engineering Science 2022, 29(4), pp.12, https://doi.org/10.52326/jes.utm.2022.29(4).08.

12. Wiener, N. Cybernetics; or control and communication in the animal and the machine. John Wiley 1948, pp. 352.

13. Merriam-Webster.com Dictionary. Available online: https://www.merriam-webster.com/dictionary/steersman (accessed on 10.09.2023).

14. Olweus, D. Bullying at school: What we know and what we can do. Blackwell Publishing Ltd. Headquarters in Oxford, United Kingdom, 1993, pp. 142.

15. Thomas, H. J.; Connor, J. P.; Scott, J. G. Integrating Traditional Bullying and Cyberbullying: Challenges of Definition and Measurement in Adolescents – a Review. Educ Psychol Rev 2015, 27(1), pp. 135–152, doi: 10.1007/s10648-014-9261-7.

16. Baldry, A. C.; Sorrentino, A. Cyberbullying: does parental online supervision and youngsters' willingness to report to an adult reduce the risk? The psychology of crime, policing and courts, Routledge, 2016, pp. 71–88.

17. Nixon, C. Current perspectives: the impact of cyberbullying on adolescent health. Adolesc Health Med Ther 2014, pp. 143, doi: 10.2147/AHMT.S36456.

18. Dooley, J.J.; Pyżalski, J.; Cross, D. Cyberbullying Versus Face-to-Face Bullying. Zeitschrift für Psychologie / Journal of Psychology 2009, 217(4), pp. 182–188, doi: 10.1027/0044-3409.217.4.182.

19. Jadambaa, A.; Thomas, H. J.; Scott, J. G.; Graves, N.; Brain, D.; Pacella, R. Prevalence of traditional bullying and cyberbullying among children and adolescents in Australia: A systematic review and meta-analysis. Australian & New Zealand Journal of Psychiatry 2019, 53(9), pp. 878–888, doi: 10.1177/0004867419846393.

20. Hinduja, S.; Patchin, J. W. Cultivating youth resilience to prevent bullying and cyberbullying victimization. Child Abuse Negl 2017, 73, pp. 51–62, doi: 10.1016/j.chiabu.2017.09.010.

21. Cornu, C.; et al. An Introduction to a Whole-Education Approach to School Bullying: Recommendations from UNESCO Scientific Committee on School Violence and Bullying Including Cyberbullying. International Journal of Bullying Prevention 2022, doi: 10.1007/s42380-021-00093-8.

22. Fischer, S.; John, N.; Melzer, W.; Kaman, A.; Winter, K.; Bilz, L. Mobbing und Cybermobbing bei Kindern und Jugendlichen in Deutschland – Querschnittergebnisse der HBSC-Studie 2017/18 und Trends. Journal of Health Monitoring 2020, 5(3), pp. 56–72, doi: 10.25646/6894.

23. Hoff, D.L.; Mitchell, S.N. Cyberbullying: causes, effects, and remedies. Journal of Educational Administration 2009, 47(5), pp. 652–665, doi: 10.1108/09578230910981107.
24. Ghadampour, E.; Shafiei, M.; Heidarirad, H. Relationships among Cyberbullying, psychological vulnerability and suicidal thoughts in female and male students. Journal of Research in Psychological Health 2017, 11(3), pp. 28–40, doi: 10.29252/rph.11.3.28.
25. Varghese, M. E.; Pistole, M.C. College Student Cyberbullying: Self-Esteem, Depression, Loneliness, and Attachment. Journal of College Counseling 2017, 20(1), pp. 7–21, doi: 10.1002/jocc.12055.
26. UNICEF. Children in a DigitalWorld. Available online: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.unicef.org/media/48601/file (accessed on 10.09.2023).
27. Pichot, P. Self-Report Inventories in the Study of Depression. New Results in Depression Research, Berlin, Heidelberg: Springer Berlin Heidelberg, 1986, pp. 53–58. doi: 10.1007/978-3-642-70702-5_7.
28. De Vaus, D. Surveys in Social Research. Routledge 2013, pp. 422, doi: 10.4324/9780203501054.
29. Krumpal, I. Determinants of social desirability bias in sensitive surveys: a literature review. Qual Quant 2013, 47(4), pp. 2025–2047, doi: 10.1007/s11135-011-9640-9.
30. Wigderson, S.; Lynch, M. Cyber- and traditional peer victimization: Unique relationships with adolescent well-being. Psychol Violence 2013, 3(4), pp. 297–309, doi: 10.1037/a0033657.
31. Alhajji, M.; Bass, S.; Dai, T. Cyberbullying, Mental Health, and Violence in Adolescents and Associations with Sex and Race: Data From the 2015 Youth Risk Behavior Survey. Glob Pediatr Health 2019, 6, pp. 2333794X1986888, doi: 10.1177/2333794X19868887.
32. Pereira, F.; Matos, M. Cyber-Stalking Victimization: What Predicts Fear Among Portuguese Adolescents? Eur J Crim Pol Res 2016, 22(2), pp. 253–270, doi: 10.1007/s10610-015-9285-7.
33. Tesler, R.; Nissanholtz-Gannot, R.; Zigdon, A.; Harel-Fisch, Y. The Association of Cyber-Bullying and Adolescents in Religious and Secular Schools in Israel. J Relig Health 2019, 58(6), pp. 2095–2109, doi: 10.1007/s10943-019-00938-z.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

REVIEW OF THE COLLECTIVE MONOGRAPH
"ANALYSIS OF RISKS ASSOCIATED WITH FOOD IN THE REPUBLIC OF MOLDOVA"

Valeriu Rudic [1], ORCID: 0000-0001-8090-3004,
Aculina Arîcu [2*], ORCID: 0000-0001-7201-2519

[1] Nicolae Testemitanu State University of Medicine and Pharmacy of the Republic of Moldova, 165 Stefan cel Mare Blvd., Chisinau, Republic of Moldova
[2] Institute of Chemistry, State University of Moldova, 3 Academiei Street, Chisinau, Republic of Moldova
*Corresponding author: Aculina Arîcu, aculina.aricu@ichem.md

Abstract. The collective monograph "Analysis of the risks associated with food in the Republic of Moldova" was carried out within the project 20.80009.5107.09 "*Improving the quality and safety of food through biotechnology and food engineering*" within the State Program (2020-2023), Strategic Priority II "*Agriculture sustainable, food security and food safety*". The work includes the analysis of the risks associated with improper nutrition, the behavioral characteristics of consumers in relation to the consumption of salt, sugar, sweeteners, trans fats. The risks of contamination of raw materials and food products along the food chain with technogenic pollutants are analyzed in detail: food contamination caused by the environment, contamination caused by animal breeding and care, food contamination during processing, food contamination during transportation and contamination in the result of contact with food packaging.

Keywords: *sugar, salt, trans fat, chemical, microbiological contaminants, control methods, food diets, nutritional status.*

Rezumat. Monografia colectivă „*Analiza riscurilor asociate alimentației în Republica Moldova*" a fost realizată în cadrul proiectului cu cifrul 20.80009.5107.09 „Ameliorarea calității şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară" din cadrul Programului de Stat (2020-2023), Prioritatea strategică II „*Agricultură durabilă, securitate alimentară şi siguranţa alimentelor*". Lucrarea include analiza riscurilor asociate alimentaţiei neconforme, particularităţile comportamentale ale consumatorilor în raport cu consumul de sare, zahăr, îndulcitori, grăsimi trans. Sunt analizate detaliat riscurile de contaminare a materiilor prime şi produselor alimentare de-a lungul lanţului alimentar cu poluanţi tehnogeni: contaminarea alimentelor cauzată de mediu, contaminarea cauzată de creşterea şi îngrijirea animalelor, contaminarea alimentelor în timpul procesării, contaminarea alimentelor în timpul transportării şi contaminarea în rezultatul contactelor cu ambalaje alimentare.

Cuvinte cheie: *zahăr, sare, grăsimi trans, contaminanți chimici, microbiologici, metode de control, diete alimentare, statut nutrițional.*

Problemele de sănătate asociate alimentelor se referă la doi factori principali: siguranța alimentară și riscurile nutriționale. Bolile alimentare reprezintă o problemă de sănătate publică la nivel mondial și au o relevanță semnificativă în țările dezvoltate, în urma crizelor de siguranță alimentară care au afectat populația la nivel global în ultimele decenii. În acest context, monografia colectivă *„Analiza riscurilor asociate alimentației în Republica Moldova",* care include analiza riscurilor asociate alimentației neconforme și problemelor actuale legate de alimentația neconformă reprezintă un studiu actual și necesar (Figura 1). *Monografia* este recomandată pentru editare de către Senatul Universității Tehnice a Moldovei (Proces verbal nr. 4 din 24 octombrie 2023).

Figura 1. Monografia colectivă *„Analiza riscurilor asociate alimentației în Republica Moldova"*.

O atenție deosebită este acordată analizei riscurilor de contaminare microbiană a produselor alimentare, factorilor de risc asociați contaminării microbiene și focarelor alimentare. Sunt elucidate cauzele și mecanismele rezistenței la antimicrobiene, corelația dintre rezistența la antimicrobiene și utilizarea antibioticelor, precum și posibilitatea de prevenire a riscurilor de contaminare microbiologică a alimentelor prin utilizarea compușilor bioactivi din plante ca inhibitori selectivi ai agenților patogeni.

Aplicarea metodelor de biologie moleculară pentru detecția și identificarea contaminanților microbiologici, drept metodă alternativă de detectare rapidă a contaminării alimentelor este examinată în mod detaliat.

Lucrarea include studii de caz privind evaluarea alimentației preșcolarilor și elevilor din Republica Moldova și recomandări pentru armonizarea legislației naționale cu referire la alimentația copiilor din instituții cu prevederile actelor legislative internaționale. In rezultatul cercetării efectuate, se recomandă armonizarea legislației naționale cu referire la alimentația copiilor din instituții cu prevederile actelor legislative internaționale care presupune utilizarea alimentelor care au un conținut scăzut de zahăr, iar zahărul rafinat folosit cu moderație, cu o frecvență limitată a băuturilor zaharoase și a dulciurilor; imitarea

aportului zilnic total de sare la 2 g pentru copiii de 1-3 ani, 3 g pentru cei 4-6 ani și 5 g pentru cei 7-18 ani, inclusiv sarea din pâine și alimentele procesate.

Monografia include 5 capitole. Capitolul 1 - *Riscuri asociate alimentaţiei neconforme în Republica Moldova*, autori - Aurica CHIRSANOVA, Vladislav REŞITCA, Tatiana CAPCANARI, Eugenia COVALIOV, Alina BOIŞTEAN, Oxana RADU, Olga DESEATNICOVA, Natalia SUHODOL constată, că procesul de educaţie alimentară ar trebui început încă la etapa de mic copil, deci ar fi bine să fie instituite programe în școli şi grădiniţe care să îndemne copii, dar şi părinţii să consume mai multe fructe şi legume; să evite produsele cu conţinut ridicat de sare, zahăr şi grăsimi *trans*; să analizeze eticheta produselor alimentare procurate; să reducă consumul/adaosul de sare, zahăr şi grăsimi *trans* în condiţii casnice; să utilizeze substituenţi sustenabili şi cu influenţe pozitive asupra organismului; să evite produsele semi-preparate, gata pentru consum.

Capitolul 2 - *Analiza riscurilor de contaminare a materiilor prime şi produselor alimentare de-a lungul lanţului alimentar cu poluanţi tehnogeni, autori* - Iurie SUBOTIN, Rodica STURZA, Raisa DRUŢĂ, Artur MACARI, Oxana RADU analizează holistic sursele de contaminare a alimentelor, agenţii contaminanţi, acţiunea acestora asupra consumatorului, metodele de detectare, etc. În special a fost studiată acţiunea poluanţilor organici persistenţi, bifenililor clorurați, reziduurilor de pesticide, metalelor grele, nitraţilor şi nitriţilor, reziduurilor de antibiotic, agenţilor de curăţare hidrocarburilor aromatice policiclice, nitrosaminelor. Au fost analizate căile de contaminare a alimentelor în procesul transportării şi măsurile preventive necesare prevenirea acestui pericol, migrarea contaminanţilor în alimente din ambalaj, etc.

Capitolul 3 - *Analiza riscurilor de contaminare microbiană a produselor alimentare*, autori - Daniela COJOCARI, Greta BALAN constată, că evoluţiile rapide din climatul concurenţial, dublate de așteptările şi exigenţele consumatorilor, au promovat o ofertă excedentară de produse alimentare, determinând, totodată, riscuri crescute de îmbolnăviri, datorate consumului de alimente contaminate sau tratării inadecvate a acestora. Sănătatea umană şi speranţa de viaţă s-au îmbunătăţit datorită costului scăzut şi accesibilităţii antibioticelor. Însă accesul liber la antibiotice a favorizat apariţia rezistenţei la antibiotice, datorate omniprezenţei lor. Extractele din plante prezintă un mare interes ca agenţi antimicrobieni naturali, potenţiatori de aromă, agenţi de conservare şi ingrediente nutraceutice în industria alimentară şi pot să înlocuiască compuşii sintetici, care produc efecte toxice şi cancerigene. În cele din urmă, căutarea unor soluţii eficiente şi practice pentru implementarea acestor extracte în ambalaje active este recomandabilă şi ar putea găsi un interes imens în viitor.

Capitolul 4 - *Aplicarea metodelor de biologie moleculară pentru detecţia şi identificarea contaminanţilor microbiologici*, autori - Dan ZGARDAN, Irina MITINA, Valentin MITIN, Silvia RUBŢOV, Emilia BEHTA, Alexandra BUGA analizează aplicarea metodelor directe de biologie moleculară, care includ detecţia şi identificarea microorganismelor direct din probele biologice. Metodele directe de biologie moleculară au două avantaje în raport cu cele indirecte. Primul avantaj constă în faptul că metodele directe pot realiza detecţia şi identificarea unor microorganisme vătămate sau care nu cresc pe medii nutritive. Al doilea avantaj constă în faptul că metodele directe sunt cu mult mai rapide decât cele indirecte. La detecţia bacteriilor acetice, s-a stabilit că primerii proiectaţi pe baza secvenţelor de ADN *Acetobacter aceti* ale genelor pentru 16S rRNA, 16S-23S rRNA ITS şi 23S rRNA şi pe baza secvenţelor fragmentului specific de genă adhA pentru alcooldehidrogenază al bacteriei *Acetobacter pasteurianus* sunt eficienţi şi specifici şi pot fi utilizaţi la detecţia acestor specii de bacterii acetice.

Capitolul 5 - *Recomandări în vederea ameliorării dietelor alimentare şi a statutului nutriţional al copiilor*, autori - Olga DESEATNICOVA, Aurica CHIRSANOVA, Natalia SUHODOL, Eugenia COVALIOV analizează rezultatele studiului realizat pentru estimarea statutului nutriţional al diferitor categorii de copii, care au un consum bazat pe meniul-model instituţional propus, precum şi a alimentaţiei per total. Scopul acestui studiu a constat în evaluarea corespunderii conţinutului de micro şi macro-nutrimente cu recomandările în vigoare, precum şi analiza obiceiurilor alimentare ale noii generaţii de consumatori din Republica Moldova în baza chestionării. În baza rezultatelor obţinute au fost formulate recomandări pentru ameliorarea statutului nutriţional al copiilor.

Monografia colectivă *„Analiza riscurilor asociate alimentaţiei în Republica Moldova"* este destinată specialiştilor din domeniul siguranţei alimentelor, agricultorilor şi operatorilor economici care se ocupă de fabricarea alimentelor, de promovare şi marketing. Lucrarea este recomandată drept manual pentru studenţii ciclului II (Masterat) şi III (Doctorat) ale Facultăţilor Tehnologia Alimentelor şi Ştiinţe Agricole, Silvice şi ale Mediului.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md

OPEN ACCESS

REVIEW OF THE COLLECTIVE MONOGRAPH
"IMPROVING FOOD QUALITY AND SAFETY THROUGH BIOTECHNOLOGY AND FOOD ENGINEERING"

Boris Găină [1], ORCID: 0000-0002-3536-1477,
Vladislav Reşitca[2], ORCID: 0000-0002-6063-1731,
Natalia Vladei [2*], ORCID: 0000-0003-1094-6812

[1] *Academy of Sciences of Moldova, 1 Stefan cel Mare Blvd., Chisinau, Republic of Moldova*
[2] *Technical University of Moldova, 168 Stefan cel Mare Blvd., Chisinau, Republic of Moldova*

Corresponding author: Natalia Vladei, natalia.vladei@ffta.utm.md

Abstract. The collective monograph "*Improving the quality and safety of food through biotechnology and food engineering*" was produced within the project code 20.80009.5107.09 "*Improving the quality and safety of food through biotechnology and food engineerin*g" within the State Program (2020-2023), Strategic Priority II "*Sustainable agriculture, food security and food safety*". The work is intended for specialists in the food industry, the wine industry, economic operators dealing with the production and processing of horticultural raw materials, promotion and marketing. Various aspects of increasing the biological value of food products by applying advanced technologies for the protection of biologically active compounds during manufacture and storage are analyzed. The proposed technologies also take into account possible textural and sensory changes, since the consumer is the final evaluator of food products. The collective monograph "Improving the quality and safety of food through biotechnology and food engineering" is recommended as a textbook for students of the II (Master's) and III (Doctorate) cycle of the Faculties of Food Technology and Agricultural, Forestry and Environmental Sciences.

Keywords: *food technologies, bioactive substances, process optimization, sensory, physico-chemical, technological criteria, antioxidant activity, plant extracts, biopolymers, natural dyes.*

Rezumat. Monografia colectivă *„Ameliorarea calităţii şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară"* a fost realizată în cadrul proiectului cu cifrul *20.80009.5107.09 „Ameliorarea calităţii şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară"* din cadrul Programului de Stat (2020-2023), Prioritatea strategică *II „Agricultură durabilă, securitate alimentară şi siguranţa alimentelor"*. Lucrarea este destinată specialiştilor din industria alimentară, domeniul vitivinicol, operatorilor economici care se ocupă de producerea şi procesarea materiilor prime horticole, de promovare şi marketing. Sunt analizate diferite aspecte de sporire a valorii biologice a produselor alimentare prin

aplicarea tehnologiilor avansate de protecţie a compuşilor biologic activi în timpul fabricării şi păstrării. Tehnologiile propuse iau în considerare şi posibilele modificări de textură şi senzoriale, deoarece consumatorul reprezintă evaluatorul final al produselor alimentare. Monografia colectivă *„Ameliorarea calităţii şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară”* este recomandată drept manual pentru studenţii ciclului II (Masterat) şi III (Doctorat) ale Facultăţilor Tehnologia Alimentelor şi Ştiinţe Agricole, Silvice şi ale Mediului.

Cuvinte cheie: *tehnologii alimentare, substanţe bioacive, optimizare procese, criterii senzoriali, fizico-chimici, tehnologici, activitate antioxidantă, extracte vegetale, biopolimeri, coloranţi naturali.*

Siguranţa alimentelor şi sănătatea publică sunt preocupări primordiale pentru fiecare ţară, atât pentru consum intern, cât şi pentru export. Calitatea şi siguranţa alimentelor reprezintă o prioritate pentru consumatorii din întreaga lume, care devin tot mai conştienţi de relaţia dintre alimentaţie şi sănătate. Calitatea şi siguranţa alimentelor se bazează pe eforturile tuturor celor implicaţi în lanţul alimentar, iar ameliorarea calităţii şi siguranţei de-a lungul acestuia necesită biotehnologii avansate şi implementarea inovaţiilor din domeniul ingineriei alimentare.

Monografia colectivă *„Ameliorarea calităţii şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară”* are ca scop relevarea tehnologiilor şi procedeelor avansate de păstrare şi procesare a materiilor prime apte pentru asigurarea valorii nutriţionale şi amplificarea efectelor biologice ale alimentelor, precum şi elaborarea produselor alimentare cu componente bioactive şi ingrediente funcţionale, Figura 1.

Figura 1. Monografia colectivă „Ameliorarea calităţii şi siguranţei alimentelor prin biotehnologie şi inginerie alimentară”.

Această lucrare reprezintă un studiu de referință pentru specialiștii din industria alimentară, domeniul vitivinicol, operatorilor economici care se ocupă de producerea și procesarea materiilor prime horticole, de promovare și marketing.

Sinteza monografică cuprinde analiza din diferite perspective a sporirii valorii biologice a produselor alimentare prin aplicarea tehnologiilor avansate de protecție a compușilor biologic activi în timpul fabricării și păstrării.

Concepția de bază a lucrării rezidă în valorificarea componentelor naturale din materii prime vegetale prin metode eficiente de tratare, extracție și încorporare în matricea alimentelor. De asemenea, sunt elucidați multitudinea factorilor, care pot influența calitatea produselor: factorii tehnologici, metodele de stabilizare și protecție a activității biologice a componentelor hidro- și liposolubile, optimizarea proceselor tehnologice de fabricare și păstrare. Tehnologiile propuse iau în considerare și posibilele modificări de textură și senzoriale, deoarece consumatorul reprezintă evaluatorul final al produselor alimentare.

Monografia reprezintă rezultatul activității de cercetare în cadrul proiectului cu cifrul *20.80009.5107.09* „Ameliorarea calității și siguranței alimentelor prin biotehnologie și inginerie alimentară" din cadrul Programului de Stat (2020-2023), Prioritatea strategică *II „Agricultură durabilă, securitate alimentară și siguranța alimentelor"*.

Monografia colectivă *„Ameliorarea calității și siguranței alimentelor prin biotehnologie și inginerie alimentară"* este structurată în 9 capitole, fiecare din ele fiind axat pe un aspect specific al ameliorării calității și siguranței alimentelor.

În capitolul 1 este analizată în mod detaliat influența parametrilor tehnologici asupra activității antioxidante a substanțelor biologic active și a calității produselor alimentare, atât vegetale cât și animale.

Capitolul 2 include studii despre stabilizarea proprietăților senzoriale și activității biologice a substanțelor biologic active din compoziții alimentare, precum și influența factorilor tehnologici asupra stabilității coloranților naturali în sisteme-model alimentare.

Capitolul 3 propune tehnologii de valorificare a substanțelor biologic active și a biopolimerilor din deșeuri agroindustriale, precum tescovina de struguri și de mere.

Capitolul 4 se axează pe studii referitoare la optimizarea și modelarea matematică a proceselor de deshidratare a produselor vegetale.

În capitolul 5 sunt descrise tehnologii de fabricare a produselor făinoase funcționale cu adaosuri vegetale, cu accent pe utilizarea pulberii de cătină și de spirulină.

Capitolul 6 descrie particularității ale tehnologiei de fabricare a produselor lactate fermentate cu adaosuri din fructe și extracte vegetale, precum și evoluția indicilor de calitate pe parcursul păstrării.

În capitolul 7 sunt descrise în mod detaliat particularități ale tehnologiei de stabilizare a produselor lipidice cu extracte vegetale liposolubile, precum și evoluția cantitativă a produșilor oxidării lipidice.

Capitolul 8 descrie specificități ale tehnologiei de substituire a coloranților sintetici în produse de cofetărie cu extracte și pulberi vegetale în calitate de coloranți naturali, contribuind astfel la creșterea valorii biologice a produselor zaharoase.

Capitolul 9 vizează metode tehnologice complexe pentru optimizarea procesului de fermentare a strugurilor în vederea majorării conținutului de substanțe biologic active în vinuri din soiuri autohtone.

Organizarea monografiei este una clasică, corectă din punct de vedere științific, în care există consecvența prezentării și argumentării materialului. Capitolele și subcapitolele

lucrării au fost utilizate judicios pentru prezentarea, definirea şi discuţia rezultatelor cercetărilor efectuate. De asemenea, fiecare capitol cuprinde o vastă listă bibliografică în baza căreia au fost argumentate cercetările efectuate. În monografie sunt combinate tehnici şi metode de cercetare şi analiză actuale şi relativ noi la momentul recenzării lucrării, prin intermediul căror se aduce o lumină nouă asupra domeniului de calitate şi siguranţă a alimentelor.

Astfel, monografia colectivă *„Ameliorarea calității și siguranței alimentelor prin biotehnologie şi inginerie alimentară"* reprezintă o lucrare ştiinţifică valoroasă şi este în concordanţă deplină cu importanţa şi complexitatea problematicii siguranţei alimentelor prin prisma biotehnologiei şi ingineriei alimentare.

Publisher's Note: JSS stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Submission of manuscripts: jes@meridian.utm.md