INTERNATIONAL ACADEMIC INSTITUTE

# INTERNATIONAL ACADEMIC JOURNAL

**Vol. 3 Issue 2. Year 2022**

**INTERNATIONAL ACADEMIC JOURNAL**



**ISSN 2671-3748**

## TABLE OF CONTENTS

# Analysis of financial performances of agricultural company for financial decision making: a case study

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**Abstract**

The aim of this research paper is to discover the key financial performances of an agriculture company, in the Republic of Serbia, which would be of special importance for the owner's decision-making. This analysis of financial performance is based on ratio indicators for the period covering four years (2016-2019). The analysis was conducted based on the components of annual reports in the form of financial statements - balance sheet, income statement and cash flow statement. Performance measurement is a control activity of the company owner which determines the level of achieved performance. The financial analysis carried out revealed the key points to which investors and creditors should pay special attention in making business decisions, in order to minimize the risk of making wrong decisions. It was found that this company faced significant problems in the analysed segments, especially in terms of profitability and liquidity.

*Keywords:* agriculture, company, analysis, financial performances, financial decisions.

## 1. Introduction

Changes in the characteristics of corporate companies bring new challenges and lead to changes in management, so that, faced with risks, company management has significantly improved management practices (Knežević et al., 2012), and in the process, information is of strategic importance. Financial statements are an important source of financial information for different groups of users and they are of great importance for the purpose of informing about the financial position and business performance of the company to the extent that the goal of primary importance is achieved, which is profit generation (Mitrović & Milašinović, 2019). Accounting information, which is usually of a quantitative nature, i.e., quantified in order to reduce uncertainty and risk in the company's operations, are of priority importance in an integrated information system, both for internal users and external users, especially if we keep in mind that they are the basis for decision making (Mitrović et al., 2015).

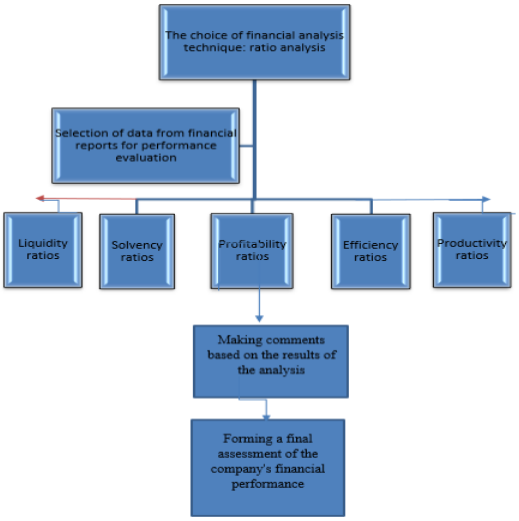
Financial reporting and financial analysis (analysis of financial statements) are intertwined because, in the end, economic value (wealth) arises from the expectation of future inflows of economic benefits, primarily in the form of equivalent cash flows (Simonović et al., 2019). Financial analysis involves the use of quantitative information from financial statements to identify the relationship of items that a company reports in accordance with accounting standards for reporting, to assess its strengths, weaknesses and areas that need attention in the organization. Measuring the financial health of the company through the reported financial statements provides a qualitative analysis of the position of the company, as well as an overview of how the company used its capital in production (Mbona & Yusheng, 2019). Financial performance analysis is the process of determining the operational and financial characteristics of companies from financial statements (Bnunia et al, 2011). Accounting performance measurement is important for financial planning and control, which are the key activities of the management process in companies, for the realization of financial business objectives, as well as for motivating and controlling the activities of managers (www.adbacka).

The subject of analysis in this paper is the financial performances of the joint-stock company "BAČKA FOR AGRICULTURAL PRODUCTION, TRADE AND SERVICES SIVAC". The company owns 348.686.000.00 RSD of capital that is registered and paid. In its branch, the company belonged to a group of medium-sized companies in 2016, and from 2017-2019 to a group of small businesses according to the prescribed legal indicators. This company is engaged in the cultivation of grain, legumes and oilseeds, and has its own production and sale of cereals. In addition to farming, it is also involved in animal husbandry. It had several organizational changes. The company is engaged in farming (wheat, barley, beets, soybeans, sunflowers, corn), cultivating exclusively its own arable land and marketing its products exclusively on the domestic market (www.adbacka). This company was formed in the '70s by merging several working cooperatives, and in 2009 70.63% of the capital of this joint-stock company as a business entity was transferred to the Share Fund of the Republic of Serbia (Kotane & Kuzmana-Merlino, 2012).

## 2. Material and methods

The research conducted in this paper is primarily empirically oriented, as it relates to a case study of a selected company for the period 2016-2019. Ratio analysis as a technique of financial analysis is based on data provided in annual reports, more precisely the financial reports contained in them - balance sheet, income statement and statistical report on employee data, which are available on the website of the Business Registers Agency of the Republic of Serbia (www.apr.gov.rs). The research procedure using the selected technique is presented in the following figure:

**Figure 1.**
**The resarch procedure**




Source: Authors' representation

As pointed out by Kontane & Kuzmina-Merlino [9] research and evaluation in terms of financial indicators, a successful solution to the business problems of owners can be achieved through the development of a unique system of financial indicators in the context of complex business performance analysis. They emphasize that despite the fact that there is an increasing number of publications on this topic in the scientific literature, researchers have not reached a common view on the essence and composition of business indicators, as well as on methods of measuring and evaluating them.

For the purposes of this research, the analysis of liquidity, activity, solvency, profitability, efficiency and productivity, as well as dynamic analysis were applied, and the ratios covered by ratio analysis as a frequently used technique of financial analysis in financial decision making are given in Table 1.

**Table 1.**
**Application of financial ratios in the evaluation of company's performance**

| Liquidity ratios | Solvency ratios | Profitability ratios | Efficiency ratios | Productivity ratios |
|---|---|---|---|---|
| Current liquidity ratio | Financial leverage | Gross profit margin | Average time of collection of receivables (in days) | Average number of employees |
| Quick liquidity ratio | Interest coverage ratio | Return on assets | Average inventory turnover time (in days) | Net profit per employee |
| Cash liquidity ratio | Indebtedness ratio | Return on equity | Average payment time to suppliers (in days) | Current assets per employee |
| Net working capital | The ratio of long-term resources and fixed assets | EBIT Margin | Turnover ratio of total assets | Operating income per employee |
| | The ratio of long-term sources of fixed assets and inventories | EBITDA Margin | Turnover ratio of long-term (fixed) assets | Total assets per employee |
| | The ratio of long-term liabilities and long-term assets | | Turnover ratio of short-term (current) assets | |
| | The ratio of total liabilities and equity | | | |

Source: Summarized by the authors

## 3. Results and discussion

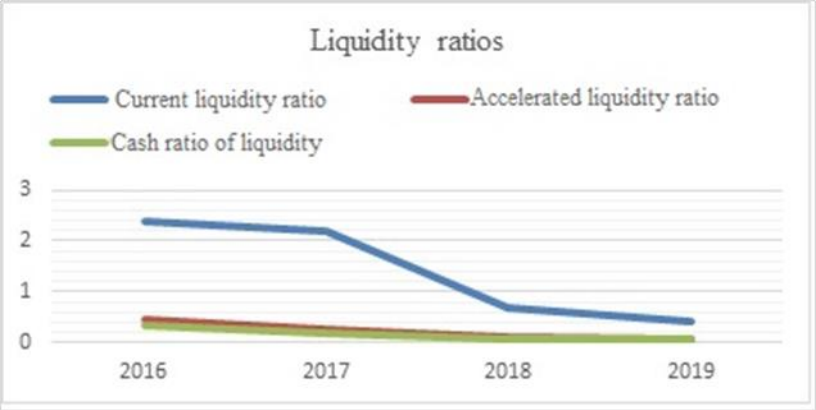
Liquidity or short-term solvency ratios focus on the company's ability to pay its short-term (debt) liabilities. This group of ratios is calculated solely on the basis of balance sheet data known as the "liquidity ratio". Those who grant corporate loans are particularly concerned with the company's liquidity. It is not uncommon for a company to show a profit in its income statement, but it still does not have enough money to pay off creditors - that is, the company has "unhealthy" liquidity ratios. The following liquidity indicators indicate problems of this nature:

**TABLE 2**
**Testing the liquidity of the company for the period 2016-2019**

| Name | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Current ratio | 2,3763 | 2,182 | 0,6659 | 0,4044 |
| Quick ratio | 0,4712 | 0,2569 | 0,1 | 0,0602 |
| Cash liquidity ratio | 0,3527 | 0,1863 | 0,0817 | 0,0528 |

Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

**FIGURE 1**
**Dynamics of liquidity indicators for the period 2016-2019**




Source: Table 2

Based on the data from Table 1 and Figure 1, it can be seen that in 2016 and 2017 the current liquidity ratio is in line with the desired normal, while in 2018 and 2019 the situation is deteriorating because the ratios are lower than 1. The ratios of accelerated liquidities are below the desired orientation normal, and all are lower than 1 in all observed years (2016-2019). The cash liquidity ratio shows a decrease by year, which is an unfavorable tendency.

**TABLE 3**
**Net working capital for the period 2016-2019**

| Name | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Net working capital | 130.122 | 109.109 | -99.087 | 303.022 |

Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

**FIGURE 2.**
**Net working capital dynamics for the period 2016-2019**


Source: Table 3

Based on Table 3 and Figure 2, it can be seen that net working capital had positive values in all observed years, except for 2018, where there was a sharp decline, resulting in a negative value.

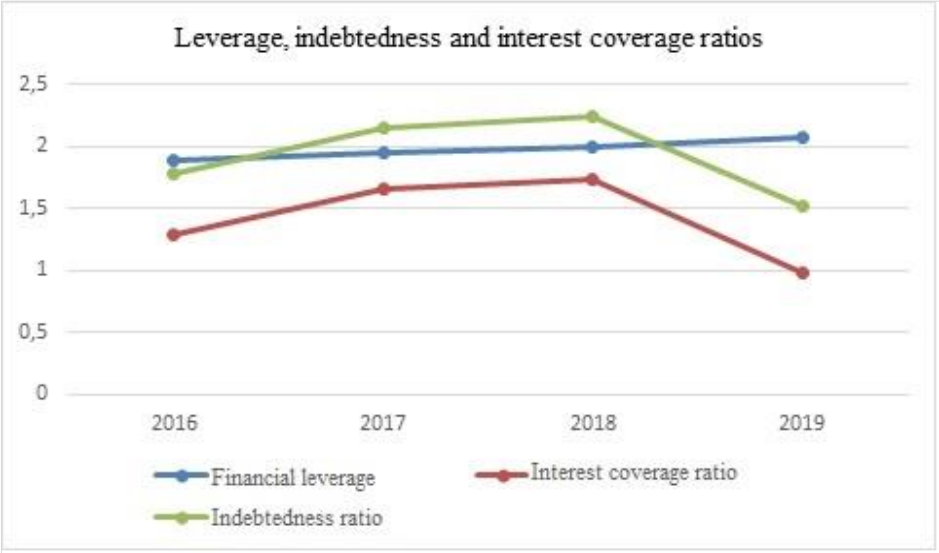
**TABLE 4**
**The solvency ratios**

| The name of the ratio | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Financial leverage | 1,8834 | 1,9525 | 1,9876 | 2,0667 |
| Interest coverage ratio | -0,5915 | -0,3009 | -0,2557 | -1,0844 |
| Indebtedness ratio | 0,4847 | 0,491 | 0,5028 | 0,5296 |
| Relationship between long-term sources and fixed assets (%) | 104,1903 | 103,2052 | 92,9825 | 82,7516 |
| Relationship between long-term sources and fixed assets and inventories (%) | 95,8146 | 94,9577 | 85,8603 | 76,0853 |
| Ratio of long-term liabilities and long-term assets (%) | 47,0438 | 47,2965 | 38,4115 | 30,8645 |
| Ratio of total liabilities and equity (%) | 94,0688 | 96,4716 | 101,1328 | 112,5668 |

Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

The solvency ratios are used for the purpose of assessing the company's ability to meet long-term liabilities and to analyse the financial structure. The financial leverage ratio and the interest coverage ratio show an unfavorable trend in all observed years, because it is negative. The indebtedness ratio shows a tendency of growth, with smaller changes by years for the observed period. The ratio of long-term sources and fixed assets shows that in 2016 and 2017 there is a positive net working capital, and in 2018 and 2019 a part of short-term sources was used to finance fixed assets. When it comes to the ratio of long-term liabilities and long-term assets, there is a decrease in the financing of long-term assets from long-term liabilities in 2018 and 2019. The ratio of total liabilities and capital shows a tendency of growth by years, with the maximum value expressed in 2019 (112, 57%), and these data are important for measuring financial risk.

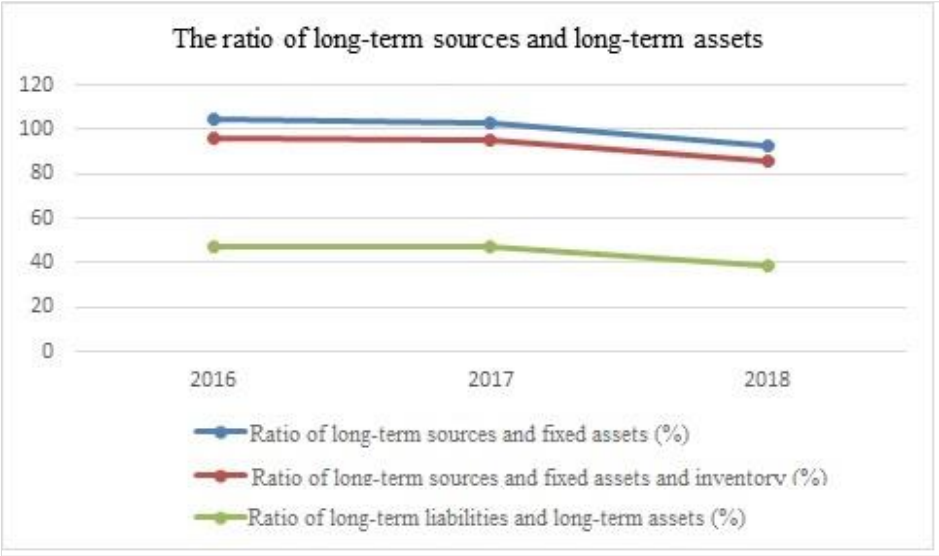
**FIGURE 3**
**Leverage, indebtedness and interest coverage ratios**




Source: Authors' research based on Annual report - Financial Statements 2016-2019

**FIGURE 4**

The ratio of long-term sources and long-term assets




Source: Figure 3

Profitability is the ultimate test of a company's business efficiency. The prospect of profitability is the main reason for the company's business. It is also a key element of a company's success or lack of capital. Profitability ratios are viewed as two categories: margin ratios, which represent a company's ability to convert dinar sales (sales from revenue) into profit, and return/yield ratios, which measure a company's ability to generate the shareholders' wealth. Profitability ratios try to measure a company's success in generating earnings. These indicators reflect the combined effects of asset management (assets) of the company and debt management (liabilities). The key profitability ratios are: Gross Profit Margin, Net Profit Margin, Return on Assets and Return on Equity (Grgur et al., 2019). Profitability ratios reveal the company's ability to make a profit and return on investment and as such represent indicators of the company's financial health and show how efficiently the company's assets are managed (Kneževič et al., 2019).

**TABLE 5**

Profitability testing

| Name | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Gross profit margin (%) | 27,57% | 30,15% | 32,10% | 17,55% |
| Return on Assets (ROA) (%) | -3,21% | -1,48% | -1,77% | -3,04% |
| Return on equity (ROE) (%) | -6,0396 | -2,8968 | -3,5104 | -6,2775 |
| EBIT margin | -47,17% | -25,32% | -11,20% | -111,64% |
| EBITDA margin | -17,40 | -23,05% | -13,53% | -65,46% |

Source: Authors' research based on Annual report - Financial Statements 2016-2019

Based on the data in Table 5, it can be noticed that the gross profit margin has a tendency to increase from 2016 to 2018, while in 2019 it shows the lowest value, and in 2018 the highest value. Other profitability indicators - ROA, ROE and margins show negative values in all observed years.

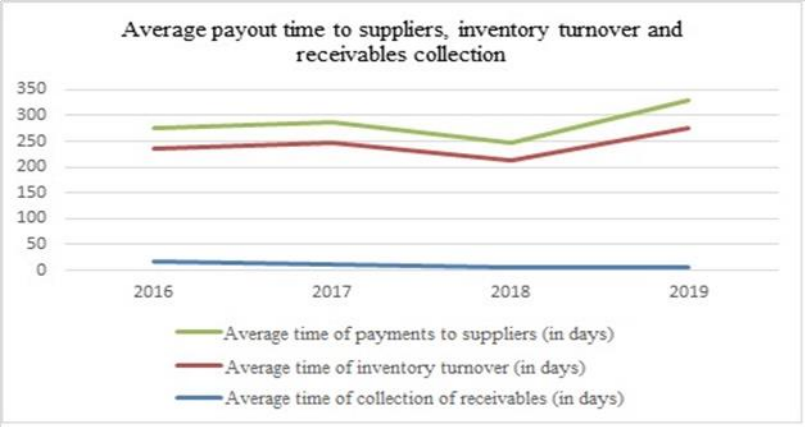
The efficiency ratios measure the productivity of the company and the utilization of funds, and efficiency means the optimal use of resources that enable maximum output and profit. This analysis includes financial ratios (coefficients) that measure how efficiently a company manages its assets. This group of ratios enables the identification of how many times a category of assets has changed in the business cycle, i.e., how long the time of binding these assets is expressed in days or months, which is important for the company owner when planning the business cycle and managing individual activities within it, especially compared to the competitors. If the binding time is shorter, it will certainly have a positive effect on profitability, solvency, liquidity and economy. One of the most important activities within this group is the comparison of the average time for collection of receivables and the average time for settling liabilities in order to harmonize their deadlines in the function of maintaining continuous liquidity.

**TABLE 6**
The efficiency testing (activities)

| The name of the ratio | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Average time of collection of receivables (in days) | 18,4555 | 10,7211 | 6,4784 | 6,5503 |
| Average inventory turnover time (in days) | 218,2579 | 237,3469 | 206,0479 | 269,5552 |
| Average payment time to suppliers (in days) | 37,7296 | 38,48 | 35,5007 | 55,0015 |
| Turnover ratio of total assets | 0,1388 | 0,1202 | 0,1356 | 0,1037 |
| Turnover ratio of long-term (fixed) assets | 0,1543 | 0,1326 | 0,1489 | 0,1141 |
| Turnover ratio of short-term (current) assets | 1,382 | 1,2783 | 1,5186 | 1,1382 |

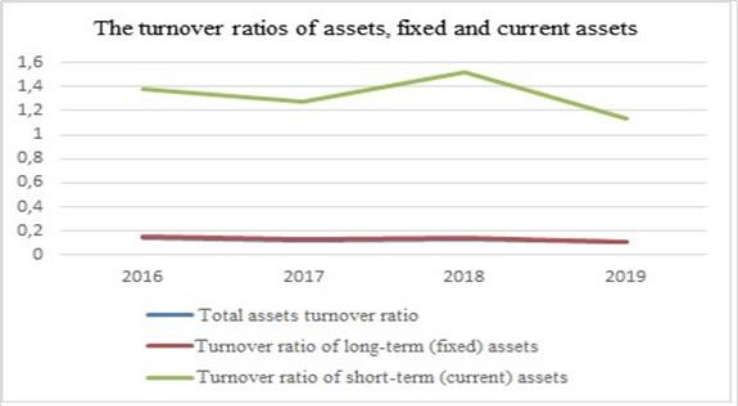
Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

**FIGURE 5**
**Average playout time to suppliers, inventory turnover and receivables collection**




Source: Table 6

**FIGURE 6**




Source: Table 6

The time of inventory turnover shows a tendency to grow, with the exception of 2018, with the shortest period of inventory turnover. The turnover ratio of business assets showed the highest value in 2016, and the turnover of assets in 2018. The average time for collection of trade receivables is decreasing on average over the years, which is a warning signal that the company's existing credit policy should be reconsidered, especially defining credit limits and the efficiency of the collection process, while the average time for settling liabilities to suppliers is growing, with the exception of 2018. Comparing these two groups of indicators, it can be seen that the company, on average, collects receivables from customers faster than it settles liabilities to suppliers, which has a positive impact on cash flows.

In order to assess the overall financial status of the company, productivity indicators were calculated and interpreted per average employee in the observed company (Table 7, Table 8).

**TABLE 7**

The average number of employees for the period 2016-2019

| Ratio | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Average number of employees | 47 | 42 | 38 | 33 |

Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

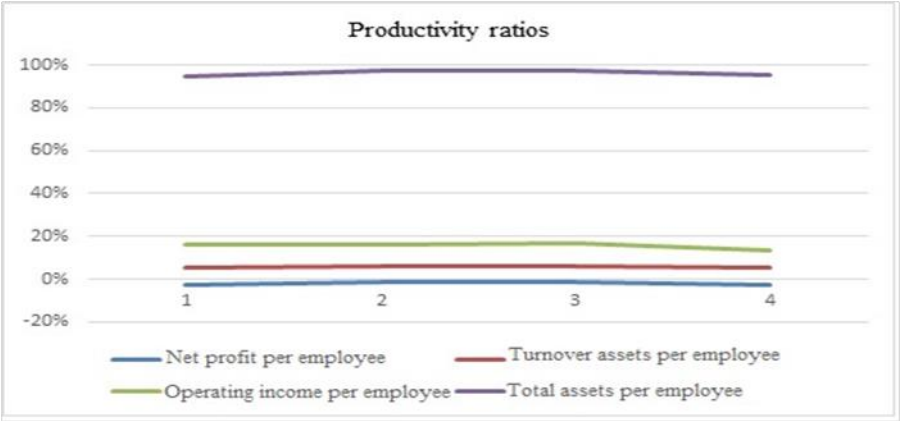
**TABLE 8**

Productivity testing per average employee for the period 2016-2019

| Ratio | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|
| Net profit per employee | -1563,9574 | -800,5476 | -1038,4737 | -2036,8485 |
| Current assets per employee | 4780,1702 | 4795,7381 | 5198,1579 | 6235,303 |
| Operating income per employee | 6692,0213 | 6374,619 | 7895,2895 | 6819,4545 |
| Total assets per employee | 48620,5532 | 53509,5 | 58456,4474 | 66803,2424 |

Source: Authors' research based on Annual Report 2016-2019 (www.apr.gov.rs)

**FIGURE 7**




Source: Table 8

The number of employees shows the dynamics of reduction for the observed period. As can be seen from Figure 7, current assets and assets per employee show maximum values in 2019, while operating income per employee reached its maximum in 2018. The company had the highest loss per employee in 2019.

## CONCLUSION

It can be concluded that financial statements are the basic carriers of financial information, and it is known that without adequate information, interested users can not properly perform assessments and make various business and financial decisions. In order for a company to improve its performance, it is necessary to monitor them through a certain accounting period. The question of the extent to which financial indicators will be useful for those who make decisions based on them, of course, points to the importance of having a good knowledge of the character and specifics of the observed company. Financial information for the evaluation of financial performance will be fully useful for decision-makers if they are interpreted in accordance with the strategy and goals of the researched company. It is of particular importance to consider the circumstances in which the observed company operates.

The profitability analysis showed positive values exclusively for the gross profit margin, while all other profitability indicators showed negative values, which is a negative signal for investors and creditors. Considering the solvency ratios, the tendency of significant borrowing is noticed. Observing the results of efficiency testing, it was noticed that the period of collection of receivables from customers is growing, which requires a review of the company's credit policy. If these were compared with the planned or average branch in which the observed company operates, a more precise conclusion could be obtained about the efficiency of managing the assets of this company. Testing of liquidity indicators showed a deterioration in liquidity in 2018 and 2019 by applying current liquidity ratios, as well as in accelerated liquidity ratios, which is below the lower reference limit in all observed years. The number of employees decreases by year, so that it affects the dynamics of productivity indicators in those periods. A concise

conclusion about the financial performance of this company is that it already has warning signals for financial sustainability (see: Obradović et al., 2021) due to unfavorable indicators in the observed segments of analysis, and that great efforts and redesign of the business model are needed to significantly improve financial performance and business performance as a whole.

.The limitations in this analysis are that no comparison was made with related economic entities (from the so-called peer group) and a bankruptcy test. Future research should focus on including non-financial measures in the analysis of financial performance, and comparison with key competitors and leaders in the industry in which the observed company operates.

**References**


1) Annual report Bačka Sivac, a.d. available at https://www.adbacka-sivac.co.rs/o%20nama.htm [accessed Septembre 1, 2020].
2) Bhunia, A., Mukhuti, S. S. and Roy, S. G. (2011). Financial Performance Analysis-A Case Study. Current Research Journal of Social Sciences. 3(3), 269-275.
3) BRA. (2020). Serbian Business Registers Agency, Financial Statements Annual Report, Belgrade, available at https://www.apr.gov.rs/registri/finansijski-izvestaji/publikacije/godisnji--bilten-finansijskih-izvestaja.2127.html 07.08.2019 [accessed Septembre 1, 2020].
4) Grgur, A., Vujić, M., Simonović, M. & Petković, Z. (2019). Application of linear programming model in ROE management in hotels. „Education and Social Sciences Conference: Business and Economics Conference“. International academic institute. Vienna University, March 20, 2019, pp. 15-16.
5) Knežević, S., Mitrović,, A., Vujić, M., Grgur, A. (2019). Analysis of financial statements, author's edition, Belgrade.
6) Knežević, S., Stanković, A., Tepavac, R. (2012). Accounting Information System as a Platform for Business and Financial Decision-Making in the Company. Management - Journal for Theory and Practice Management. 65, 63-69.
7) Kotane, I. & Kuzmina-Merlino I. (2012). Assessment of financial indicators for evaluation of business performance. European integration studies. No. 6. International School of Economics and Business Administration, available at http://dx.doi.org/10.5755/j01.eis.0.6.1554, pp. 216-224.
8) Mbona, R. M. and Yusheng, K. (2019). Financial statement analysis: Principal component analysis (PCA) approach case study on China telecoms industry. Asian Journal of Accounting Research. 4(2):233-245, https://doi.org/10.1108/AJAR-05-2019-0037.
9) Mitrović, A. Knežević, S. & Veličković, M. (2015). Ratio analysis specifics of the family dairies' financial statements, Ekonomika poljoprivrede. (Economics of Agriculture). LXII (4), 1061–1078.
10) Mitrović, A., Milašinović, M. (2019). Financial report as sources of financial information for the purposes of financial report analyse. Scientific Conference Accounting and audit in theory and practice. Banja Luka College. Banja Luka, 2019. May 29, 2019, 9-21.
11) Obradović, T., Knežević, S., Grebić, B. (2021). Strateški okvir za održive finansije. 25. Međunarodni kongres iz upravljanja projektima "Odgovorno i fleksibilno upravljanje projektima". 9-11. septembra 2021. Udruženje za upravljanje projektima Srbije – IPMA Srbija., Zbornik radova, str. 30-36.
12) Simonović, D., Travica, J., Joksić, J. (2019). Accounting for tracking business transactions and reporting. In: Management of family businesses. College of Vocational Studies. Aranđelovac, 1-36.
13) Srebro, B., Mavrenski, B., Bogojević Arsić, V., Knežević, S., Milašinović, M., Travica, J. (2021). Bankruptcy Risk Prediction in Ensuring the Sustainable Operation of Agriculture Companies. Sustainability, 13(14), 7712. https://doi.org/10.3390/su13147712.

# "Fit for purpose" principle from customer's viewpoint: RefStyler - case study of a simple novel bibliography style translator

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**Abstract**

The work consists of two interrelated, yet conceptually different parts. In the first, we introduce the Fit for purpose principle, but, in contrast to the usually elaborated, from the viewpoint of the customer. We also relate the principle to the concept of economy of time (involvement) and give rather broad perspective to this concept, in the context of article publication process, and more specifically to the quoting sources from literature. We continue by reviewing available computational aids in writing bibliography for scientific articles. In the second part of the work, we concentrate on one possible solution to the problems laid out in the first part. As it turns out, there is possible rationale in adopting otherwise seemingly sub-optimal solution (software), taken into account customer's individual cost-benefit analysis. The software developed is lightweight, relatively easy to adapt to specific needs and practically requiring no user engagement prior to use. As presented in the work, it is developed having in mind the specific needs of a niche of customers wanting to avoid repetitive steps in bibliography formatting, but also not willing to spend too much effort to adopt some of the more comprehensive automatization solutions. The software developed is given as open-source JavaScript code freely available on GitHub.

*Keywords:* time-effort economy, Fit for purpose paradigm, bibliography styles, JavaScript

## 1. Introduction

The work we present consists of the two interrelated, yet conceptually different parts: the first part is dealing with establishing what has been done, and what is the current state of affairs in the field of demand and offer, specifically in one software field, and the other part in which the specific solution to a case-problem is developed and studied. In the whole first part of the work we will be concerned with discussing how the available solutions, being ever more elaborate and comprehensive, potentially add additional implementation burden i.e., the effort required from the part of the user to start using such general solutions as offered on the market. In the course of the modern demand-and-offer economy, most of the more common problems potential customers may encounter have already been solved, and many solutions are usually already available on the market. The additional effort is related to both finding the 'perfect tool' for the task the user wants to tackle, and, on the other hand, to develop certain skills for using this tool. The issue of choosing the 'best tool' is, of course unavoidable, since it relates sets of all possible problems and of available developed solutions. In the balance of problems (most often) encountered by users and the solutions developed for specific groups of problems, however, two common evolutionary aspects seem to be developing: first, groups of problems are narrowing, and reducing to already solved classes of problems, and second, certain solutions are starting to act as standards, so the problems outside these, standard classes become more or less insignificant in number. This is, among other things obvious from, and regulated in part by many of the so-called anti-trust laws (Baker, 2007).

That said, from the broadest sense, the prevailing demand-offer organized civilization seems to increasingly restrict the available 'problem space' due to efficiency of application of available solutions (Augustyn, no date). This may have possible deteriorating effect, since some of the uncharted problems do offer specific knowledge which is thereby not possible to acquire or implement in improved solutions already set as standards.

Here we have given the most broad context of the work. In the following we first restrict ourselves to the more practical ways of coping with the above mentioned issues, introducing Fit-for purpose (F4P) concept, briefly from the viewpoint of the commodity-producer, and somewhat more in depth on how would such a concept be applied by the end-user. We then focus more on the specific topic of bibliography writing aids, thus establishing the landscape for the second part of our work. In the second part we build up on what has been elaborated in the first (general) part of the work, and develop the specific bibliography writing aid, with the user-aware context in mind. We show that the software developed, although not following the usually adopted comprehensiveness goal, has its specific benefits and strengths being lightweight, easy to use and with almost no requirements and demands on outside sources. In concluding, we finally put what we have done in perspective, both in the specific, and in the more global contexts, thus trying to relate our outcomes to the motivations laid here within the broad scope.

## 2. Part I. Fit for purpose and time-effort economy

As rationally-driven subjects, both commodity providers as well as end users may both follow the same principle of efficiency – i.e. "how much it is to be invested for achieving certain goal", yet their decisions of the optimal behavior or product may differ significantly. We first proceed to emphasize this crucial standpoint difference. F4P concept, closely related to the cost-benefit issue mentioned earlier has recently been brought to focus in a book by DJ Anderson and A Zheglov, *Fit for Purpose: How Modern Businesses Find, Satisfy, & Keep Customers* (Anderson and Zheglov, 2018). As evident from the title itself, the book considers commodity provider's viewpoint. The F4P concept may thus be related to efficiency: the both answer the same question: 'Which tasks are of most interest to the customers, and how to best address these tasks to obtain most results with least investments.' (taken any term in its broadest sense). However, there are significant differences between what is 'best' from the viewpoint of the business and what is optimal from the point of the end-user, even if F4P concept is already introduced as aware of changing customers needs over time. We first consider these differences.

### *2.1 Commodity providers*

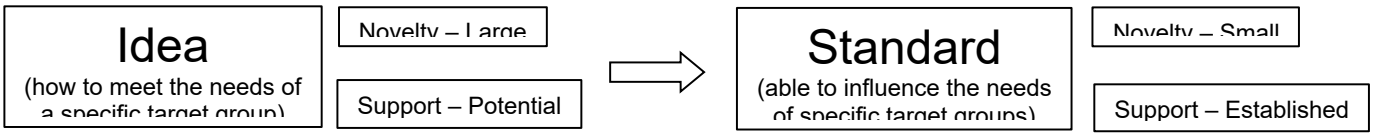
General goal for a provider or producer of any new product is to target as large audience as possible, and establish firm place in the market. The most often applied strategies to achieve this involve:

- Targeting the most common problems/tasks;
- Building as much as possible on commonly acquired skills and knowledge of users;
- Offering comprehensive solutions;
- User-friendly interface;

But, due to a large diversity of specific situations the product needs to satisfactorily solve, the development of the products is usually quite lengthy. Thus, some of the more common traits (especially in software solutions) are also that:

- These are usually not designed for much adaptations;
- Updates and new features are often obtained through new products;

Commodity-providers tend to target large audiences to approve for their considerable investments by large return profits from the expected high demand of their products. To reach such a large audience, the providers usually develop their commodities with user-friendly interfaces. The general approach may be simplified and depicted by the scheme below: from initial idea on how to address specific problem or need in the target group, the product is offered which, ideally tends to become a standard (a standard would mean that all further development is more or less relying on this commodity, so that it becomes a requirement, a necessity.)




**Scheme 1.** Fit for purpose concept as seen from the position of commodity provider

F4P from the standpoint of business may thus be defined as the best (optimal, most efficient) approach in design of process, product, or the optimal leadership approach which takes account for specific goal, and adapts to the possible routes to reach the goal with minimal investments. However, long term-goals (and required investments) may have to be balanced with short-term goals (and the investments involved). For example, if the ultimate target is 'building standards' then some short-term cost-benefit compensations are loosened. (This is somewhat the concept also found in more natural environment: it has been proved that biological systems have this down-regulating behavior, sacrifying imminent benefits which proves useful in the long-term economy of evolutionary approach (Taddei *et al.*, 1997).)

Few years ago, the concept has been reintroduced for the application in design of new products or services, and even in establishing leadership styles (Anderson and Zheglov, 2018; Esser, 2020; Galletly, no date). However, much of the idea is organized around the presumption that the novelty is gradually formalized to final product that fit specific need/audience. It may be concluded that the ultimate goal of many market products is setting standards. This in turn both secures product's lifetime and even secures position on the market for its successor-applications or products by developing a specific group of users prone to use the specific line of products (‘training users’ so to speak). Examples for this general market behavior are seen in most of the fields of everyday

lifestyle (fashion, computer and mobile operating systems, units of measurements, language, monetary agreements, quoting some examples from more specific to more global ones). The influence of commercial propaganda in forming user opinions on specific products is in this process obviously large and important. The above is reasonable approach from the perspective of big business, where customers are an integral part of product development process, so that they, willingly or not entirely so, participate in the process, not only by feedback on offered commodities, but also by conforming to specific standards, from early fashion, and especially in the modern strongly interconnected digital environment (Gregory, 1948; Liu, 2007; Bailey and Steeves, 2015; Nallasivam et al., 2023; Fang et al., 2022; Muralidharan and Men, 2015; Valaei and Nikhashemi, 2017; Wijenayake, 2020; Wijenayake et al., 2021).

Finally, if setting standards is preferred achievement for most commercial products, it may also be of interest to consider how standards most often affect customers life. As a general rule, it is seen that standards make (trans)actions quicker, if not at all possible, but somewhat restrict other, routes not initially followed. This narrowing of space of possibilities, however, is worth keeping in mind. The restrictive element of such behavior is acknowledged in modern theoretical approaches to economy, especially as effects of monopoly in global market that restrict competition, as a more negative consequence of setting standards (Tarullo, 2000; Munger, 2022). To mention just one common example - Google Android mobile platform: "Third, dominant platforms have used their integration to tie products and services in ways that can lock in users and insulate the platform from competition. Google, for example, required that smartphone manufacturers seeking to use Android also pre-install and give default status to certain Google apps—enabling Google to maintain its search monopoly and crowd out opportunities for thirdparty developers." as stated in p. 379 of (US House of Representatives et al., 2020). However, even standardizing the global market regulations is sometimes dubious (Gal and Padilla, 2010).

At the end of this brief review of commodity providers' approaches to the global market one last example of effects of new technologies to society is presented. The standards, especially in electronic/information technologies global market start presenting a problem, especially as oligopolly firms such as Amazon, Facebook or Google use automatized solutions and artificial intelligence (AI) to target customers needs. It may be that AI-mediated market is our first AI challenge, and the first (or the one which may have the most impact) areas of everyday living which we let machines to govern (Ünver, 2018)? Further investigation of such phenomena in sociology are expected and in order.

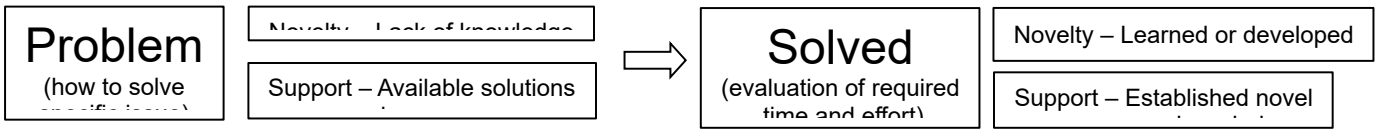
### *2.2 End users*

Now the complementary approach is followed: starting from the perspective of economy of time and effort from the part of customer, the relevant cornerstones in decision-making process within the F4P paradigm are established. It is thus here considered how customers will approach solving their specific tasks and choose, in their opinion, the best tools for these. 'The best tools' of course strongly depends on what they are accustomed with, depends on the character and customers' resourcefulness (should they spend time to define in depth needs, or at the very beginning start searching for available tools, already developed and then modify approach to include these.) These topics may all be subjects to further and separate research.

The problem landscape in customers' viewpoint may thus be described by:

- Looking for specific tasks to solve;
- Usually many options in comprehensive solutions not needed;
- Preferred interface dependent on the users experience;
- Being able to easily adapt solutions is welcome;
- Time-effort economy: how much do I have to involve to solve the problem?

So, what is considered optimal from the customer's point of view in the F4P concept is quite different than encountered in considering producer's viewpoint. The schematics below simplifies explanation of this, end-user context: the main obstacle for an end-user for specific problem to solve is novelty of the situation, and thus lack of knowledge or experience. So the end-user will revert to their existing ways of coping with problems, and thus depending on their individual character (depending on other psychological/sociological factors) will adopt any of existing solutions, or try some of the more do-it yourself (DIY) solutions. This obviously also depends on customer's knowledge, experience, professional and personal background, etc. However, the outcome of the process is usually bright - the end-user generally ends with adopting some new knowledge. So, working on solving the problem for an end-user is usually useful, although it depends also on what kind of investment is made and what kind of knowledge is obtained during the work on solving the problem. For example, if user opts for some of the developed solutions, the benefit is the knowledge of using a new tool for the purpose. However, if the user decides to try more of DIY solutions, the benefits may indeed be much more than that, such as developing new production skills (Atkinson, 2006).




**Scheme 2.** Fit for purpose concept as seen from the position of end users

*2.3 Bibliography writing aids - an overview*

Now we focus more on the topic of bibliography writing and referencing aids, since the case-study software developed in this work is related to this specific subject. Although first efforts date as far back as the beginning of the spread of Internet access in the public (Wolff, 1992), from the activity still present in projects such as Pandoc, Zotero and Zenodo, it is seen that the bibliography handling and referencing sources is still of interest (Ram and Ambu, 2014). It is so, both at the level of the scientific community as a whole, and at the level of individual scientists. The latter are usually left to find their own way when submitting articles to cope with journal requirements as they consider suits best their personal character and writing/task organization style. There are two most important general aspects in relation to this problem: dealing with inserting, changing formats, adding or deleting references, and database integration and database search for references. Most of available developed aids which are commonly used have some capabilities in both aspects, although most are more focused on in-text handling help and local database handling. Integration to online databases are more related to elaborate and comprehensive solutions, offered often in cooperation with database providers. In-document handling is provided by developed solutions depending on writing environment/word processor (such as MS Office/LibreOffice/(La)Tex).

Reviewing the most used bibliography writing software, only some of the most popular solutions are mentioned here, and the most important specifications listed:

*EndNote*: MS Word integration, LibreOffice, database generation and integration with Clarivate sources, browser integration – Firefox, Safari. Full license: 306€, registration (EndNote, 2022)

*Mendeley*: MS Word integration, Windows/MacOS/Linux reference manager, free, registration (Mendeley, 2022)

*JabRef*: Windows/MacOS/Linux, browser applet integration, access to databases (DOI, ISBN), LaTex integration through BibTex/Biber, free (FOSS) (JabRef, 2022)

*Zotero*: Windows/MacOS/Linux, Word, LibreOffice, and Google Docs integration, free (Zotero, 2022)

*Anystyle.io*: latest addition, relatively similar to the approach developed in this work with some specific differences: not an integrated comprehensive solution, but use-per-need webpage, free (Anystyle, 2022)

EndNote is mostly targeted to MS Windows users. This is one of the most popular bibliography writing aids, although it is the only one which requires paid registration. It is powered by Clarivate, the maintainer and developer of the well-known Web Of Science bibliography database and search product (Clarivate, 2022; Web of Science, 2022). Similar, although free to use solutions with somewhat less users but also very well known are Mendeley, JabRef and Zotero. All of these offer similar integration to most popular writing processors, with slight inclination to specific solutions (JabRef for example is specifically targeted to LaTex variants users and its BibTex/Biber environment).

Latest addition and last in the list, a web-application AnyStyle.io is the most similar to approach followed here, in the sense that it is designed to change from one to other general bibliography styles, but is not targeted to exactly the same problem, since it is not sorting references in particular reference types, etc.

Quite a number of other solutions are also offered. Many of these online reference-styling aids remain more or less unnoticed except for selected user groups. These are not listed above since they have much less users, which of course does not mean their functionalities are not comparable to these above. The popularity and availability of developed independent tools is also hampered by the problem of reaching target audience (as commented already, independent software, including the writing aids are often not subject to marketing and propaganda, so when users are searching for specific tools for solving their problems, these are not as easy to come across) (Willighagen, 2019; Citation Style Language, 2022). (Their importance however is somewhat acknowledged by the community, as the Citation Style Language, which is at the basis of above implementations has been awarded Open Publishing Award of 2019 in the open-source software category.)

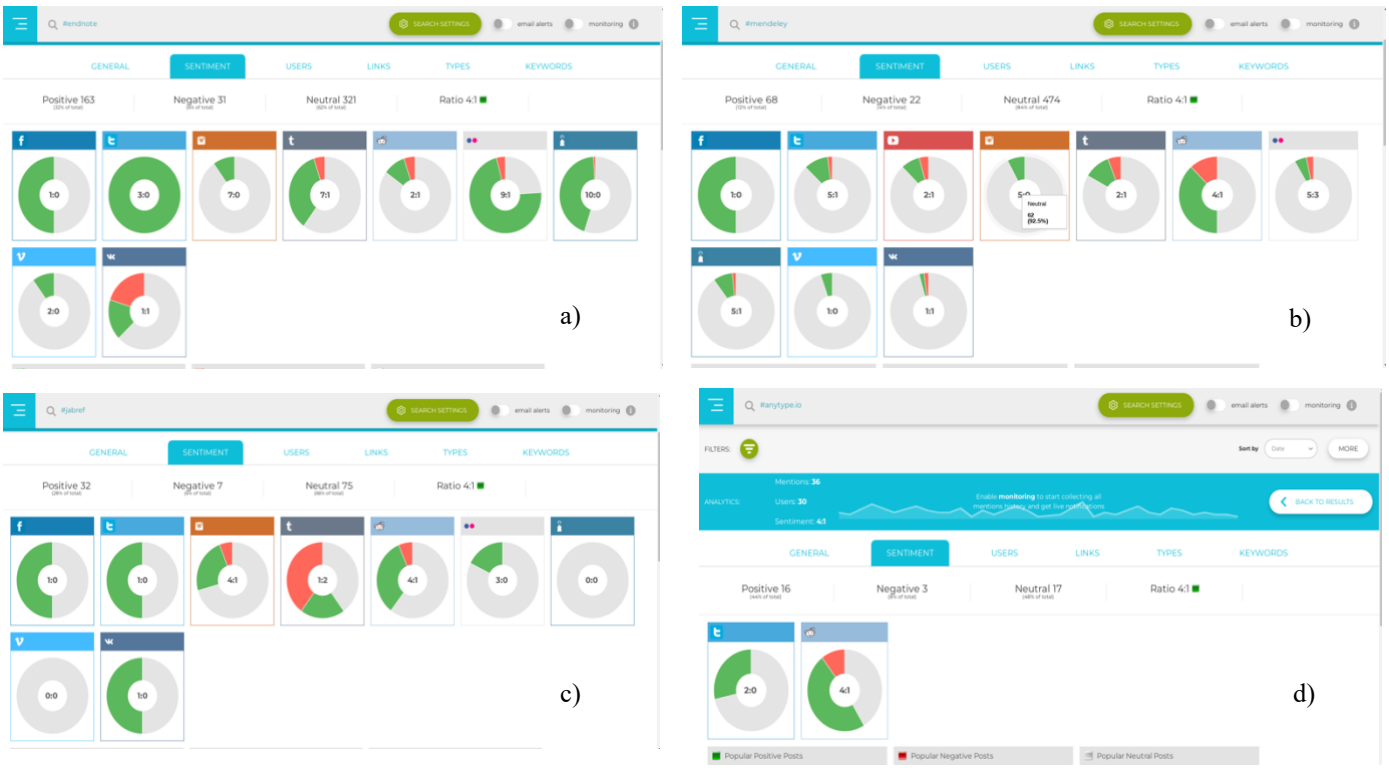



**Figure 1, a)-d)**. Number and sentiment from social media mentions, obtained by the use of online tools Social Buzz.

In Figure 1. a)-d) the comparison of the most popular referencing aids is shown. The comparison is obtained by the use of online tool Social Buzz for searching number and sentiment of mentions found in social media (Social Buzz, 2022). It is seen that all of the EndNote, Mendeley, JabRef and AnyStyle.io have similarly positive sentiments (ratio of positive to negative mentions of 4:1) among social media posts, although the EndNote is the most popular (has by large the most mentions altogether, 168 vs. 68 of Mendeley, which is next in popularity).

*2.3 Time-effort economy: an example in writing bibliography*

It is interesting to see how would an average customer benefit from using bibliography software. In the article of Rokni et. al, it is estimated that the use of EndNote significantly increases both inserting and style modifications of references in the text (Rokni et al., 2010). However, here we also wanted to estimate additional time and effort required for downloading, installing and start using the software. EndNote is about 600 MB of zipped installer, so the time to download software and install it is estimated to be some 15 - 20 min, in which the time handling correct web pages and basic reading on installation steps is included (Compatibility and System Requirements | EndNote, 2022). The time to start using software is much less straightforward to estimate and it may vary a lot depending on user background and proficiency. The estimated time of 30 - 45 min is obtained from duration of listings on EndNote YouTube tutorials page: the shortest tutorials video devoted to basic usage is 7 minutes long, but heavily packed with information (YouTube | EndNoteTraining, 2022). The more advanced ones last for more than 2 hours. Thus it is estimated that at least 30 min (with a more reasonable 45 min correction estimate) is needed for average user to start using the software. So, the time required for inserting 20 references using the software, taken all of the additional resources (time) needed (for download, install and basic instructions on how to use the EndNote) is close to at least 70 min, while the approximate time for inserting 20 references by hand is 110 min. It is seen that the use of software should still reduce the required time for inserting references. It may however be argued that there may be not too strong a motivation for starting using the software, if no repeated style modifications are initially expected (Table 1). Of course, all of estimates here are prone to large uncertainty in values. Thus, in the installation and adapting to software times (rows 3 and 4 in Table 1), only lower bounds in the required time are estimated. That means the true times are expected not to be smaller than stated, but may be larger.

**Table 1.** Comparison (time in min) for specific tasks.

| task | using EndNote | by hand | source of estimate |
|---|---|---|---|
| *Insert 20 references* | ~7 | ~110 | (Rokni et al., 2010) |
| *Modify style (20 refs.)* | ~1 | ~50 | (Rokni et al., 2010) |
| *Download and install* | ~15-20 | 0 | (Compatibility and System Requirements \| EndNote, 2022) |
| *Get accustomed to software* | ~30-45 | 0 | (YouTube \| EndNoteTraining, 2022.) |

## 3. Part II. RefStyler

### *3.1 Developed within specific context.*

Finally, after setting the stage, we explain why it was decided to proceed following the specific approach and what the designed software is for (and what it is not). It is quite common that a scientist finds literature sources in random order and random manner. So, the styles in which these references are initially cast to are usually defined by the journal-specific requirements. These are by no means unique, even if the same general (APA, MLA, Harvard, ...) styles are required by journal (Ramchandra, 2016; Citation Style Language, 2022; University of Chicago Press Staff (Ed) 2010). Now let's assume the author(s) afterwards decide to send already prepared manuscript to some other journal. This would usually require re-styling of all the references. Thus generally, there would be a set of references in some style and the author would need to cast these to the other style, not necessarily in any of the exact common types. This is what RefStyler is expected to help with.

Description of problem:

- A scientist in position of making a new submission to a journal requiring different bibliography referencing style;
- He/She does not already have all the data built in the local database;
- He/She wishes to use as much software help as possible to avoid repetitive tasks;
- The number of references is usually not that huge (30 - 50).

Solution requirements:

- As simple to use as possible (choice: HTML/Javascript)
- Some unnecessary functionality and most of elaborate features may be omitted;
- Only the three most common types of sources are specifically targeted: articles, books, web sources.

Problem with developed comprehensive solutions is that quite substantial time or effort is involved in generating initial reference database. This is useful in the long run, although not always employed. Also, a specific problem may be also that if multiple authors contribute to the writing of the article, one of the authors, or some specific typewriting aid person has to merge all the data from these sources to the database. Although it may prove useful to build a database of references in the long run, it is relatively common to just cast these in the form of the journal the authors are sending the article to, especially if the number of references is not that huge (average of 30-50 references is taken as being the most common). So we opted to design a piece of simple software that will help users to modify referencing styles quickly and without much consideration or effort on how the data is obtained (not having a database). Ideally, (and is finally as such implemented) it is preferred not to bother users with installation problems, issues of different operating systems, integration with other softwares, etc. In the course of production quite a bit functionality is left out for these goals to be achieved: outside databases are involved only as a list of journal abbreviations, and only three most commonly cited sources: journals, books and web sources are considered. Also, specific cases which may be fine-tuned by hand afterwards are intentionally omitted as claiming impractical to develop 'solutions' for such special cases (addition of '*et. al*' after specific number of authors, for example, or parsing and casting of the date formats in 'accessed:' element in web references).

Thus the intention in this work was not to develop an all-encompassing environment, or rely to specific infrastructure in which the article author is expected to work. There is a number of such products already developed as mentioned earlier. The downsides of the approach adopted here may seem numerous in the sense that considerable functionality of the more comprehensive products is missing. It will be shown that the availability and simplicity of usage, requiring no specific adaptation of the user for specific software, may and in many real-life occasions will, overcome its limitations in the economy of researcher's time-effort to eventually get their bibliography in the required form.

*3.2 Some details on the code.*

Choice of the development platform and approach, although initially motivated by author's capabilities and other requirements (it is developed as part of bachelor's project, thus production time was an important limitation) is also in line with contemporary practice in the field. Due to its simplicity and intuitiveness, powerful capabilities, extensions and platform independence Javascript (JS) has established the position of one of the most popular development platforms in modern programming (Lennon, 2018). The code presented in the project thus is built on nothing more than usual ECMA/JavaScript as built-in in almost any of the current browsers (JavaScript Versions, 2020). This satisfies the requirement for simplicity and transferability of the software. Yet, even more than this, it is in line with the modern shift from locally installed software to the use of software as a service (SaaS), the principle of increasing importance (SaaS use was responsible for 38% of cloud services in 2016 but increased to more than 70% in 2022) (Watts, 2018). So, there is real benefit of building software able to run in the browser, although the code we provide does not rely on external libraries or databases and do not require to be run on the server. The code is simple enough and could be run on any supported browser even without internet connection.

Although JavaScript is one of the most popular development platforms in 2022, compared to the statistics of commercial software products:
"Software development project takes between one to nine months. On average, a custom software development project is expected to take about 4.5 months. Less than 10% of developers can deliver a typical software with basic features in a time less than 2 months. Fixed prices for software development projects vary widely and can range from $3,000 to $120,000 depending on the scope of work, timelines, experience of the developers and other factors. [...] Less than 10% developers deliver software solution in less than 2 months." (Shulz, 2022),
it is clear that the software developed is built under considerably different conditions than are market-ready solutions. It has been developed in about a month, and without almost any funding. Yet, taken simplicity into account, the functionality of the solution seems reasonable (see Test examples below).

Basic code description:

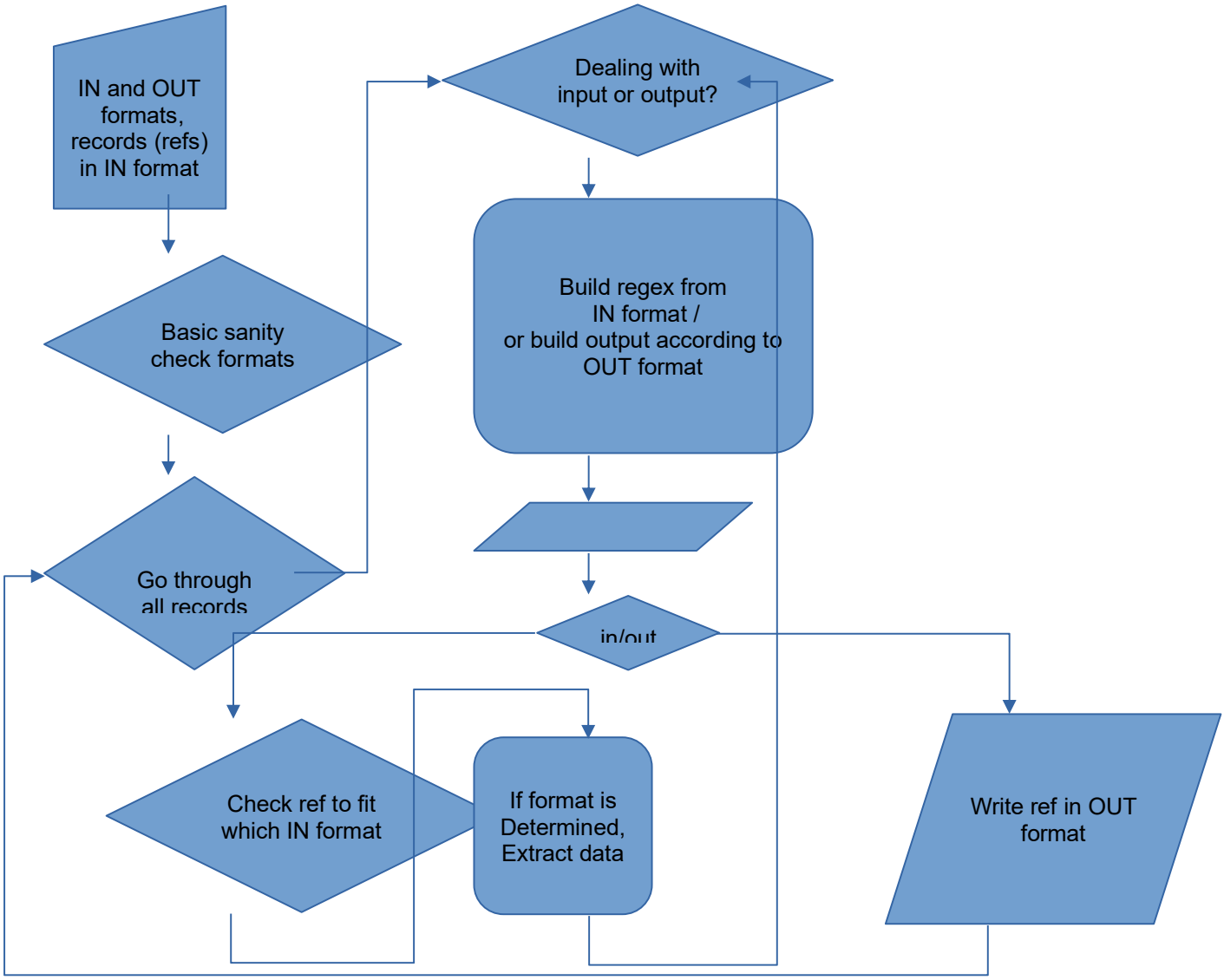
- Lightweight: ~500 lines JS code (<40kB) + additional 300-350kB or more for journal abbreviations JSON database
- No external libraries or CSS/CGI (can be run locally/offline)
- Based on regular expressions for format recognition

The code consists of less than 40 kb (approx 500 lines) of JS open source code executed in (almost any) browser (JavaScript Versions, 2020). There are no relations to outside libraries, and the code can be run offline. Additional 300-350kB (or more) for journal abbreviation JSON database, depending on whether we use ISI-1997 or the full Web of Science database (the smaller one is added for testing purposes at the moment) (International Organization for Standardization, 1997; Web of Science, 2022).

The code design is depicted on Scheme 3. It relies on two sets of inputs: IN and OUT formats for journals, books and web-sources. It then reads the input lines inserted in 'textarea' HTML field and determines their type according to given input styles (at present, quite a lot of logging and debugging data is also included at the end of page, as specific format is highly sensitive to the number, type and placement of keywords and available separators, spaces included). Also to help with managing, a brief, yet quite complete description of all the keywords and their meaning in specifying formats is included at the right part of the page (see screenshot in Figure 2 and Test examples).

The greatest benefit from the simple approach in which all code is handled by small JS code approached from any browser, relying only on the JSON database of journal abbreviations, is that it requires almost no learning on the part of user: the input and output formats are defined by simple and intuitive arrays of keywords ('Descriptors') and separators. These are then transferred to regular expressions (RegExp) (Scaffidi et al., 2009) and three most commonly used types (from personal experience of one of the authors) of sources are distinguished on the basis of the formats obtained from input. Finally formats are read for data as inserted in the text area in web form and data is then cast to output format (if information given allows for such a translation).

As the input is validated using RegExp, it is very sensitive to any slight changes in formatting, including spaces. This is both a problem (robustness is usually good for general use) but also the requirement (since we're dealing with formatting specifics, we're bound to define formats which is a matter of detail.)




**Scheme 3.** Simplified code flowchart.

Basic font style formatting (again, as considered by own experience of one of the authors as most usually encountered in journal referencing styles) is available: for this, HTML-tags for **bold**, , <u>underline</u>, <u> and *italic*, <i> font types are available. Obviously, the output using such a code is more directed for Word-users, which could then simply copy and paste it with required formatting. LaTex-variants users probably already use some bibliography style management within biber/bibtex. If not, it may be a case of simple .replace() function to add this functionality to the code. It could be done by users, simply replacing HTML tags with analogous LaTex tags:  boldtext  combination should become \textbf{ boldtext }. However, it seems to the authors not justified effort to include this functionality in this implementation, since the same functionality is obtained by using just few simple sed-replacements in bash (*nix) environment. So, the authors here adopt a less-popular (if not entirely new) paradigm - we opt for simplicity, not designing structured software that 'expects' a lot of input (in the sense of learning) from the user, but build intuitive helper application, which, due to its simplicity, may require additional work with tools with which the average user is expected to be familiar with (either basic word processor - rewriting parts and fine-touching translated results, or the environment, as for example usual bash tools like sed).

*3.3 Test case examples.*

In course of this section the work with the developed software solution is presented. It is also briefly explained how the software is used.

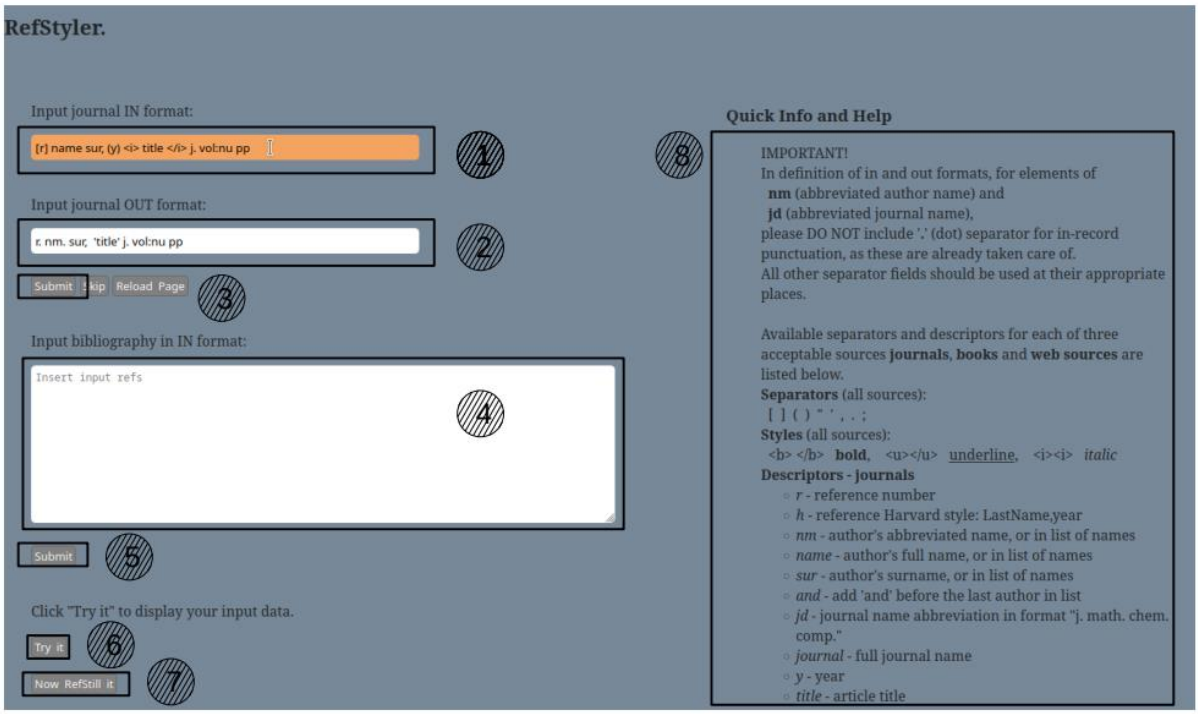



**Figure 2.** Screenshot of the HTML/JS page developed in course of our work. Detailed description is given in the text.

In Figure 2 the screenshot of the user interface of JS run HTML page is presented. Upon starting the RefStyler page, the page will look like this. The numbers and respective rectangular black framed areas refer to specific elements that are explained further in the following.

1. The line in which the user inputs a line that explains the expected INPUT format for one of the supported input types (journal, book, web). The area turns orange on mouse over event. This is the format that the references are initially given. It is initially already filled with some format expression to act as a template. This, together with the field 8, should help user quickly grasp the method for describing the formats in terms of "Descriptors" and "Separators" allowed.
2. The line in which the user inputs a line that explains the expected OUTPUT format for one of the supported input types (journal, book, web). This is the format that the references we want to be cast to.
3. Upon pressing "Submit" button here, two events are performed: The input and output formats are inserted to respective strings in the script, and new input and output formats are expected *in the same fields* (1. and 2. in Figure 2.) but for another reference type (if it was initially inserted for 'journal' type, upon pressing "Submit", the user is expected to give input and output for 'book' type, and finally for 'web' type.)
4. Textarea is used to give references of the allowed types in the INPUT formats. If script is successful in recognizing format types, it is so stated in final output and in logs on the same page below. Otherwise, it is indicated that certain record has not been assigned to any of the types, based on INPUT formats. This section will be explained further in test example below.
5. Submitting the textarea is required for the script to build array of strings. It is expected that records (references) are separated by newline markers in any of the usual OS environments (Windows, Linux, Macintosh)
6. "Try It" button now builds some arrays and does some basic sanity checks on formats. It is required for the final step.
7. Finally, "RefStill it" does everything else and eventually outputs references in the output format. As said previously, basic HTML style font formatting is included, so the output is given as HTML on the same page. This output may easily be copy-pasted to most popular word processors.
8. The basic description on how to define input and output formats in the fields 1. and 2. This description is brief but also exhaustive and quite complete. It is worth noting that spaces are separators as any other separator type, so the RegExp which is underlying recognition method is sensitive to number and placing of these.

In Figure 3. the output of the script is presented if the INPUT and OUTPUT formats for reference types are defined (inputs 1. and 2. in Figure 2.) and the following text is fed to the script in the textarea (area 4. in Figure 2.):

[12] Vet Erinn, Nodt Mat Sć, (2020)  naslovni članak  Abh. Akad. Wiss. Lit. Mainz Math.-Nat.wiss. Kl. 56:65 1-33
[23] Nona Math, Bona Kath, (2021)  naslovak dio  Knjiga stanja 14-15
[44] <u>http://neki.com/web/sajt/u.html </u> accessed (2024) 12.05.2024.
[5]format (45-66) koji [5] nema nam smisao 77
[1] Vet Erinn, Nodt Mat Sć, Petra Stetra, (1020)  naslovni  j. happen. 5:6 1-3

We first briefly explain what is tested by using these example references:

- The first record should be of journal type. It tests also multiple authors, handling two first names, handling of local (Croatian diacritics, eastern UTF-8 coding) characters, basic HTML-formatting and searching of the journal abbreviation in locally stored ISI-1997 JSON database (*Abh. Akad. Wiss. Lit. Mainz Math.-Nat.wiss. Kl.*).
- The second record should describe the book format, and should be distinguished from journal record type.
- The third is a web type reference, and should be recognized as such.
- The fourth is some record in incorrect format and should not be recognized.
- Finally, the fifth record has three authors, is initially in journal format, but the journal abbreviation is not found in the database.


**Figure 3.** Screenshot of RefStyler HTML page after RefStilling some example references. Some details described in the text.

From Figure 3. it is possible to analyze how actually did RefStyler script perform after being fed with input and output formats (given at the Figure 3, stated at following the bold text of the input and output format for the three reference types) and references (also bold section "List input data" in Figure 3). First we mention what kind of changes in reference styling we requested:

For "journal" reference type we request that instead of full name, the output reference is only first initial with "." (dot). Also, the number of reference is not enclosed in square brackets, and the name of the journal is full name instead of abbreviation. The latter is, for example requested by using Descriptor "journal" in output, instead of "jd" in input format. It is seen that the output

journal references are correctly recognized (first and last record), and both are cast to correct format. However, if journal abbreviation is not found in the list, the name of the journal is missing (the last record in the "RefStilled - output Formatted" section in Figure 3). The behavior of the script for the "jd" and "journal" Descriptors relies on the locally stored journal abbreviation database.

For "book" type we request Harvard-style (surname of author, year) referencing instead of numerical referencing, while for "web" format we omit separate notion of the year, as it is usually already included in the accessed: "date" field.

Record 3 (which is actually fourth record in the text area list, as arrays in JS start numbering from 0) is correctly assigned as "NO FORMAT" as this record is not in any of the correct input formats.

Thus, as seen on Figure 3. (see "RefStilled - output Formatted" section) most of the requested changes are performed as expected. For further testing, we offer readers to run the script online at Repl.it (available at https://replit.com/@vgomzi/RefStiller). Also, this latest version (still at some alpha testing variant) is available at GitHub (Gomzi, 2022).

The software is designed to take bibliography from one format and cast it to the other. Unfortunately, as the diversity of the possible problems is huge (especially as the standard for article titles is practically non-existent, and there are no universally-accepted title separators, rendering formed RegExp's either too permissive or too restrictive), and deciding not to rely on online databases (which may be accessed if web-server in application is run, or other, more sophisticated approach is adopted) lends this issue prone to problems. However, this is, as stated previously, a sort of payoff for not being forced to build a structural database of the manuscript bibliography.

Design of not only functional but also appealing user interface is the main feature usually neglected in building of DIY-helper tools / software. The user interface in our solution consists of only a web-page, with minor CSS-style definitions, and three simple input areas: two for IN and OUT format inputs, and the third, text area in which references to be cast to different formats are pasted. While as it is built it adds to simplicity both in production and in the expected performance, it is statistically confirmed that the user interface has great impact on the user experience and satisfaction with the program performance and may significantly increase users willingness to use the software (Lynkova, 2022). Thus the development of perhaps more adequate user interface is possible way forward in further work on our present solution.

## 4. Conclusions

It may be concluded that, although the use of such DIY-solutions as developed here among general public is limited, these are still important as:

- these are made to solve problems of specific user groups / often of the users that designed the software themselves;
- these hold a lot more outcome in the sense of novel acquired knowledge / developed skills etc., so such software solutions are of great heuristic/methodological potential in teaching;
- these are useful as a pool of approaches and ideas that may prove important for extending standards, or offering complementary views on solving problems.

Specific solutions thus not only solve specific problems without introducing additional effort burden, but also serve as a resource of possible alternative views on how to approach problems, which may prove beneficial in further development of new applications.

Such solutions are also very F4P-specific, in the sense that are specifically targeted to the problems of certain users or user groups. Main issue in using user-developed, non-commercial products is the problem of their distribution, or the problem that interested users may not easily become aware of their existence at all. Thus it may be of benefit to develop an updated database of tools available for classes of tasks. Finding the available program solution for specific task may be as much of a problem comparable sometimes in effort required as developing the tool itself. This is especially so, as it is not easy to know what are real capabilities of the available programs unless these are tested by the user him- or herself. This further puts an emphasis on what are the important points that would promote the use of a large pool of user-designed software solutions available. Apart from the general database of code tools classified by the problem fields, clearly and honestly described and documented software capabilities would be of great benefit for DIY-solutions to be used to a larger extent.

**Nomenclature**

| | |
|---|---|
| F4P | Fit for purpose |
| DIY | Do it yourself |
| JS | JavaScript |
| JSON | JavaScript Object Notation |
| ECMA | European Computer Manufacturers Association |
| CGI | Common Gateway Interface |
| ISI | Institute for Scientific Information |
| CSS | Cascading Style Sheet |

**Appendix**

Appendix: JSON - formatted journal abbreviation list ISI-1997 (approx 13000 lines) available as SI.

**References**

Anderson, D. J., Zheglov, A. 2018. *Fit for Purpose: How Modern Businesses Find, Satisfy, & Keep Customers*, Blue Hole Press.
*Anystyle.io,* 2022. Available at: https://anystyle.io/ (Accessed: 30 November 2022).
Atkinson, P. 2006. Introduction: Do It Yourself: Democracy and Design *Journal of Design History*, Vol. 19, No. 1, pp. 1-10
Augustyn, A. (no date) *Market equilibrium, or balance between supply and demand.* Available at: https://www.britannica.com/topic/supply-and-demand/Market-equilibrium-or-balance-between-supply-and-demand (Accessed: 1 December 2022).
Bailey, J., Steeves, V. 2015. *eGirls, eCitizens: Putting Technology, Theory and Policy into Dialogue with Girls' and Young Women's Voices*, University of Ottawa Press
Baker, J.B. 2007. Beyond Schumpeter vs. Arrow: how antitrust fosters innovation. *Antitrust Law Journal*, Vol. 74, No. 3, pp. 575-602
*Citation Style Language,* 2022. Available at: https://citationstyles.org/ (Accessed: 30 November 2022).
*Clarivate - data, insights and analytics for the innovation lifecycle,* 2022. Available at: https://clarivate.com/ (Accessed: 30 November 2022).
*Compatibility and System Requirements | EndNote,* 2022. Available at: https://endnote.com/product-details/compatibility, (Accessed: 5 December 2022).
*EndNote | The best reference management tool,* 2022. Available at: https://endnote.com/ (Accessed: 30 November 2022).
Esser, H. 2020. *Fit for purpose. Agile? Lean? Design thinking? Six…* Available at: https://medium.com/@hendrik_esser/fit-for-purpose-e442b9015ec7 (Accessed: 30 November 2022).
Fang, X., Zhou, J., Zhao, H., Chen, Y. 2022. A biclustering-based heterogeneous customer requirement determination method from customer participation in product development *Annals of Operations Research* Vol. 309, No.2, pp. 817-835
Gal, M.S., Padilla, J. 2010. The follower phenomenon: implications for the design of monopolization rules in a global economy, *Antitrust Law Journal*, Vol. 76, No. 3, pp. 899-928
Galletly, T. (no date) *7 Reasons Employees Won't Use Your New Software.* Available at: https://www.codesigned.com/blog/reasons-employees-arent-using-new-software (Accessed: 30 November 2022).
Gomzi, V. 2022. *GitHub - vgomzi/RefStiller: JS Bibliography style translator*, Available at: https://github.com/vgomzi/RefStiller (Accessed: 5 December 2022).
Gregory, P.M. 1948. Fashion and Monopolistic Competition. *Journal of Political Economy*, Vol. 56, No. 1, pp. 69-75
International Organization for Standardization, 1997. *ISO 4:1997(en)* Available at: https://spo.nmfs.noaa.gov/sites/default/files/List_of_Journal_Abbreviations_final.pdf (Accessed: 5 December 2022).
*JabRef - Free Reference Manager,* 2022. Available at: https://www.jabref.org/ (Accessed: 30 November 2022).
*JavaScript Versions,* 2020. Available at: https://www.w3schools.com/Js/js_versions.asp (Accessed: 5 December 2022).
Lennon, B. 2018. JavaScript Affogato: Programming a Culture of Improvised Expertise, *Configurations*, Vol. 26, No 1, pp. 47–72
Liu, Y. 2007. The Long-Term Impact of Loyalty Programs on Consumer Purchase Behavior and Loyalty, *Journal of Marketing*, Vol. 71, No. 4, pp. 19-35
Lynkova, D. 2022. *31+ User Experience Stats 2022 [Everything You Need To Know]*, Available at: https://techjury.net/blog/user-experience-stats/ (Accessed: 5 December 2022).
*Mendeley - Reference Management Software,* 2022. Available at: https://www.mendeley.com/ (Accessed: 30 November 2022).
Munger, M.C. 2022. Giants among us: do we need a new antitrust paradigm? *Constitutional Political Economy* Vol. 33, No 4, pp 445 - 460
Muralidharan, S., Men, L. R. 2015. How Peer Communication and Engagement Motivations Influence Social Media Shopping Behavior: Evidence from China and the United States *Cyberpsychology, Behavior, and Social Networking* Vol. 18, No 10, pp 595 - 601
Nallasivam, A., Selvaraj, C., Kalavathy, K. S., Kiran, P., Humnekar, T. D. 2023 *Effect of Social Network System (Peer Inputs) in Influencing the Consumer Conformity Behavior in Product Customization System*, in: Yadav, S., Jain, P. K., Kankar, P. K., Shrivastava, Y. (eds) Advances in Mechanical and Energy Technology. Lecture Notes in Mechanical Engineering. pp. 307-321, Springer, Singapore.
Ram S., Anbu, K. J. P. 2014. The use of bibliographic management software by Indian library and information science professionals *Reference Services Review* Vol. 42, No 3, pp. 499-513
Ramchandra, S. 2016. Chicago and APA style manual in research activities: a comparative study, *Bulletin of the Deccan College Research Institute*, Vol. 76, pp. 163-172

Rokni L., Ahmad A. P., Rokni M. B. 2010. A comparative analysis of writing scientific references manually and by using Endnote bibliographic software. *Pakistan Journal of Medical Sciences*, Vol. 26, No 1, pp. 229-232

Scaffidi C., Myers, B., Shaw, M. 2009. *Fast, Accurate Creation of Data Validation Formats by End-User Developers* in:

Shulz, S. 2022. *33 Software Development Statistics, Trends, and Insights*, Available at: https://ddiy.co/software-development-statistics/ (Accessed: 5 December 2022).

*Social Buzz - Free Social Mentions Search and Monitoring*, 2022. Available at: https://www.social-searcher.com/ (Accessed: 29 November 2022.)

Taddei, F., Vulić, M., Radman, M., Matić, I. 1997. *Genetic variability and adaptation to stress* in: Bijlsma, R., Loeschcke, V. (eds) Environmental Stress, Adaptation and Evolution. Experientia Supplementum, Vol. 83. Part 5, pp. 271-290, Birkhäuser, Basel.

Tarullo, D. K. 2000. Norms and Institutions in Global Competition Policy, *The American Journal of International Law*, Vol. 94, No 3, pp. 478-504

University of Chicago Press Staff (Ed) 2010. *The Chicago Manual of Style, 16th ed.* The University of Chicago Press, Chicago

Ünver, H. A. 2018. *Artificial Intelligence, Authoritarianism and the Future of Political Systems*, Centre for Economics and Foreign Policy Studies

US House of Representatives, Judiciary Committee, Subcommittee on Antitrust, Commercial and Administrative Law, 2020. *Investigation of competition in digital markets: Majority staff report and recommendations*, Subcommittee on Antitrust, Commercial and Administrative Law of the Committee on the Judiciary

V. Pipek et al. (Eds.): End-User Development. IS-EUD 2009, LNCS, Vol. 5435, pp. 242–261, Springer-Verlag, Berlin, Heidelberg

Valaei, N., Nikhashemi, S.R. 2017. Generation Y consumers' buying behaviour in fashion apparel industry: a moderation analysis, *Journal of Fashion Marketing and Management.* Vol. 21, No 4, pp. 523-543

Watts, S. 2018. *3 Critical End User Experience Metrics for Application Performance*, Available at: https://www.bmc.com/blogs/end-user-experience-metrics/ (Accessed: 5 December 2022).

*Web of Science*, 2022. Available at: https://www.webofscience.com (Accessed: 30 November 2022).

Wijenayake, S. 2020. Understanding the dynamics of online social conformity, *Proceedings of the 3rd ACM Conference on Computer Supported Cooperative Work, CSCW*, pp 189 - 194

Wijenayake, S., Hu, J., Kostakos, V., Goncalves, J. 2021. *Quantifying the Effects of Age-Related Stereotypes on Online Social Conformity* in: Human-Computer Interaction – INTERACT 2021. Lecture Notes in Computer Science, Vol. 12935, pp 451 - 475, Springer.

Willighagen L. G. 2019. Citation.js: a format-independent, modular bibliography tool for the browser and command line. *PeerJ Computer Science* Vol. 5, No e214

Wolff, T. E. 1992. Personal bibliographic databases - an industrial scientists perspective *Database* Vol.15, No 2, pp. 34-40

*YouTube | EndNoteTraining*, 2022. Available at: https://www.youtube.com/user/EndNoteTraining/videos, (Accessed: 5 December 2022).

*Zotero | Your personal research assistant*, 2022. Available at: https://www.zotero.org/ (Accessed: 30 November 2022).

# Financial Literacy of Management and Business Performance: trends and challenges

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**Abstract**

Measuring financial literacy is attracting increasing attention. Financial knowledge is very important, both for individuals and for companies. It can be seen as a tool for the growth and development of profit-oriented organizations. Managers are expected to have the sufficient financial knowledge to make quality decisions related to the growth and development of the company. Bearing in mind that every managerial decision has an impact on the performance of the company, the aim of this paper is to point out the importance of financial literacy for the business success of the company.

*Keywords: Financial literacy, management, business performance.*

## 1. Introduction

Interest in financial literacy has been growing in recent years. Several studies from different countries show that financial literacy of individuals affects financial decision-making and their behavior, which is consistent with the claim that a higher level of financial knowledge results in There are various definitions of financial knowledge. Noctor et al. (1992) were among the first to define the concept of financial literacy as follows: "financial knowledge that leads to informed decision-making". The uncertainty of the business environment often leads managers to adapt in order to maintain the existence of the company. In an increasingly risky and globalized market, managers are expected to make financial decisions based on good information. Financial literacy is a set of skills and knowledge that enable an individual to make an appropriate financial decision. However, there is no comprehensive definition of financial literacy that would apply to the owner (manager) and businesspeople.

In general, there is no agreed single or specific definition for accounting and financial literacy. Most authors have defined accounting and financial literacy in different ways about the purpose and measurement of accounting and financial literacy. Coates et al. (2007) indicated that the definition of financial literacy includes the concept of accounting literacy. It is the ability to understand the important accounting judgments that management makes, why management makes them, and how management can use those judgments in manipulating financial statements. Nayebzadeh et al. state that financial literacy provides the ability to read, analyze, understand financial choices, plan for the future and properly respond to incidents that affect everyday financial decisions. Financial literacy has been defined as "the ability to make informed judgments and to take effective actions regarding the current and future use and management of money" (U.S. Department of Treasury, 2008). Businesses are failing in recent times due to the illiteracy of management and stakeholders on how to deal with the financial aspect of their activities (Gbemigun & Agbaje, 2022).

Financial management requires knowledge and skill in accounting (Herawati et al., 2020). Accounting information provides financial statements that are able to measure business performance, showing the financial position and cash flow generated. This information allows them to identify and predict problems and then take corrective action in a timely manner. A user of accounting information can not only calculate profit and loss, but most importantly can understand the meaning of profit and loss for their business. Chetthamrongchaia et al. (2019) point out that accounting literacy is always an important element that can determine the success or failure of a business because this literacy helps in record keeping, cost management, cost reduction, and other accounting functions of the company. Financial management in older companies is more traditional and conservative than financial management in newer companies (Trombetta, 2016).

## 3. Behavioral finance and decison choices

Human beings are a set of complex systems and are influenced by various factors that affect their decision choices (Kalra Sahi, 2012). Behavioral finance is a fully developed discipline that also has its theoretical basis as methods and methodology; and ranging from ethnographic research to experiments (DeBondt et al., 2010). Behavioral finance has a pragmatic goal, which is the analysis of business decision-making. Managers should be able to use information effectively, which will enable effective and valid decision-making. With the strong development of financial markets around the world, more and more scholars are getting involved in behavioral finance research. Neurofinance is a very young discipline that attempts to link brain processes with investment behavior (Kalra Sahi, 2012).

A rational decision will then enable managers to solve problems in performing the managerial function and thereby improve their managerial performance. With the strong development of financial markets around the world, more and more scholars are involved in behavioral finance research (Huang et al., 2016). Determining the impact of behavioral influences on the stock market has significant implications for investment analysis and portfolio management as more demanding forms of financial literacy for quality business decision-making (Hossain & Siddiqua, 2022).

Financial literacy is the ability to analyze financial options, plan for the future and respond appropriately to events. Behavioral finance deals with the study of the application of psychology to finance (Muradoglu & Harvey, 2012), with a focus on cognitive biases at the individual level. As Hastings et al. (2013) point out, there is a need for more theory and testing of the effects of feelings on financial decisions and overall outcomes, on the one hand, and to make the transition from behavioral finance to social finance, which studies the structure of social interactions, how financial ideas spread and evolve and how social processes affect financial outcomes, on the other hand. Financial literacy conceptually represents the way in which businesses manage financial knowledge and strategy, which significantly affects the behavior, awareness and consciousness of decision-makers (Gbemigun & Agbaje, 2022).

## 3. Financial inclusion of women entrepreneurs

Entrepreneurial activities and entrepreneurs do not emerge in isolation but it is a highly integrated and complex system with multiple actors (Cowell et al., 2018). Entrepreneurial culture is not static but dynamic and constantly changing depending on the nature of social interaction between entrepreneurs and other players (Motoyama & Knowlton, 2017). Financial literacy, in light of the new business reality, is the ability to adequately monitor financial resources during the life cycle and to effectively connect them with financial products and services. Financial literacy refers to discernment and making effective decisions about the use of financial management (Gavigan, 2010). This is an area that requires knowledge, skill, attitude and experience with the goals to be addressed for the survival of the firm; profit maximization; sales maximization; winning a certain market share; minimizing staff turnover and internal conflicts; and wealth maximization (Jacobs, 2001).

Female entrepreneurship is a symbol of balanced growth in society (Goel & Madan, 2019). Women start independent businesses to be economically independent, and in addition, one of the incentives is empowerment. The financial inclusion schemes offered by the government aim to encourage a large number of women in the country to take up entrepreneurship. The financial inclusion of women has become a global research agenda. Financial knowledge affects key outcomes, including borrowing, saving, and investment decisions (Lusardi & Mitchell, 2014).

Entrepreneurial learning happens for a variety of reasons. Some of these are personal, social and environmental factors. It is emphasized that entrepreneurial learning helps in the development of various competencies such as personal, social, managerial and entrepreneurial competencies that are necessary for the efficient operation of the enterprise and its survival (Lenka & Agarwal, 2017). The level of financial literacy among entrepreneurs worldwide is generally low (Anshika & Singla, 2022). Financial literacy has been found to improve firm performance, especially when funds are readily available, as insufficient funds disrupt a firm's operational efficiency, hindering its growth and survival. Education and training at both the secondary and tertiary levels with an emphasis on financial literacy and entrepreneurial skills can have significant implications for the development of small, micro and medium enterprises and the growth of young entrepreneurs in general.

A review of the relevant literature found that studies provide mixed evidence on the key determinants of financial inclusion among women entrepreneurs globally (Hasan et al., 2022). In this context, it is important to point out that financial literacy must include digital literacy. The reason is that it is impossible to use innovative technologies for more efficient financial management in organizations without a satisfactory level of digital literacy. However, despite its importance, there is a lack of literature in the field of digital financial literacy on women's financial inclusion. It remains fragmented due to the absence of a comprehensive review that consolidates the intellectual structure of the field.

## 4. Conclusions

The main cause of financial problems in organizations is improper financial management. In principle, financial literacy is essential in any economy. Financial and accounting literacy is important in controlling the operations of organizations (their business activities and performance) in today's complex and turbulent environment. Making business decisions requires financial literacy. Entrepreneurs (regardless of age and gender) are consistently engaged in decision-making activities related to the acquisition,

distribution and use of resources, resulting in financial consequences, and for efficiency, entrepreneurs must be financially literate at a satisfactory level. Financial literacy is of increasing importance in our time, as it largely ensures the making of rational investment decisions.

The uncertainty of the business environment requires managers of today's organizations to make effective decisions in order to improve performance through long-term oriented, externally focused information. A new era of understanding human emotions, behavior and feelings, previously dominated by the study of financial markets, has begun. The field of behavioral finance attracts not only the attention of academics, but also various companies, financial intermediaries and entrepreneurs, which ultimately gives this topic even more intense relevance.

State support through its institutional capacities should provide support to small and medium-sized enterprises in the field of strengthening financial (accounting) literacy, in order to ensure profitable business in the long term. The topic of financial literacy of managers for business decision-making is still very topical and it is necessary to expand the research fund in this segment.

## References


Anshika, A. and Singla, A. (2022). Financial literacy of entrepreneurs: a systematic review, Managerial Finance, 48(9/10), 1352-1371. https://doi.org/10.1108/MF-06-2021-0260.

Arthur, C. (2012). Financial Literacy Education. Financial Literacy Education, 1–12. doi:10.1007/978-94-6091-918-3_1.

Calma, A. (2019). Journal of Behavioral Finance in retrospect: A review of its publications as a case in behavioral finance, *Review of Behavioral Finance*, 11(4), 468-476. https://doi.org/10.1108/RBF-06-2018-005.

Chetthamrongchaia, P., Foosirib, P., & Jermsittiparsertc, K. (2019). Enhancing perceived crop yield through farmer's accounting literacy and agricultural extension services knowledge: Moderating role of farming training. International Journal of Innovation, *7*(2), 178-197.

Coates, D., Marais, M., Weil, R. (2007). Audit committee financial literacy: A work in progress, Journal of Accounting, Auditing, and Finance, 22 (2), 175.

Cowell, M., Lyon-Hill, S. and Tate, S. (2018). It takes all kinds: understanding diverse entrepreneurial ecosystems, Journal of Enterprising Communities: People and Places in the Global Economy, 12(2), 178-198.

DeBondt, W., Forbes, W., Hamalainen, P., Gulnur, M. Y. (2010). What can behavioural finance teach us about finance?. Qualitative Research in Financial Markets, 2(1), 29–36. doi:10.1108/17554171011042371.

Gavigan, K. (2010). Show me the money resources: Financial literacy for 21st century learners (pp. 28(25):24-27.): Library Media Connection.

Gbemigun, C. O., & Agbaje, W. H. (2022). Financial Accounting Literacy and Growth of Small and Medium Scale Enterprises (SMEs) in Ondo State, Nigerian Academy of Management Journal, 17(2), 105–114. Retrieved from https://namj.tamn-ng.org/index.php/home/article/view/190.

Goel, N. and Madan, P. (2019). Benchmarking financial inclusion for women entrepreneurship – a study of Uttarakhand state of India", Benchmarking: An International Journal, 26(1), 160-175. https://doi.org/10.1108/BIJ-01-2018-0023.

Hasan, R., Ashfaq, M., Parveen, T. and Gunardi, A. (2022). Financial inclusion – does digital financial literacy matter for women entrepreneurs?, International Journal of Social Economics, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/IJSE-04-2022-0277.

Hastings, J. S., Madrian, B., C., Skimmyhorn, W. L. (2013). Financial literacy, Financial Education and Economic Outcomes, Annual Review of Economics, 5, 347-373.

Herawati, N. T., Candiasa, I. M., Yadnyana, I. K., & Suharsono, N. (2020). The influence of gender and financial literacy on accounting implementation in small and micro business (SMES). International Journal of Innovation, Creativity and Change, 12(4), 36-50.

Huang, J. Y., Shieh, J. C. P. and Kao, Y.-C. (2016). Starting points for a new researcher in behavioral finance, *International Journal of Managerial Finance*, 12(1), 92-103. https://doi.org/10.1108/IJMF-05-2015-0111.

Jacobs, A. (2001). Financial Management IV (FMA 401-V): Study guide 1 (3rd ed.). Pretoria: Technikon S.A.

Kalra Sahi, S. (2012). Neurofinance and investment behaviour, *Studies in Economics and Finance*, 29(4), 246-267. https://doi.org/10.1108/10867371211266900.

Kansheba, J. M. P., & Wald, A. E. (2020). Entrepreneurial ecosystems: a systematic literature review and research agenda. Journal of Small Business and Enterprise Development, ahead-of-print(ahead-of-print). doi:10.1108/jsbed-11-2019-0364.

Lenka, U. and Agarwal, S. (2017). Role of women entrepreneurs and NGOs in promoting entrepreneurship: case studies from Uttarakhand, India, Journal of Asia Business Studies, 11(4), 451-465. https://doi.org/10.1108/JABS-07-2015-0088.

Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. American Economic Journal: Journal of Economic Literature, 52(1), 5-44.

Motoyama, Y. and Knowlton, K. (2017). Examining the connections within the startup ecosystem: a case study of St. Louis, Entrepreneurship Research Journal, 7(1), doi: 10.1515/erj2016-0011.

Muradoglu, G. and Harvey, N. (2012). Behavioural finance: the role of psychological factors in financial decisions, *Review of Behavioral Finance*, 4(2), 68-80. https://doi.org/10.1108/19405971211284862.

Nayebzadeh, S., Taft, M. K., & Sadrabadi, M. M. M. (2013). The study of university professors' financial literacy. International Journal of Academic Research in Accounting, Finance and Management Sciences, 3(3), 111-117.

Nigam, R. M., Srivastava, S. and Banwet, D. K. (2018). Behavioral mediators of financial decision making – a state-of-art literature review, Review of Behavioral Finance, 10(1), 2-41. https://doi.org/10.1108/RBF-07-2016-0047.

Noctor, M., Stoney, S. and Stradling, R. (1992), Financial Literacy: A Discussion of Concepts and Competencies of Financial Literacy and Opportunities for its Introduction into Young People's Learning, National Foundation for Education Research, London.

Sharma, A. and Kumar, A. (2020). A review paper on behavioral finance: study of emerging trends, *Qualitative Research in Financial Markets*, 12(2),137-157. https://doi.org/10.1108/QRFM-06-2017-0050.

Trombetta, M. (2016). Accounting and finance literacy and self-employment: An exploratory study. IE Business School, IE University, Spain.

U.S. Department of Treasury, 2008, https://home.treasury.gov/policy-issues/financial-sanctions/civil-penalties-and-enforcement-information/2008-enforcement-information.

# Gender Competitiveness in Social Science: A Bibliometric Analysis

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**Abstract**

Gender inequality persists in various areas. This paper identifies the main research domains and topics of gender competitiveness between 2015 and 2021, through a bibliometric analysis. We have selected 2000 documents, according to PRISMA, from the Scopus database and we have examined them using R (programming language). The aim of this paper was to analyze researchers´ productivity and current trends in the social science area for the last seven years to find out the emerging themes they deal with related to gender competitiveness. We found that gender competitiveness is concentrated in four main research domains: 1) social issues; 2) education and its impact; 3) sustainable development and social responsibility including corporate governance; 4) goals of competitiveness including tourism organization. These research domains are examined by the main scientific communities that prevail in this international research. This review offers an overview of the most relevant research and provides a benchmark for future research.

*Keywords:* gender competitiveness, research productivity, social science, bibliometric analysis.

## 1. Introduction

According to OECD, one of the defining challenges of our time is the fight for gender equality. Although progress has been made in many areas, gender inequality remains an unexplored issue in many areas.

Studies confirm that gender differences in competitiveness are significant and that competitiveness correlates with educational and labor market outcomes (Niederle, 2017). The gender difference in competitiveness in the educational environment is influenced by the difficulty of the given task (Hoyer et al., 2020). Overconfidence, risk attitudes, and ambiguity are among the factors that most often measure the level of competitiveness between women and men (Saccardo et al., 2017). Gender inequalities in the choice of education and subsequent results in the labor market can be predicted based on the willingness to compete (Buser et al., 2017). The lack of women in high-ranking positions in companies is explained through gender differences in competitiveness. Risk aversion and the fact that women are less competitive than men are considered to be among the general reasons for these differences (Petrie and Segal, 2015). The gender difference in the willingness to compete is not directly affected by stress, but stress overall reduces competitiveness, which for women is related to their performance (Cahlíková et al., 2019).

Internal and external factors influence companies when deciding on ecological innovations contribute to the sustainability of agriculture in various ways (Kiefer et al., 2018). In small and medium enterprises, the main role in engaging in sustainability activities is played by owners together with employees (Giudice et al., 2017).

Current studies in the field of motivational and technological factors suggest that the perception of risk, benefits, quality, and trust in the subject are significant predictors of the evaluation of the degree of involvement in the sharing economy (Lee et al., 2018). Education, lifelong learning, and their impact on income inequality and economic growth can be evaluated based on information and communication technologies. The availability of modern technologies has a positive effect on inequality and economic growth through education (Tchamyou et al., 2019). Working from home currently has great cost-saving potential. This way of working is considered innovative and brings new challenges to organizations. As problems appear in this form of work, problems with information and communication technologies appear in particular (Raišiené et al., 2020).

## 2. Methodological design of the bibliometric analysis

The bibliometric analysis was performed according to PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) in three steps (Figure 1). The first step represents the identification of articles in the Scopus database to create our database. Gender competitiveness was used to identify the main documents. The keywords of the query were ´gender´ and ´competitiveness´. To focus on the most up-to-date articles, the period was limited to the last 6 years, from 2015 to 2021. The language was limited to English; only open-access articles were searched in social sciences as a subject area. In this step, 2464 articles were identified.

In the second step, a screening of these articles was carried out, where only documents of the article type were included in our database with the final stage of publication and were searched only in journals. Finally, 2000 articles were selected to build our database (Figure 1).

In the third step, the analysis was performed (Figure 1). Bibliometric analysis was based on the tools used in Scopus. This analysis allowed us to examine articles according to the following variables: countries, journals, author´s keyword, most-cited articles, and most-productive authors related to gender competitiveness. Based on this analysis, we examined the relation between the main research domain and the main topic in the highly-cited articles. Following this, the scientific communities and emerging topics were identified.

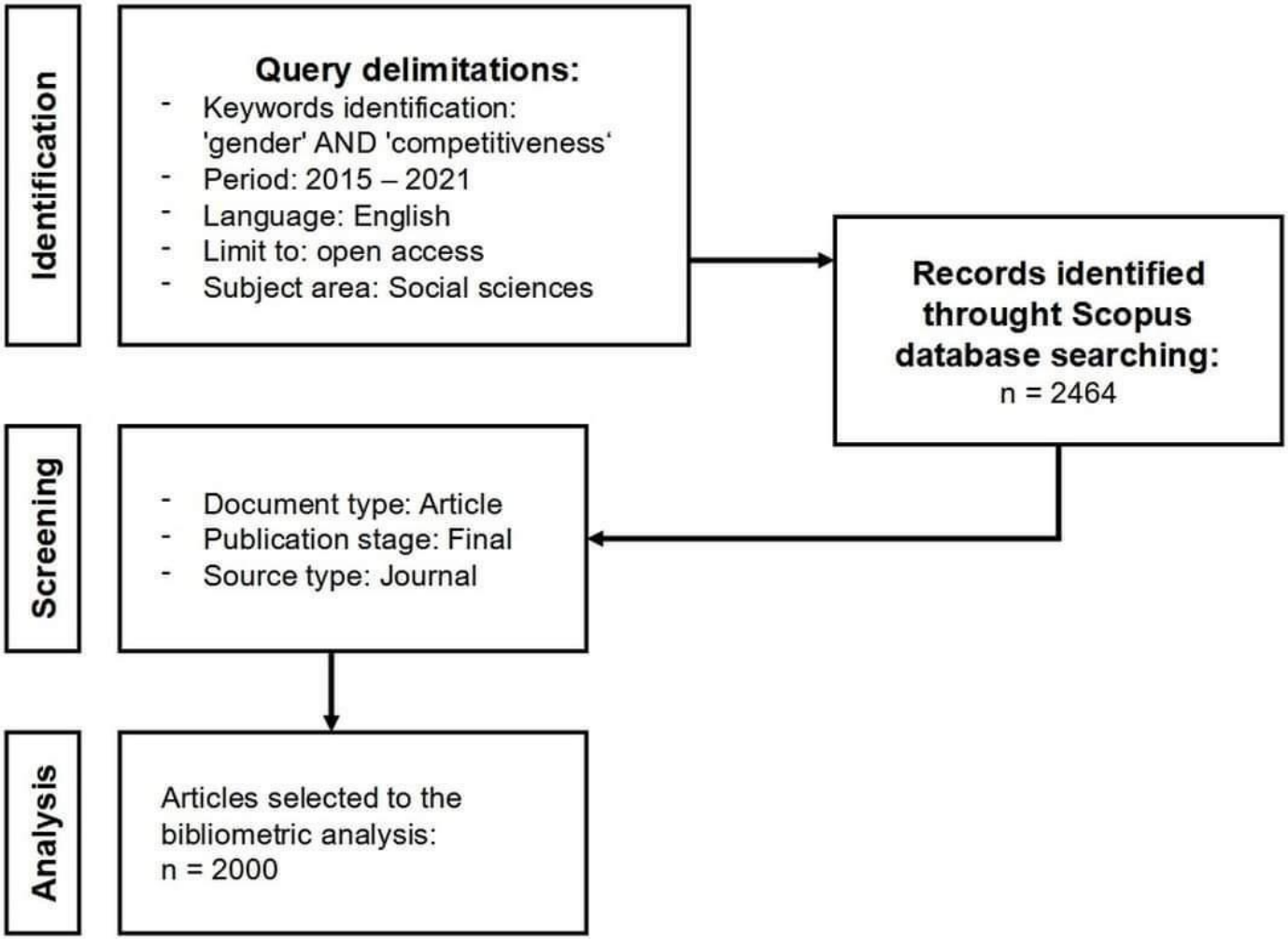


**Figure 1.** Records identified through Scopus database. Workflow of the methodological design of the bibliometric analysis in three steps: 1) identification; 2) screening of documents; 3) final selection for bibliometric analysis.
**Source 1:** own processing

## 3. Results and Discussion

This section provides a precise and concise description of the results and conclusions.

### *3.1 Counties*

Among the 97 countries identified related to research about gender competitiveness in the past 6 years, the United Kingdom is the biggest publisher with 26% of the articles published, followed by the United States (22%), then China (14%), Spain (13%), and Italy (9%) (Table 1). Following there were Germany and Netherlands as upper-middle publisher countries.

**Table 1.** The top 15 countries publishing articles on gender competitiveness

| Order | Country | Number of publication |
|---|---|---|
| 1 | United Kingdom | 511 |
| 2 | United States | 447 |
| 3 | China | 283 |
| 4 | Spain | 266 |
| 5 | Italy | 175 |
| 6 | Germany | 172 |
| 7 | Netherlands | 134 |
| 8 | Slovakia | 123 |
| 9 | Australia | 119 |
| 10 | Romania | 119 |
| 11 | Czechia | 104 |
| 12 | Poland | 91 |
| 13 | Finland | 89 |
| 14 | South Africa | 89 |
| 15 | Portugal | 85 |

**Source 2:** own processing

*3.2 Journals*

The 2000 articles were published in 875 journals, of which 28% were published in the 10 journals that published the most in the past 6 years (Table 2). Two main journal groups were distinguished: (1) multidisciplinary journals relating to social sciences and gender studies, and (2) disciplinary journals in gender studies.

**Table 2.** The top 10 journals publishing articles on gender competitiveness

| Order | Source | Number of articles |
|---|---|---|
| 1 | Sustainability (Switzerland) | 392 |
| 2 | Sage Open | 31 |
| 3 | Economics & Sociology | 28 |
| 4 | Journal of International Studies | 25 |
| 5 | Geopolitics, History, and International Relations | 19 |
| 6 | Journal of Business Ethics | 15 |
| 7 | Journal of Open Innovations | 14 |
| 8 | Journal of Economic Psychology | 13 |
| 9 | Journal of self-governance and management economics | 13 |
| 10 | Economies | 11 |

**Source 3:** own processing

*3.3 Author´s keywords*

More than 6100 keywords were identified in the 2000 articles. The most frequent keywords shed some light on: 1) the topics studied over the past 6 years, such as gender, sustainability, education, and motivation; 2) the social responsibility, such as sustainable development, and corporate social responsibility; 3) the field of technology, such as innovation, internet of things; 4) psychological level, such as motivation (Table 3.).

**Table 3.** 20 most frequent keywords related to gender competitiveness

| Keywords | Frequency | Keywords | Frequency |
|---|---|---|---|
| Gender | 120 | Neoliberalism | 27 |
| Sustainability | 84 | Competitiveness | 26 |
| Higher education | 45 | SMEs | 25 |
| Sustainable development | 38 | Diversity | 23 |
| Entrepreneurship | 34 | Gender differences | 23 |
| Innovation | 34 | Motivation | 23 |

| | | | |
|---|---|---|---|
| Corporate social responsibility | 32 | Performance | 21 |
| Tourism | 30 | Gender equality | 19 |
| Covid-19 | 28 | Internet of things | 19 |
| Education | 28 | Competition | 18 |

**Source 4:** own processing

*3.4 Articles*

Three main domains were identified in the 10 highly cited articles related to gender competitiveness in social sciences over the last 6 years: 1) sustainable development; 2) governance; 3) field of technology (Table 4.).

The United Kingdom is highlighted among the most-cited articles in the last 6 years, based on the first author affiliation. Except for the review article of K. Salemink et al. (CSIRO, Canada), R. Yung and C. Khoo-Lattimore (Griffith University, Australia), and J. Baas et al. (International Center for the Study of Research, Netherlands), the most-cited articles produce knowledge grounded on database analysis or empirical analysis. The articles were published in disciplinary journals and multidisciplinary journals addressing varied topics, such as economy, development, entrepreneurship, or environment (Table 4.).

**Table 4.** Most-cited articles

| Times cited | Authors | Title | Year | Source | First authors´ affiliation | First authors´ country |
|---|---|---|---|---|---|---|
| 1064 | Murray A., Skene K., Haynes K. | The circular economy: An interdisciplinary exploration of the concept and application in a global context | 207 | Journal of Business Ethics | Winchester Business School | UK |
| 377 | Stafford-Smith et al. | Integration: the key to implementing the sustainable development goals | 2017 | Sustainability Science | Commonwealth Scientific and Industrial Research | Canada |
| 310 | Salemink K., Strijker D., Bosworth G. | Rural development in the digital age: a systematic literature review on unequal ICT availability, adoption, and use in rural areas | 2017 | Journal of Rural Studies | University of Groningen | Netherlands |
| 300 | Gereffi G., Lee J. | Economic and social upgrading in global value chains and industrial clusters: why governance matters | 2016 | Journal of Business Ethics | Duke University | USA |
| 299 | Rose-Ackerman S. | Corruption and government: causes, consequences, and reforms | 2016 | Cambridge University Press | Yale University | USA |
| 273 | Yung R., Khoo-Lattimore C. | New realities: a systematic literature review on virtual reality and augmented reality in tourism research | 2017 | Current Issues in Tourism | Griffith University | Australia |
| 239 | Malecki E. J. | Entrepreneurship and entrepreneurial ecosystems | 2018 | Geography Compass | Ohio State University | USA |
| 189 | Baas J. et al. | Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies | 2020 | Quantitative Science Studies | International Center for the Study of Research | USA |
| 146 | Gray M. | The depths of the cut: the uneven geography of local government austerity | 2018 | Cambridge Journal of Regions Economy and Society | University of Cambridge | UK |
| 143 | Rosenthal J. et al. | Clean cooking and the SDGs: Integrated analytical approaches to guide energy interventions for health and environment goals | 2018 | Energy for Sustainable Development | National Institutes of Health | USA |

**Source 5:** own processing

*3.5 Authors*

The 10 most productive authors published about three main topics related to gender competitiveness in the last 6 years: 1) gender studies – the main topic among Czech authors, A. Ključnikov and M. Civelek, both from the University of Entrepreneurship and Low in Ostrava; 2) social policy and factors – the main topic from three different European countries, L. Salavati, from University of Macerata, Italy, J. Belas, from Tomáš Baťa University in Zlín, Czechia and M. Cepel, from Pan-European University, Slovakia; 3) labor market – the main topic among Slovak authors, A. Valaskova, from University of Žilina and J. Dobrovič, from the University of Prešov (Table 5.).

**Table 5.** Top 10 authors by number of articles published

| Order | Author | No. of articles | Keywords | Journals | Affiliation | Country |
|---|---|---|---|---|---|---|
| 1 | Salvati L. | 14 | Economic downturns; Social policy; Europe; Socioeconomic change; Indicators; Land; Economic structure | - Sustainability<br>- Journal of Urban and Regional Analysis<br>- Economics<br>- Social Indicators Research | Univ. of Macerata | Italy |
| 2 | Hitka M. | 8 | Gender; Motivation; Human resources; Management; Corporate sustainability | - Social Sciences<br>- Sustainability<br>- Education Science | Technical Univ. in Zvolen | Slovakia |
| 3 | Ključnikov A. | 7 | Gender; Age; Work experience; Job positions; Educational status; Financial resources; Access to finance; Innovativeness | - Economics & Sociology<br>- Oeconomia Copernicana<br>- Journal of International Studies | Univ. of Entrepreneurship and Low in Ostrava | Czechia |
| 4 | Valaskova A. | 7 | Earnings; Internet of things; Labor market | - Economics & Sociology<br>- Sustainability<br>- Journal of International Studies | Univ. of Žilina | Slovakia |
| 5 | Belas J. | 6 | Social factors; Gender Firm age; Firm size; Market risk; Economic factors | - Economics & Sociology<br>- Journal of International Studies | Tomas Bata Univ. in Zlin | Czechia |
| 6 | Cepel M. | 6 | Social factors; Economic factors; Public sector; Financial education; Business environment | - Economics & Sociology<br>- Journal of International Studies | Pan-European Univ. | Slovakia |
| 7 | Elomäki A. | 6 | Gender policy; Governance; Economic policy; European Union; Social policy; Gender equality | - NORA-Nordic Journal of Feminist and Gender Research<br>- Australian Feminist Studies | Tampere Univ. | Finland |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | - Journal of Common Market Studies<br>- Public Money & Management<br>- European Journal of Women´s studies | | |
| 8 | Civelek M. | 5 | Age; Work experience; Job positions; Gender; Educational Status; Innovativeness | - Journal of International Studies<br>- Oeconomia Copernicana | Univ. of Entrepreneurship and Low in Ostrava | Czechia |
| 9 | Dobrovič J. | 5 | Tax system; Financial administration; Performance; Business environment | - Journal of International Studies<br>- Sustainability | Univ. of Prešov | Slovakia |
| 10 | Kot S. | 5 | Higher educational institutions; Public sector; Motivation; Market segmentation; EU countries | - International Journal of Evaluation and Research in Education<br>- Sustainability<br>- Economics & Sociology | Czestochowa Univ. of Technology | Poland |

**Source 6:** own processing

*3.6 The main research domains*

Four main research domains were identified in our analysis when considering the linkage between the author´s keywords: social issues in gender competitiveness, education and its impact, sustainable development and social responsibility including corporate governance, and goals of competitiveness including tourism organization.

The first research domain, social issues in gender competitiveness, is characterized by diverse topics linked to entrepreneurship, diversity, employment, or development. The themes of the social issues are intertwined with education and its impact (Figure 2).

The second research domain, education, and its impact are characterized by the analysis of education and its impact on the labor market, mostly in European countries (Figure 2).

The third research domain, sustainable development and social responsibility including corporate governance indicate how firms, their governance, and attitudes can influence gender inequality through. This section is also linked with technological progress, innovation, the internet of things, and working with big data as a point for assessing the state of gender competitiveness (Figure 2).

The fourth research domain, goals of competitiveness including tourism organization, is focused on gender differences linked with competitiveness including tourism organization. It is analyzed according to factors such as motivation, satisfaction, and also economic growth is examined (Figure 2).

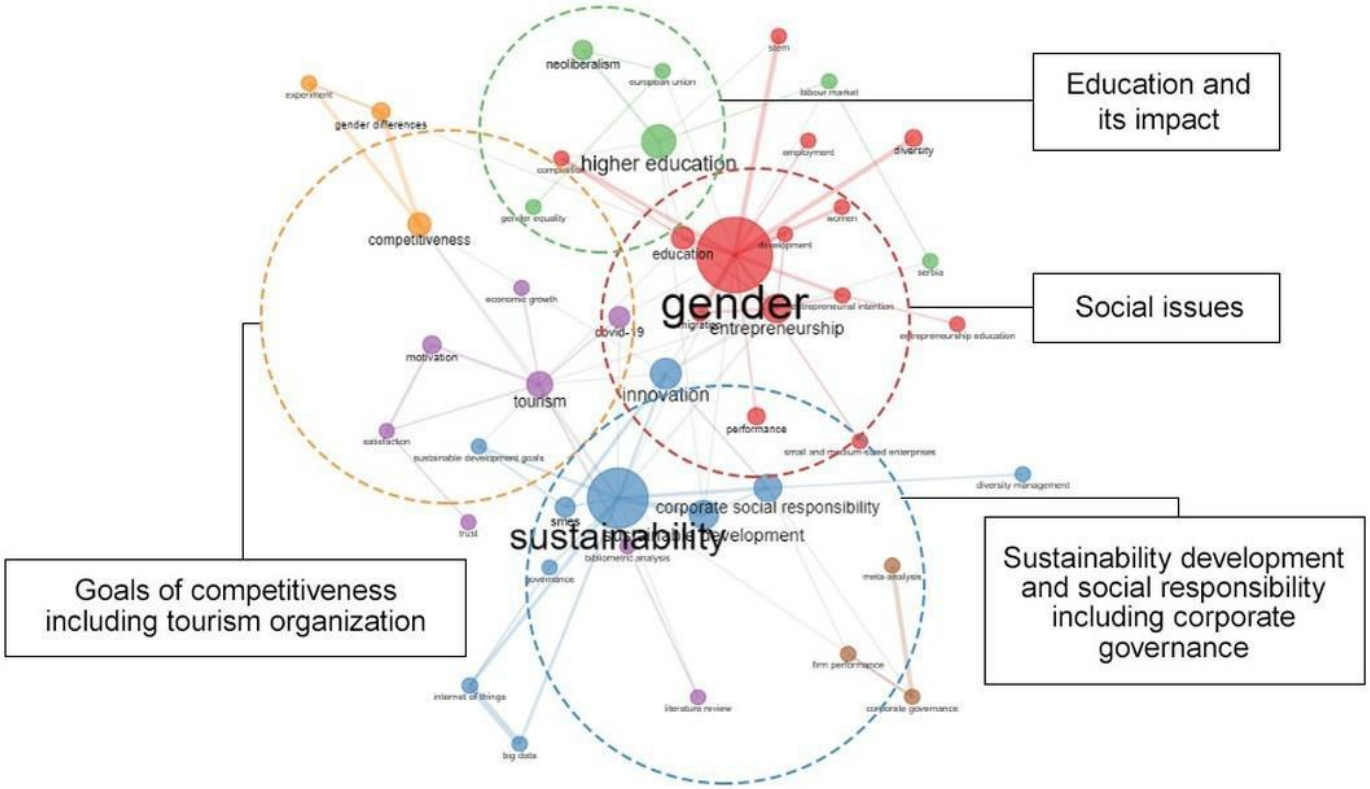


**Figure 2.** The four main research domains related to gender competitiveness over the last 6 years: social issues, education and its impact, goals of competitiveness and tourism organization, and sustainability

**Source 7:** own processing

*3.7 Main scientific communities*

Three main scientific communities were identified: gender studies, social policy and factors, and the labor market.

Gender studies were the first scientific community. It discussed topics that focus mainly on educational status, work experiences, and gender policy. This topic is characterized by the mainstream analysis of age, job positions, and gender equality. The reference authors were M. Hitka, Technical University in Zvolen (Slovakia); A. Ključnikov and M. Civelek, both from the University of Entrepreneurship and Low in Ostrava (Czechia). No reference paper was identified among the 10 most-cited articles. The main journals were the Journal of International Studies and Oeconomia Copernicana.

The second scientific community was social policy and factors. Socioeconomic changes, gender, and economic factors were the focus of the analysis. The reference authors were L. Salvati, University of Macerata (Italy), J. Belas, Tomáš Baťa University in Zlín (Czechia) and M. Cepel, Pan-European University (Slovakia). The three reference articles were: "Economic and Social Upgrading in Global Value Chains and Industrial Clusters: Why governance matters", wrote by G. Gereffi and J. Lee (2016) and published in the Journal of Business Ethics; "Corruption and Government: Causes, Consequences, and Reforms", wrote by S. Rose-Ackerman (2016) and published in Cambridge University Press. "The depths of the cut: The uneven geography of local government austerity", wrote by M. Gray (2018) and published in Cambridge Journal of Regions Economy and Society. The topic was characterized by the market, business environment, various economic structures and their consequences in gender competitiveness. The main journals were Economics & Sociology, Social Indicators Research and Economies.

The labor market was the third scientific community, focusing on two main topics: 1) financial administration; 2) sustainable development. The reference authors were J. Dobrovič, University of Prešov (Slovakia) and S. Kot, Czestochowa University of Technology (Poland). The reference articles were: "The circular economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context", wrote by A. Murray et al. (2017) and published in the Journal of Business Ethics; "Integration: the key to implementing the sustainable development goal", wrote by Stafford-Smith et al. (2017) and published in Sustainability Science. The topic was characterized by market segmentation and earnings. The main journals were Sustainability and Economics & Sociology.

*3.8 Emerging topics*

The four main research domains represent the mainstream topics studied in the scientifical research: social issues, education and its impact, sustainable development and social responsibility, goals of competitiveness. It means that these topics are consolidated topics among the scientifical community related to gender competitiveness.

Topics discussed by the top 10 authors and the main topics in the 10 highly-cited articles were aligned to the mainstream topics in the gender competitiveness. In contrast, two emerging topics were identified: 1) informational and communication technologies; 2) internet of things (Table 6.).

**Table 6.** Mainstream and emerging topics related to gender competitiveness in the past 6 years

| Topic classification | Four main research domains | Main topics of the top 10 highly cited articles | Main topics of the top 10 authors |
|---|---|---|---|
| Mainstream topic | Social issues<br>Education and its impact<br>Sustainable development and social responsibility including corporate governance<br>Goals of competitiveness including tourism organization | Governance<br>Sustainable development | Labor market |
| Emerging topic | | Information and communication technologies | Internet of things |

**Source 8:** own processing

## 4. Conclusions

Our results show that three main scientific communities have been performed the most relevant researches mostly in four domains related to gender competitiveness over last 6 years.

Two research trends emerged: information and communication technologies and internet of things. These researches show ongoing change in gender competitiveness. It is important to think about development of technologies besides mainstream research.

The bibliometric analysis of publications indexed in Scopus database allowed us to identify four main research domains: social issues, education and its impact, sustainable development and social responsibility including corporate governance, and goals of competitiveness including tourism organization. Three main research communities that have been performed the most contiguous research related to gender competitiveness in last 6 years: gender studies, social policy and factors, and labor market. Current issues were identified and trends in gender competitiveness, as information and communication technologies, and internet of things.

## References

Baas J., Schotten M., Plume A., Côté G. and Karimi R. 2020. Scopus as a curated, high-quality bibliometric data source for academic research in quantitative science studies. *Quantitative Science Studies*, Vol.1. No.1, pp. 377–386. DOI: 10.1162/qss_a_00019.

Belas J. and Sopková G. 2016. Significant determinats of the competitive environment for SMES in the context of financial and credit risks. *Journal of International Studies*, Vol.9. No.2. DOI: 10.14254/2071-8330.2016/9-2/10.

Buser T., Peter N. and Wolter S.C. 2017. Gender, Competitiveness, and study choices in high school: Evidence from Switzerland. *American Economic Review*, Vol.107. No.5, pp.125-30. DOI: 10.1257/aer.p20171017.

Cahlíková J., Cingl L. and Levely I. 2019. How stress affects performance and competitiveness across gender. *Management Science*, Vol.66. No.8, pp.3295-3798. DOI: 10.1287/mnsc.2019.3400.

Cepel M., Belas J., Rozsa Z., Strnad Z. 2019. Selected economic factors of the quality of business environment. *Journal of International Studies*, Vol.12. No.2. DOI: 10.14254/2071-8330.2019/12-2/14.

Civelek M., Ključnikov A., Fialova V., Folvarčná A. and Stoch M. 2021. Major obstacles in innovative activieties of family-owned SMEs: Evidence from Czechia. *Economics & Sociology*, Vol.14. No.2. DOI: 10.14254/2071-789X.2021/14-2/7.

Dobrovič J., Rajnoha R. and Korauš A. 2018. Effectiveness and performance of tax system in Slovak Republic in terms of its key non-macroeconomic factors. *Oeconomia Copernicana*, Vol.9. No.4. DOI: 10.24136/oc.2018.030.

Elomäki A. 2015. The economic case for gender equality in the European Union: Selling gender equality to decision-makers and neoliberalism to women's organizations. *European Journal of Women's Studies*, Vol.22. No.3, pp.288–302. DOI: 10.1177/1350506815571142.

Gereffi G. and Lee J. 2016. Economic and social upgrading in global value chains and industrial clusters: Why governance matters? *Journal of Business Ethics*, Vol.133, pp.25-38. DOI: 10.1007/s10551-014-2373-7.

Giudice M., Khan Z., Silva M., Scuotto V., Caputo F. and Carayannis E. 2017. The microlevel actions undertaken by owner-managers in improving the sustainability practices of cultural and creative small and medium enterprises: A United Kingdom-Italy comparison. *Journal of Organizational Behavior*, Vol.38. No.9, pp.1396-1414. DOI: 10.1002/job.2237.

Gray M. 2018. The depths of the cuts: The uneven geography of local government austerity. *Cambridge Journal of Regions Economy and Society*, Vol.11. No.13. DOI: 10.1093/cjres/rsy019.

Hitka M., Kucharčíková A., Štarchoň P., Balážová Ž., Lukáč M. and Stacho Z. 2019. Knowledge and human capital as sustainable competitive advantage in human resource management. *Sustainability*, Vol.11. No.8. DOI: 10.3390/su11184985.

Hoyer B., Huizen T., Keijzer L., Rezaei, S., Rosenkranz, S. and Westbrock, B. 2020. Gender, competitiveness, and task difficulty: Evidence from the field. *Labour Economics*, Vol.64, 101815. DOI: 10.1016/j.labeco.2020.101815.

Kiefer CH.P., González P. and Carrillo-Hermosilla J. 2018. Drivers and barriers of eco-innovation types for sustainable transitions: A quantitative perspective. *Business Strategy and the Environment*, Vol.28. No.1, pp.155-172. DOI: 10.1002/bse.2246.

Ključnikov A., Sobeková Majková M., Schwendemann A. and Knogler Ch. 2016. Do SMES in Slovakia face real difficulties in obtaining financing? Comparison of the studies from Slovakia and the EU. *Journal of International Studies*, Vol.9. No.3. DOI: 10.14254/2071-8330.2016/9-3/3.

Kot S., Goldbach I.R. and Slusarczyk B. 2018. Supply chain management in SMEs – Polish and Romanian approach. *Economics & Sociology*, Vol.11. No.4. DOI: 10.14254/2071-789X.2018/11-4/9.

Lee, Z.X.Y., Chan T.K.H., Bajali M.S. and Chong A.Y.-L. 2018. Why people participate in the sharing economy: an empirical investigation of Uber. *Internet Research*, Vol.28. No.3, pp.829-850. DOI: 10.1108/IntR-01-2017-0037.

Malecki E.J. 2018. Entrepreneurship and entrepreneurial ecosystems. *Geography Compass*, Vol.12. No.3. DOI: 10.1111/gec3.12359.

Murray A., Skene K. and Haynes K. 2017. The circular economy: An interdisciplinary exploration of the concept and application in a global context. *Journal of Business Ethics*, Vol.140. pp.369-380. DOI: 10.1007/s10551-015-2693-2.

Niederle M. 2017. A gender agenda: A progress report on competitiveness. *American Economic Review*, Vol.107. No.5, pp.115-19. DOI: 10.1257/aer.p20171066.

Petrie R. and Segal C. 2015. Gender differences in competitiveness: The role of prizes. *GMU Working Paper in Economics*, No.14-47. DOI: 10.2139/ssrn.2520052.

Raišienė A.G., Rapuano V., Varkulevičiūtė K. and Stachová K. 2020. Working from Home—Who Is Happy? A Survey of Lithuania's Employees during the COVID-19 Quarantine Period. *Sustainability*, Vol.12. No. 13. DOI: 10.3390/su12135332.

Rose-Ackerman S. and Palifka B.J. 2016. Corruption and government: Causes, consequences, and reforms. *Cambridge University Press*. ISBN: 9781107441095. DOI: 10.1017/CBO9781139962933.

Rosenthal J., Quinn A., Grieshop A.P., Pillarisetti A. and Glass R.I. 2018. Clean cooking and the SDGs: Integrated analytical approaches to guide energy interventions for health and environment goals. *Energy for Sustainable Development*, Vol.42, pp. 152-159. DOI: 10.1016/j.esd.2017.11.003.

Saccardo S., Pietrasz A. and Gneezy U. 2017. On the size of gender difference in competitiveness. *Management Science*, Vol.64. No.4, pp.1477-1973. DOI: 10.1287/mnsc.2016.2673.

Salemink K., Strijker D. and Bosworth G. 2017. Rural development in the digital age: A systematic literature review on unequal ICT availability, adoption, and use in rural areas. *Journal of Rural Studies*, Vol.54, pp.360-371. DOI: 10.1016/j.jrurstud.2015.09.001.

Salvati L. and Carlucci M. 2020. Shaping dimensions of urban complexity: The role of economic structure and socio-demographic local contexts. *Social Indicators Research*, Vol.147, pp.263-285. DOI: 10.1007/s11205-019-02156-2.

Stafford-Smith M., Griggs D., Gaffney O. et al. 2017. Integration: the key to implementing the Sustainable Development Goals. *Sustainability Science*, Vol.12, pp.911–919. DOI: 10.1007/s11625-016-0383-3.

Tchamyou V.S, Asongu S.A. and Odhiambo N.M. 2019. The role of ICT in modulating the effect of education and lifelong learning on income inequality and economic growth in Africa. *African Development Review*, Vol.31. No.3, pp.261-274. DOI: 10.1111/1467-8268.12388.

Valaskova K., Throne O., Kral P. and Michalkova L. 2020. Deep Learning-enabled Smart Process Planning in Cyber-Physical System-based Manufacturing. *Journal of Self-Governance and Management Economics*, Vol.8. No.1, pp.121–127. DOI:10.22381/JSME8120205.

Yung R. and Khoo-Lattimore C. 2017. New realities: a systematic literature review on virtual reality and augmented reality in tourism research. *Current Issues in Tourism*, Vol.22. No.17, pp.2056-2081. DOI: 10.1080/13683500.2017.1417359.

# The Role of Encompassing Significant Elements For Intelligible and Comprehensible Communication in ELT Classes

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**Abstract**

Pandemic situation has altered the face of almost every aspect. Reflections and attitudes toward various things have been changed, it has affected global communication as well, as the last has become more intense and almost inevitable part of our lives. More and more professionals of different fields meet online to share their expertise and listen to each other. The world has truly become the one unity that has its obvious effects.

The main purpose for obtaining knowledge of a foreign language is to establish successful communication in the global world. When we talk about teaching English, there are four skills that emerge in our mind, receptive (reading and listening) and productive (speaking and writing) skills. In terms of professional communication standard business and marine phrases are focused. But is it all students should be taught or can there be some troublesome factors that can evoke misunderstanding between nations even if they apply the language quite well, even if they are confident in their accuracy and fluency?!

The aim of the work is to identify the significant points for developing effective communication in the global business world, at sea or in some other working areas and underscore their involvement in a learning process. It reveals the role of English after pandemic situation to depict the consequences it has affected. It shows the foreign language teaching as something complex, not just four skills that are evident part of an "iceberg" but far more, as an essence of teaching a foreign language is directly linked with developing skills to build rapport successfully.

According to the survey that was conducted between professionals and students, some substantial issues have been distinguished connected with successful communication. The observation method was also utilized to emerge the problems concerning language comprehensibility and intelligibility. The work discusses the significance of inclusion of all distinguished aspects in a learning process from a teacher's angle.

**Key words: communication, language peculiarities, cultural intelligence, body language, ELT class**

## 1. Introduction

Nowadays, global communication has increased immensely, and the pandemic situation has apparently made it more intense. For a variety of professions, the point might vary, but the evident consequences of this situation in terms of integrity are the same, as it has truly made the world global. Professionals or even students of various countries, without covering some distance and losing time in traveling, easily meet online, in one virtual space, to exchange attitudes, expertise, and approaches that undoubtedly make the global relations tight and firm.

"The times when interacting by reading and writing was sufficient are gone, and the globalized world, where no distance is big enough, dictates its own rules. Nowadays, to be successful, we need to communicate face-to-face or, at least, "monitor-to-monitor," and how we express ourselves orally plays an essential role in establishing relationships of any nature."(James, R. B. 2010)

Our times are often referred to as the 'new world order' with its 'new economy'. What this means is that capitalism has been restructured on a global scale, and people of widely different cultural and linguistic backgrounds have been thrown into contact more than ever before. Cultural and linguistic contact may occur in the flows of information and mass media, as well as in the flows of actual people in migration and tourism. (Ingrid, P. 2007)

In the global world, humans communicate not only online, but in many cases, their vocation is straightly linked to face-to-face international relations. To establish rapport successfully, fluency in English is substantial. It is evident that standard business or marine phrases significantly contribute to a working environment mainly acquired during the learning process. However, numerous issues (sufficiency of these phrases for efficient communication, beneficial skills, points for establishing successful communications, responsibilities of teachers in a learning process, and a lot more) are raised.

In work, the effort has been made to distinguish the remarkable factors for intelligible and comprehensible communication and underline the significance of their inclusion in ELT classes. The Internet survey (through Google Forms) reveals the professionals' and students' attitudes to the point. Apart from this, the observational research was also applied to underscore the problem. The work tries to discuss the role of a teacher in a learning process to enable students to obtain all inevitable aspects for successful communication.

**The importance of pronunciation in Cross-cultural communication**

Communication across the world is becoming more and more vigorous. "Being an effective communicator is no longer a 'nice' skill for some; it is absolutely a required skill for everyone to possess. Connecting with others is the key to building relationships and improving performance". (Michael A. 2016)

In this global world, knowing effective communicational skills is a must. The topic at issue is to teach students developing good communication, to enable them apply the language meaningfully, properly, and intelligibly. There always comes an immense accent on four essential skills of English, but sometimes when it comes to speaking, we assume that less focus is made on pronunciation. It is often stated that intelligibility does not depend just on the speaker but is interactional between the speaker and listener (Smith & Nelson, 1985, p. 333; Smith, 1992, p. 76). Speaking is directly connected with communication where both a speaker and a listener are equally involved; from both sides, relevant knowledge of pronunciation is vital to grab the message that is intended to convey. Both a listener and a speaker must know proper pronunciation to establish communication judiciously and intelligibly.

It has been argued that, in cross-cultural contexts where English is the language of communication, intelligibility and comprehensibility are not enough to ensure successful interpretability, as Smith and Christopher (2001, p. 92) suggest, in negotiation, it is essential to ensure interpretation is accurate and there is mutual understanding between interactants.

In some languages, a word is pronounced as it is spelled, while in others, it is not; in some languages, some letters do not exist in others, and everything this causes immense problems with pronunciation, so language peculiarities matter a lot. E.g., with Georgian students, through the observational research, participants were observed and the problem was identified with "p" and "f" sounds, as far as "f" is not in the Georgian alphabet; students often have difficulties dealing with them that, in some cases, make a strong misunderstanding, 200 students were observed, 76 of which made pronunciation mistakes, some of these problems make a difference in meaning that can be the cause of ambiguity in conversation. The problem is highlighted with words like "depend" and "defend", "cheap" and "chief", "peasant" and "pheasant", "flight" and "plight", "past" and "fast", "fair" and "pair", "phone" and "pone", "pool" and "full" and many others. Some other mispronounced words were also outlined like: "beer" and "bear", "accept" and "except", "desert" and "dessert", "affect" and "effect", "also" and "although", "colleague" and "college". Letter "c" is also mispronounced in numerous cases; the prominent examples are "special," "official," and "social" Georgian students pronounce these words with the same utterance as they are in the Georgian language; this point is less problematic as it does not cause a meaning difference, but still matters.

Smith and Nelson (1985, p. 333) also highlight the importance of the listener's expectations of the speaker in influencing their perception of the speaker's intelligibility. Lindemann (2010) shows that listeners' negative attitudes and low expectations about speakers can result in their perception of the pronunciation of the speakers as incomprehensible. In her study of ratings by native US English speakers about the intelligibility of non-native Korean accented speech, she found that those who had a negative attitude towards the non-native speakers beforehand rated their interactions as 'unsuccessful' even though most of them actually proved to be successful. Her study was based on interactions between non-native speakers and native speakers. (Ishamina A. 2015)

"Learners with good English pronunciation are likely to be understood even if they make errors in other areas, whereas learners with bad pronunciation will not be understood, even if their grammar is perfect. Such learners may avoid speaking in English and experience social isolation, employment difficulties, and limited opportunities for further study. We judge people by the way they speak, so learners with poor pronunciation may be judged as incompetent, uneducated or lacking knowledge". A. P. Gilakjani (Gilakjani A. P. 2012)

Still, sometimes, the little emphasis is made on pronunciation due to:

Lack of time at lesson (because the focus is made on other areas of a language)

Belief that people can still communicate despite their accent and pronunciation

Attitude that Students can work on pronunciation on their own with dictionaries.

**Cultural intelligence as a prominent factor for developing smooth communication**

Another prominent issue is cultural intelligence, as nowadays, most employment perspectives and landing a position in society are significantly linked with multicultural aspects. The cultural phenomenon is so diverse and rich in content that its inclusion in a learning process is strenuous but indispensable as it plays a crucial role in successful communication. A lack of cultural knowledge can cause ambiguous situations that end with misunderstandings and confusion, and dozens of instances prove it. "Contemporarily, communicative competence is more and more extended leading to intercultural discourse competence."(Lucia-Larisa M. 2021).

Postgraduates must be ready for intercultural relations, so while teaching it is substantial to underscore the importance of intercultural discourse competence.

Teaching a foreign language can be compared to trying to deal with an iceberg as the evident aim of this process is to develop good communicative skills in learners that can be considered as a most visible part of an iceberg 'the top", but other countless factors stay underneath the iceberg. E.g., culture, it overlaps dozens of areas like beliefs, traditions, customs, religion, attitudes, approaches, media, education and so on. Raising cultural intelligence in students is vital, but can it be included in a language course? Isn't it a strenuous process that is time-consuming? Not everything can be taught, of course, but raising cultural awareness is crucial.

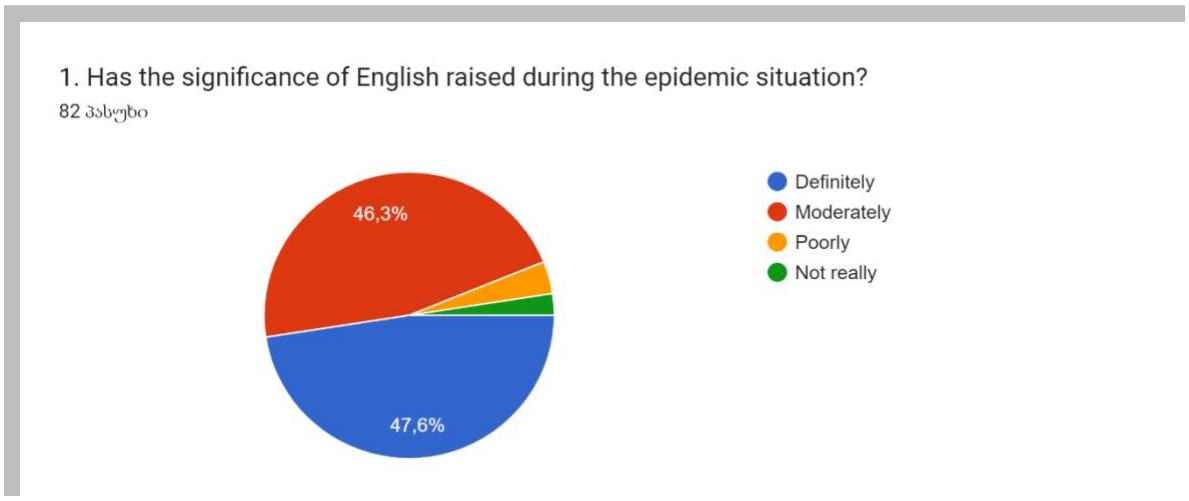
Furthermore, **body language** can affect the communication in a great deal. "In today's globalized world, it is essential to build relationships between people by using body language (behaviors) as a bridge of communication in politics, tourism, business, negotiations, hospitals, religions, education, and the military. At the same time, body language can act as a barrier (wall) or a challenge that separates and prevents people from different cultures exchange simple, clear, and accurate non-verbal messages because misreading body language may cause misunderstandings of the non-verbal messages that lead to destroying relationships between people" (Abu-Arqoub I.A. 2019). Insights on body language must be included in the learning process to have relevant outcomes. As culture differs, body language differs as well. Something that can be considered acceptable for some nations may appear insulting to others. "Body language is an element of our lives that is inextricably incorporated into all spheres of human interactions and functioning. It may happen that the same gesture in diverse cultures may have a completely different meaning so researchers from all over the world are recommending to gain as much insight into the concept of nonverbal communication as possible so as not to miss out on certain critical elements that could expose a person to unwanted circumstances" (Filiz A. 2019). Consequently, all the factors mentioned above are crucial for building rapport successfully, developing comprehensible communication and they must be included in the course.

**Survey of students and professionals**

The below-given survey depicts the student's and professionals' attitudes toward these troublesome aspects.

The first part of the survey results is students' and the second is professionals.' **82 students and 29 professionals took part in it.**

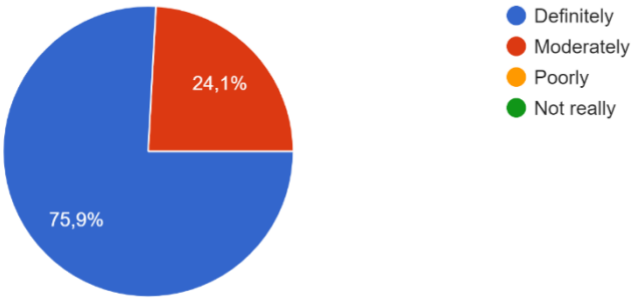
**Students:**



**Professionals:**

1. Has the significance of English raised during the epidemic situation because of global virtual world?

29 პასუხი

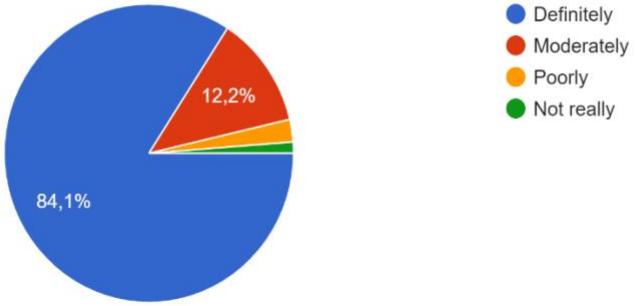



Both types of participants in the survey agree that the pandemic situation contributed to the popularity of English. However, due to intense global communications, the result is slightly different for professionals as they are more involved in work-related domains.

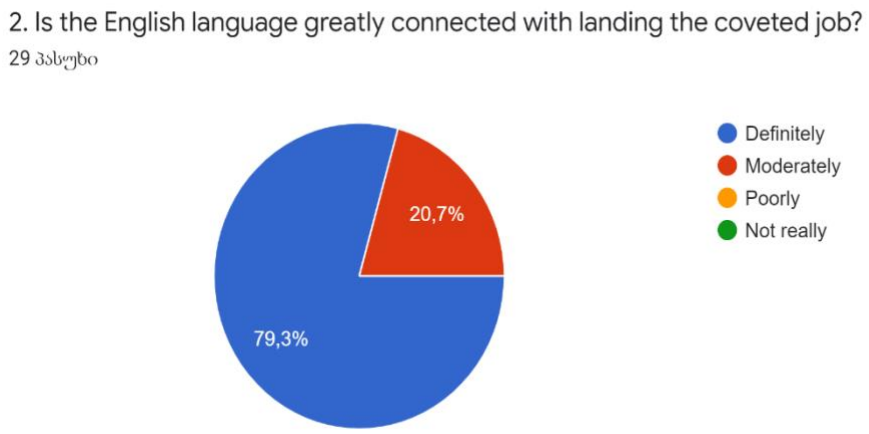
**Students:**

2. Is the English language greatly connected with landing the dream job?

82 პასუხი

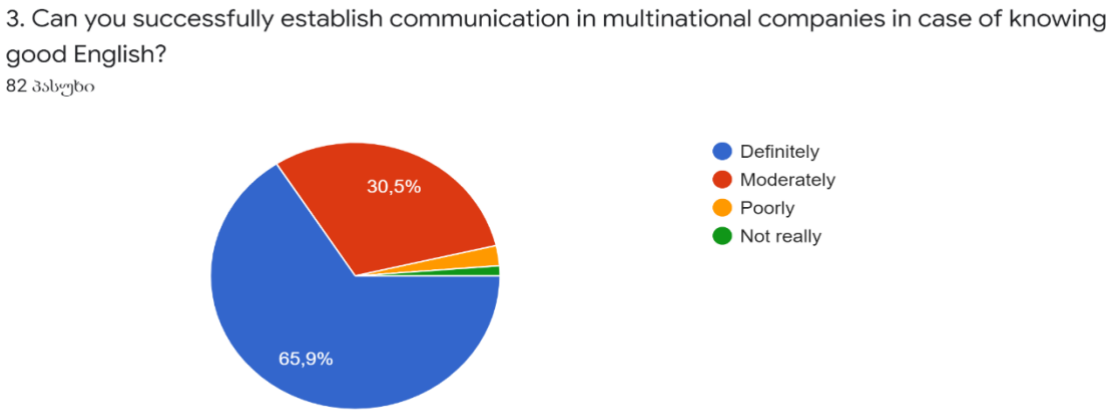


**Professionals:**

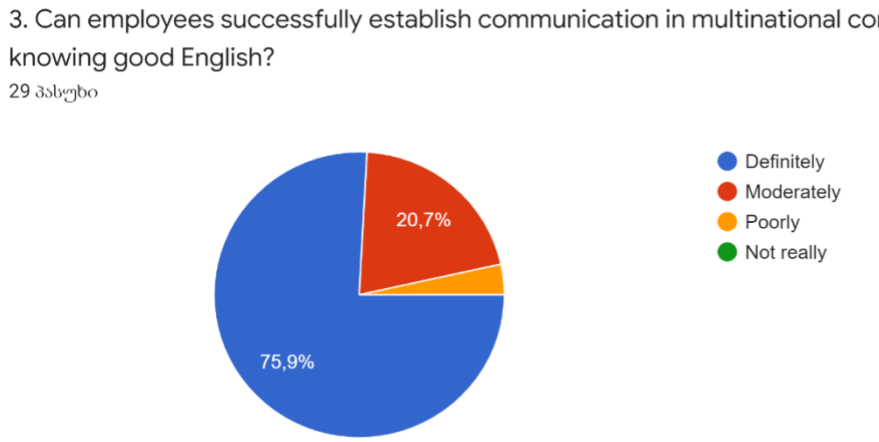



Both categories of participants consider English a prominent factor in the job finding procedure, but students consider it even more important. Since they are more involved in the job selection process, they are more sensitive to this issue.

**Students:**

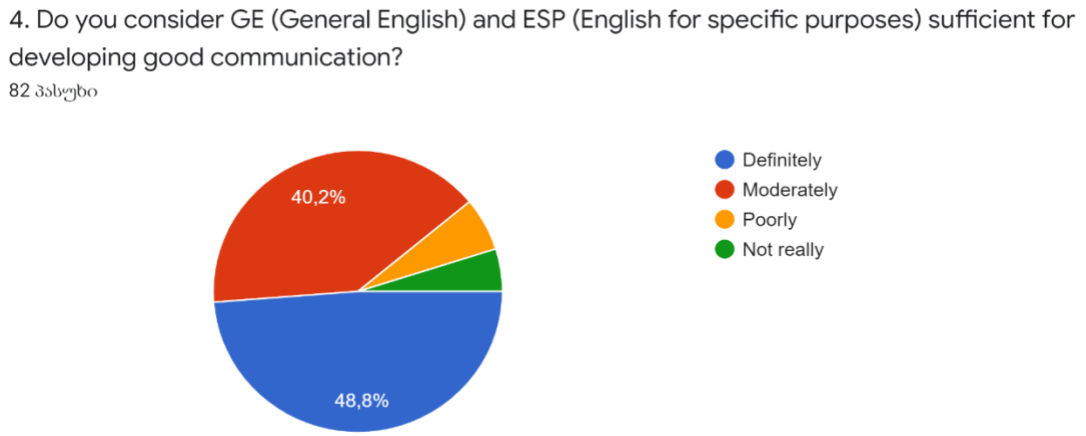



**Professionals:**

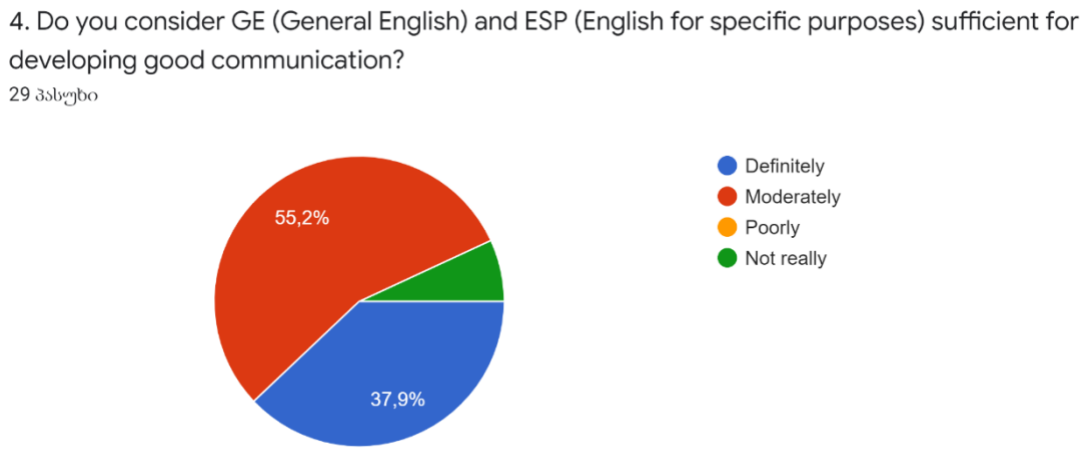


According to the answers knowing good English is mostly enough to develop communication in multinational companies, but the following questions are risen:

**Students:**




**Professionals:**

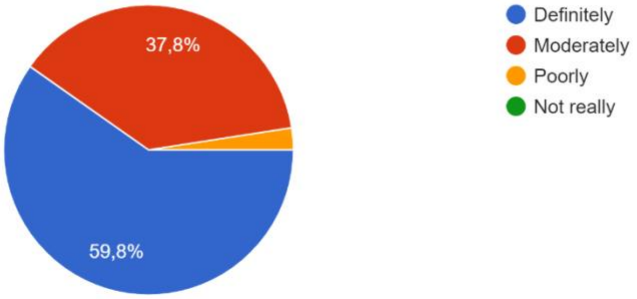



Besides knowing GE and ESP, Vividly, there are some other factors to comprehend to communicate well. Many things can be highlighted; some are given below in the survey questionnaire.

**Students:**

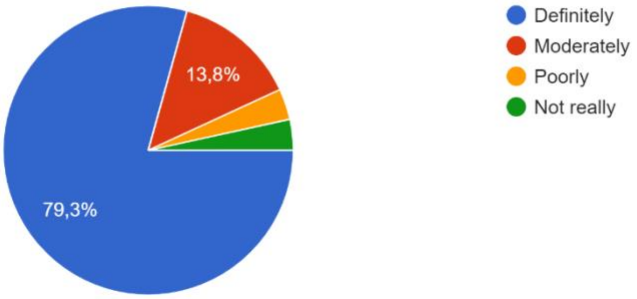
**P**

5. Do you consider pronunciation and utterance essential for establishing good communication?
82 პასუხი




**Professionals:**

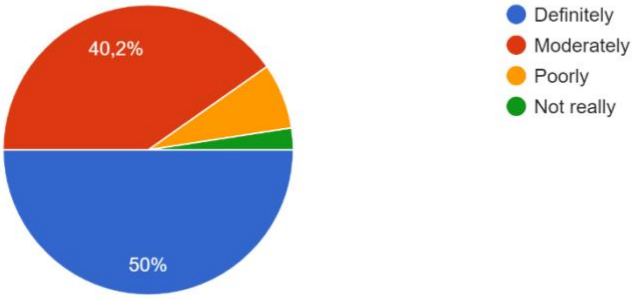
5. Do pronunciation and utterance play an essential role for establishing good communication?
29 პასუხი



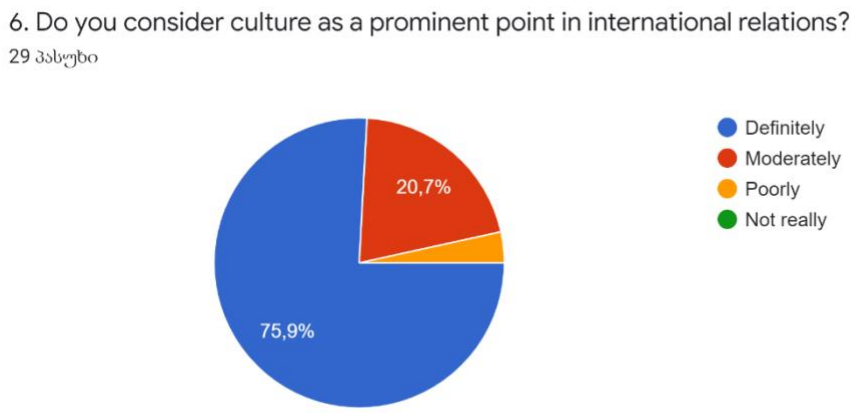

Both students and professionals consider pronunciation essential, but the picture depicts professionals better see it, and some of the students still need to apprehend the problem more.

**Students:**

6. Do you consider culture as a prominent point in international relations?
82 პასუხი

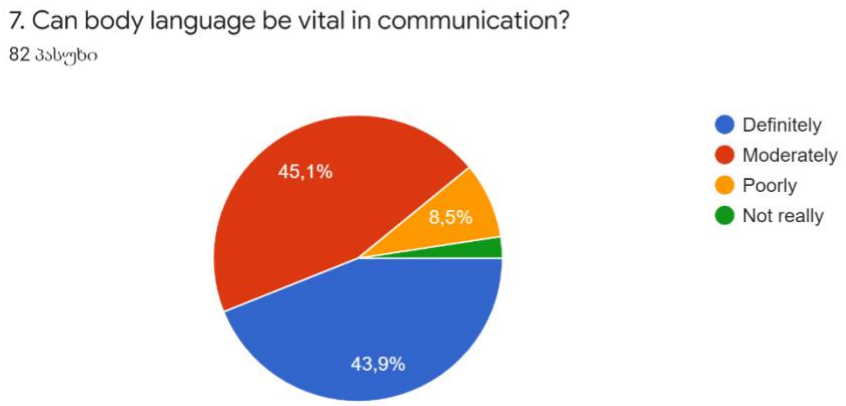



**Professionals:**

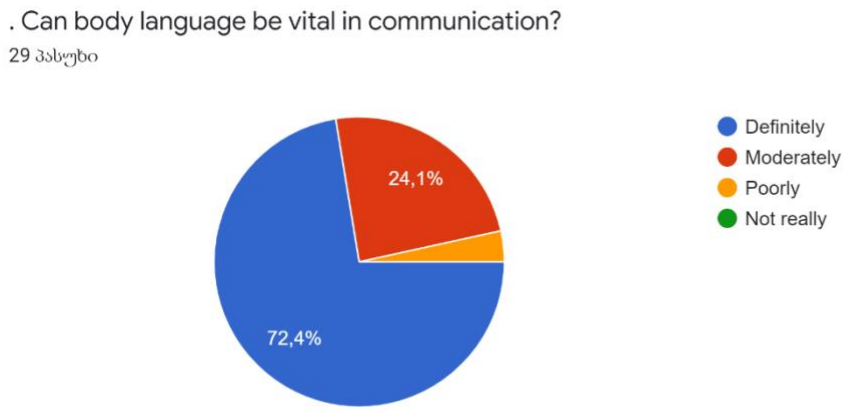



It is clear that some of the students understand the importance of cultural competence in international relations quite well, but professionals see the problem better. Consequently, it is important to convey their attitudes to all students and put them in the picture so that they can evade some awkward situations in the future.

**Students:**




**Professionals:**



Professionals comprehend quite well that not knowing some unacceptable gestures or body language can emerge many troublesome situations in multinational companies; it can be the reason for business closure or collapse, negotiation failure, and more. Many facts prove this. However, students understand this less; they know that body language matters, but half of them consider it vital, while another half think it matters but not too much.

## 4. Conclusions

The fact that knowing English is essential nowadays is vivid, and it is becoming more and more critical. As underscored, just the fact that a person knows good English is not enough anymore; to be a good communicator, one should develop many skills and knowledge of many aspects, as evident from the article.

The article reveals numerous essential factors for effective, intelligible and comprehensible communication. It shows the role of a teacher in a learning process and her liability for developing efficient communicative skills in students. It depicts various crucial factors to be taught to students.

It is essential to acquire knowledge of many aspects, and different factors make it vivid, especially in the desire to land a job in a multinational company. Numerous factors are to be taken into consideration, to make the conversation intelligible, comprehensible, and acceptable for international relations, like:

**Good general English**
**Good English for specific purposes**
**Right pronunciation**
**Cultural competence (that implies lots of aspects in it)**
**Body language (gestures)**

It stays arduous for a teacher to convey all these to students, it is effortful and energy-consuming for a teacher to find the approach to encompass all these factors in ELT classes, but to have fruitful outcomes, to have postgraduates who will be ready to face all these challenges in a real life, it is crucial to deal with them. It is unbelievable to teach all the cultures around the world as it is comprehensive and all-embracing, but the main thing is to teach some insights on body language (gestures) and culture; one should be careful while utilizing some gestures or behaving in a particular way in multinational crew or company. Cultural competence is crucial nowadays; culture includes numerous details, and the word "culture" is an evident part of its enormous background. Some approaches must be found to make students aware of this vast issue to create bases for them to be ready for different obstacles to have overcome successfully. “Video lessons match to different learner types as they listen, watch, read (as video lessons are provided with reading materials quite often) and produce speech. And it is the best option as almost every video contains some cultural aspects and body language. Students watch, listen, they get right pronunciations of words and this kind of knowledge is more long-lasting. (Sopiko, Dumbadze 2022)

Learners can find pronunciation the most challenging aspect to obtain as there are many details to acquire which apparently make it hard, like similarities of pronunciation in mother language and foreign language that is mainly the effect of borrowing; absence of some letter in mother language; fossilized errors that can be the most effortful to amend. Learners need the direct help of a teacher in this aspect; some pronunciation instructions are substantial in class. Students must comprehend the role of correct pronunciation to establish worldwide rapport and realize the importance of understandability and comprehensibility of it. Listener’s expectation can also be an obstacle. The conversation is the process where both sides are equally involved; as a speaker and a listener, they both are obliged to know the proper utterance of a word to ensure successful communication. The fact becomes more arduous when communicating with different nations with different accents. However, if they are correctly taught how crucial intelligibility is in a speech, the problem can be shrunk.

The survey shows how students and professionals look at the same problems, revealing their vision differs entirely in some aspects. Hence, the role of professionals is to raise students' awareness of some problematic points and help them acquire essential skills and knowledge for efficient communication. The survey shows that in terms of the importance of English, both categories of participants agree and have the almost same vision, but concerning cultural knowledge and body language, there is a different picture; it depicts professionals apprehend the role of these aspects in multinational companies and worldwide communication better than students. Subsequently, it enhances the inclusion of these aspects in the learning process by teachers. As for pronunciation, most students understand the importance of proper pronunciation, but they still mispronounce many words due to different reasons. Accordingly, teachers must find a way to improve this case and include phonetics in the learning process.

Including all the problematic issues in a learning process is substantial. Learners have to realize many troublesome aspects of developing communication. They must comprehend if they start using inappropriate gestures or actions, communication is to be a failure. If it is a business deal, the negotiation is to be collapsed from the very beginning. They must be wary while communicating with different nations; they must better comprehend that pronunciation also matters. Teachers are the people who are responsible for providing all these issues to students; they must raise awareness of all these aspects in students while teaching.

**References:**

Abu-Arqoub I.A., Alserhan F.A., 2019. **"**Non-verbal barriers to effective intercultural communication", Jordan University, Jordania. - https://www.redalyc.org/journal/279/27962050034/html/

Filiz A., 2019. The Body Language of Culture - International Journal for Innovation Education and Research 7(8):32-39 DOI: 10.31686/ijier.Vol7.Iss8.1639 License - CC BY 4.0

Gilakjani A. P., 2012. The Significance of Pronunciation in English Language Teaching. - https://www.researchgate.net/publication/267722924_The_Significance_of_Pronunciation_in_English_Language_Teaching

Ingrid, P., 2007. Linguistics and Intercultural Relations" - https://www.researchgate.net/publication/227506028_Linguistics_and_Intercultural_Communication

Ishamina A., 2015. Listener Pronunciation in Misunderstandings in International Communication.

*Southeast Asia: A Multidisciplinary Journal*, Vol 15, 2015, pp 26–35 © FASS, UBD

James, R. B., 2010. Teaching Pronunciation Gets a Bad R.A.P: A Framework for Teaching Pronunciation. Hankuk: University of Foreign Studies. FUNIBER - https://www.academia.edu/8236812/Teaching_pronunciation

Lucia-Larisa M. Simona B. Alina Gabriela N., 2021. *Communicative Teaching – An Efficient Approach to Foreign Language Teaching*. Available from: https://www.researchgate.net/publication/357439093_Communicative_Teaching_-_An_Efficient_Approach_to_Foreign_Language_Teaching [accessed Apr 21 2022].

Michael A.**,** 2016. https://www.amazon.com/Simply-Said-Communicating-Better-Beyond/dp/1119285283

Dumbadze Sopiko, 2022, *(PDF) Spurring Engaging Leaning Approaches in EFL Classes*. Available from: https://www.researchgate.net/publication/364971288_Spurring_Engaging_Leaning_Approaches_in_EFL_Classes [accessed Nov 02 2022].

Smith, L. E., & Christopher, E. M., 2001. "Why can't they understand me when I speak English so clearly?" In E. Thumboo (Ed.), *The Three Circles of English: Language specialists talk about the English language* (pp. 91–100). Singapore: UniPress.

Smith, L. E., & Nelson, C. L., 1985. International intelligibility of English: Directions and resources. *World Englishes*, *4*(3), 333–342.

Lindemann, S., 2010. Who's "unintelligible"? The perceiver's role. *Issues in Applied Linguistics*, *18*(2), 223–232.

# DEUS EX MACHINA
# GOD OUT OF MILITARY INDUSTRIAL MACHINE
# In the Greek Epic and Tragedy

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**Abstract**

The paper- DEUX EX MACHINA is trying to analyze the beginning staged of military industrial machine in the end of bronze age and the beginning of the iron age. We are observing the idealization of militaristic campaigns during and after Trojan war and in the writings of great epic writer Homer and the first tragedy author Aeschylus. Both if those authors proved us with very interesting details of how the image of military man is becoming a principal protagonist in the world of literature and history through last 3 thousand years, but also how we had the time before – where a peaceful coexistence and the equality between gender groups and ethnicities was the main rule. Both - Homer and Aeschylus – have very clear indications for the reader that through the Mediterranean History there were times that were peaceful and egalitarian. At the same time, even during the Mycenaean period we have witnessed many heroic acts in the name of peace, solidarity and equality between men and women. King Pelasgus is one of the examples, together with Priam, Hector, Prometheus, Io and others. The research conducted on Greek literature by Dr. Rismag Gordeziani, who found that the famous expression by Aeschylus Pathemata Mathemata is the true way to education and at the same time this is the most truthful expression of the transformative period between Pax Minoica and Golden Age of Mycenaean's. Through this emotional lessons we learn how the peaceful culture was subdued to the militaristic domination of patriarchal civilization that has led us to contemporary days of expectations of nuclear mushroom.

*Keywords:* Homer's 'Iliad', Troy, Rismag Gordeziani, Aeschylus, Prometheus Bound, King Pelasgus, Oresteia, Suppliant Maidens, Military Industrial Machine, Patriarchy, Zeus, Agamemnon, Achilles, Johan Galtung, Zones of Peace, Christopher Mitchell.

The area of the research is the origins of the concept of Deus Ex Machina – is this concept somehow connected to the Military Industrial Machine? Since we know that the MIC originated during the mid-bronze-age period when the production of bronze arms made up the bulk of the economic strength of those countries that were oriented towards conquering other countries in the beginning of militaristic era. Homer's 'Iliad' and works of Aeschylus, Euripides, Sophocles give us a clear picture of this time. We have used qualitative methods for the research to be interesting. Chosen methods gave us the possibility to make logical and original assessments.Our aim is to learn from Homer's 'Iliad' as well as Aeschylus "Prometheus Bound' and 'Suppliant Maidens', other works of Greek Dramatists and to see if the change of mindset is possible regarding the most fundamental question: whether or not ever had any period of time according to mythic-poetic tradition of the world where there was a peace instead of militarism?
The key findings of our research led to the conclusion that positive peace was established, and we had an example of this kind of civilization before the Trojan war IN 1194-84 BC and works of Homer, Aeschylus, and their other colleagues are a testament of PAX CIVILIZATION IN PRE-HELLENIC GREECE. Today, we have a great example of the last King of Argos, King Pelasgus that we can see as an example of positive peace.

**Introduction – DEUS EX MACHINA – what does it mean?**

**Deus ex Machina** – God that is coming out of machine – that is one of the oldest dramatic tools in Greek literature and drama. This was a stage machine as it is known now that was producing God to do unimaginable problem-solving and conflict resolution – where human beings were incapable of solving their puzzle of complicated life filled with scarcity of power and resources. This God was appearing and bringing a good solution to the audience. Aeschylus in his 'Eumenides' brings this 'peaceful ending' to the feud in the family of Agamemnon with the help of two Gods – Apollo and Athena – both of whom signify the wishes of Zeus. God appears out of the machine and tells the spectators that the argument between furies and Orestes needs to be settled arbitrarily and strictly according to God's Will. This story revolves around the Trojan War. Before reaching Troy, Agamemnon is stuck in Aulis and only for the sake of accomplishing his militaristic goal of taking strategically important city of Troy he decides to kill his own young daughter, Iphigenia. This incident in not described in Homer's 'Iliad', but mythology and many different

plays of other authors tell us this story very well. Euripides is also focusing on this story in his well-known play "Iphigenia in Aulis'. Patriarchal and militaristic order is settling in during the Trojan War – shortly before and after – and these events testify that social order of the socio-economic forces during the Mycenaean period was for the warriors. Queen Clytemnestra avenges the death of her innocent daughter and kills her murderer father. Then we see the history turning itself around in support of patriarchy and militarism. Agamemnon's and Clytemnestra's son Orestes together with his sister Electra comes back to kill Clytemnestra in the second tragic play 'Libation Bearers'. Children are killing their mother in vengeance. They are told to do so by the Deus Ex Machina – God out of Machine – Apollo. The third play of Oresteia, which is called 'The Eumenides' Aeschylus shows us the real 'conflict settlement' machine through the trial in Athens on the Areopagus. Furies are justly demanding the punishment of Orestes for matricide – Athena decides to cast her deciding vote for pardon. Orestes gets away with the murder of Clytemnestra. It virtually means that Gods sided with Agamemnon, when he kills his innocent daughter Iphigenia. DEUS EX MACHINA is operating in favor of militaristic leader and murder of innocent young woman. Aeschylus gives us the good and honest picture of the ideology of Zeus's civilization through Mycenaean period – warriors must get their own way. We can see this through 'Iliad' and Homer's amazing way of telling the story of last weeks of Trojan War and at the same time different plays by Euripides, Sophocles and others after.

What is Deus Ex Machina in its implementation? It is obviously not just a machine that enables actors to jump out on the stage. It is not just the mechanism but this is a conscious device that makes decisions for human beings. 'All Art is Propaganda' those words of George Orwell were true throughout the time when epics and tragedy was written. Homer's 'Iliad' is a great testament to this, where the intervention of God's and namely Zeus are making the war longer and longer. It is extremely interesting that through different sides of Olympian Gods Zeus is trying to balance the power of war and what is most important PROLONG THE WAR. Making the war longer – but in the end giving the victory to the more militaristic side – Agamemnon and his big fleet winning in the 10 year old war and the more peaceful side loses its heroes – Hector and Priam. Homer's genius description of the dialogue between Achilles and Priam makes it very interesting – when author is as amazing to bring his emotions to us regardless of historic requirements of the time. Homer gives us a great description of the requirements of mid-bronze-age military industrial complex during the Trojan War.

Another great example of indication of this transformative period of time from more peaceful Minoan Civilization to the more militaristic Mycenaean times comes in another great play by Aeschylus 'The Suppliant Maidens'. In this play, the events are slightly preceding the Trojan War. This is still the time when King Pelasgus – the last Pelasgian King of Peloponnese – lead Kingdom of Argos and Mycenae and still there is an equality between men and women. We can obviously see in this play that the peaceful order existed in Greece before the firm establishment of Danaid as well as warrior Mycenaean cultures.

So we can conclude and continue our research with the firm assumption that Deus Ex Machina represents mythical language that enforces the order of warrior culture and military industrial complex of the late Bronze and early Iron age. Actually, time before, during and after Trojan War could be considered the time of the great beginning of military industrial complex around the world. Greek literature and drama is the best testament for this very proposition.

**Deconstruction of 'Deus Ex Machina' – as a Military Industrial Complex of Bronze Age and Iron Age**

In his book – The 'Wisdom of Myths' Dr. Rismag Gordeziani gives a very good example of deconstruction of Greek Mythology and actually brings in some dates to suggest some concrete times of action.

1. **Moving of Cecrops to Athens and founding of the city is attributed to 17-16 century BC. This is still going on during a Minoan civilization**. We could see that Indo-European invasion and occupation of Attica has already started during the peaceful period of Pax Minoica. At the same time we can see that the warrior culture has already existed in many other regions – and it is only natural that those tribes went on to conquer highly civilized and abundant Greek cities. In fact, the founding of Athens is attributed to Cecrops. This is where Areopagus and Dionysian Traditions are created afterwards.
2. **Danaids going to Argos – King Pelasgus last stand described in "The Suppliant Maidens" s taking place somewhere between 16-15$^{th}$ century BC**. This is still the end of Minoan Civilization – and that is why we see very civilized and humanistic approach by King Pelasgus to the question of Gender equality as well as violence and nonviolence. Here we see the institutional 'Structural Violence' coming together with Aegyptus and his 50 sons while conquering Argos. The one in favor of patriarchy and the oether one in favor of militaristic violence in general.
3. **Flood of Deucalion has happened on the verge of 15**$^{th}$ and 14$^{th}$ century BC. This date coincides with Great Earthquake of Santorini and Tsunami that has destroyed the Island of Crete and Minoan Civilization. As it is described – Deucalion was the son of Prometheus, who revolted against Zeus and Aeschylus has dedicated his tragedy 'Prometheus Bound' to him. It comes out that the period where Zeus has made his militaristic order stand and chained Prometheus preceded Deucalion Flood just by one generation – however long this generation could have been traced. Struggle between Zeus and Prometheus one the one hand and also struggle between Zeus and Io signifies the establishment of patriarchal and militaristic order that should not have been much older than 17$^{th}$ century BC. This means still during the existence of Minoan Civilization.

4. **Cadmus has moved to Thebes according to Dr. Gordeziani by 15th or 14th century BC.** This time is different from the Herodotus, who suggests that this has happened around 2000 BC. But, in any case, Thebes was conceived during or at the very end of Minoan Period. Which is one more indication that roots of organized militaristic and violent civilization came to Attica and Thebes as well as Peloponnesus from the East and at the certain period of time.
5. **Pelops coming to Greece from the Asia Minor is traced to the 14th and 13th century BC.** Founding of Mycenaean culture of warriors that has then parented Agamemnon and Menelaus on the Island of Peloponnese also strictly coincides with the period of militarization and starting to build the structures for military industrial complex. Greek historians attest to this turn of events – we can see this in Apollodorus, Diodorus of Sicily, Dionysius Halicarnassensis, Hellanicus, Herodote and others.
6. **The story of Argonauts and 'Medea' is traced approximately by 13th century BC**. This is also very indicative of Deus Ex Machina willing to change the culture to militaristic and scarcity oriented. Euripides 'Medea' is the best testament to this tendency. Besides being very masterfully implemented by the great dramatic author, the story of 'Medea' gives us a great picture of how the militaristic civilization of Argos and rest of Peloponnese has used all its diplomatic and physical strength to attain the biggest secrets of health and wealth from the Kingdom of Colchis led by the brother of Circe and Pasiphae, Aeetes and his daughter, Medea. Different authors of 'Argonautica' as well as playwrights of the times describe this period of time also as transformational – although whether this is in a best direction for the humankind and Mediterranean basin is under a big question. The strength of Health (Medicine coming from the name of 'Medea') and Wealth (Golden Fleece and the technology of Goldsmith) is used to obtain military power by the kingdom of Argos short time after these events. The new King of Argos, Agamemnon is not shy to use all the elements of Pre-Hellenic wisdom for military purposes. According to different sources there is not much more than 50 to 30 years difference between the events of Argonautica and Trojan War.
7. **'Seven against Thebes' Invasion can be traced to the 13th century BC as well.** Theban stories are widely reflected in great Greek drama and especially in the writing of tragedies. Aeschylus, Sophocles, and Euripides – all of them write their plays on this subject. You can see in all these great writings that this is also a period of crossroads – from the time of cultural enlightenment and peaceful prosperity of late Minoan Civilization to the "Dark Years' of violence and conquest that have followed the establishment of Iron Age. It is actually very significant that great play of Sophocles – 'Oedipus Rex' is a great diagnosis for the militaristic culture of scarcity of power and resources. Good research of myth-poetic works of dramatists suggests that Theban events took place approximately contemporaneously with the events of Argonautica.
8. **Epigones war of conquering the Thebes situated at the edge of 13th century and the** 12th century, BC. This time signifies complete establishment of the military industrial order in Thebes. This is the end of any peaceful and matriarchal narrative.
9. **Trojan War was either by the 13th century or by the beginning of 12the century BC – by the most contemporary research 1994-1184 BC.** This was is described not only by Homer, Aeschylus, Euripides, Sophocles and other writers but by rater large mythic and historical literature and the point was later proved by archeological studies conducted by different research groups from around the world. The fact that war was prolonged through (at least) 10 years and many lives were sacrificed to the whole idea of conquering the city of Troy gives us an indication that in this time of late Bronze age and early Iron Age the production of Military Equipment became one of the central parts of the economy. Zeus is acting as main actor implementing interests of 'Homo Economicus' (Term used by Michel Foucault) and for the interests of Military Industrial Complex he often switches sides between different warrying sides. At times, he is allied with Hector and Trojans, but in the end finale is determined in favor of Achaeans and their leader, Agamemnon. The fall of Troy is the final sign that peaceful Greek Minoan Civilization with its principles of 'creativity, empathy, nonviolence' (Johan Galtung's terms) is substituted by violent warrior culture where 'immortality comes through the war'.
10. **Thessalian's invasion into Thessaly – is dated by 12th century BC.** These are already times when Iron Age is coming to the Asia Minor as well as Greece and the warrior mentality is firmly taking over the peaceful mindset. (Term used by Dimitri Uznadze).
11. **Dorians invading Peloponnesus in 12th Century BC.** Dorians invading the island of Peloponnesus is moving us to the next stage, where the "Dark Centuries' will follow all the way up until the times of Homer. Greek literature has started from those great works of Homer, Sappho, Aeschylus, Sophocles, Euripides and others. However it is very important to trace the connection between first great Epic work, Tragedies and the development of military industrial complex as well as militaristic mindset during and after early Iron Age.

**Change of Mindset to Military Propaganda in the early Iron Age?**

1. **Aeschylus 'Prometheus Bound' – great work of nonviolence against violence.** This work is perhaps one of the most famous tragedies in the world where there is a clear opposition between human being – Titan – named Prometheus and the Supreme God of Olympian Mountain, Zeus. In this work you can clearly see that the author is not on the side of a deity. On the contrary, he takes the side of the oppressed human being, who is the fire bearer and the one who returned CREATIVE ARTISTIC SPIRIT to humans. It is right that creativity is making up the human mind and soul – it is also an alternative to violence. Aeschylus in this play opposes THE ORDER OF VIOLENCE IMPOSED BY TYRANT ZEUS. This is perhaps the most fundamental revolt of human beings against the imposed order by divine socio-economic and political injustice.
2. **Aeschylus "The Suppliant Maidens' – amazing description of humanism of the late Minoan times.** Central point of our discussion is that King Pelasgus is defending 50 maidens against unjust and cruel punishment by their cousins. The land of Argos – shown here during the Minoan Civilization – stands firm in defense of women's rights, peace and justice. Unfortunately, these very principles do not hold.
3. **Euripides 'Medea' – Genius play describing the transformation of Patriarchy from the more egalitarian structure of Pre-Hellenic Society.** Euripides talks about the humans ''as they are' – this is the difference between him and his two contemporary colleagues. However, it should be noted that he is very honest in the description of history. Perhaps he is siding with Achaeans most of the time and cannot portray Medea as someone who is positive, but his description of patriarchal cruelty is still very admirable. Genius of Euripides is in direct depiction of how the patriarchal civilization is demonizing women in general and Colchis Princess Medea in particular.
4. **Sophocles 'Oedipus Rex' and "Antigone' – one of the deepest analysis of the patriarchal system of domination.** They say that Sophocles describing people 'as they should be' – he was valued by Aristotle and many others through the centuries. His 'Theban Plays' could be distinguished by describing not just the play of destiny, which is part of every life in general – but with showing us the absurdity of power struggle and domination – including the sexist domination. "Oedipus Rex' and 'Antigone' are some the best works through the history of humanity that give us a picture of violence and its absolute incomprehensibility through emotion.
5. **Homer 'Iliad' – great indicator of Zeus as a 'God coming out of military industrial machine' – Deus Ex Machina.** Homer's amazing work – whether we describe it as an epic or tragedy, like Aristotle – gives us a great picture of the Olympian Gods – and Zeus in particular – as the agents of Military Industrial Complex. Zeus is balancing the act of Trojan War. He is trying to prolong it. During the 'Iliad' the war does not end – it ends only with the death of Hector and absolutely superb dialogue between Priam and Achilles. Hector's body is given back to Trojans and they say farewell to their beloved Prince. But the war continues on. Only in Homer's later work we can see that the long Trojan War has ended with the victory of Agamemnon.
6. **Euripides 'Iphigenia in Aulis' – Great description of the 'Original Sin of War' –** This is one of the best plays of Euripides again. What is very significant in this play is that Agamemnon is committing the murder of his young daughter, Iphigenia for the sole reason of wanting to go to conquer Troy. Even if Agamemnon is so much insulted for the loss of his brother's wife, Helen – is this more important than the life of his young and beautiful daughter Iphigenia? The answer to this question is not clear to Agamemnon, except he is told to do this by some mysterious power. And here, again DEUS EX MACHINA intervenes – Iphigenia decides to sacrifice herself, even though Achilles himself is ready to rescue her. He mother Clytemnestra is also there and ready to help her. Agamemnon is unmasked and he could be punished. But GOD OUT OF MILITARY INDUSTRIAL MACHINE tells Iphigenia that ELLADA NEEDS HER DEATH. So, she goes on to sacrifice herself for the interests of Greece. This is true justification that Military Industrial Machine needs from all warriors today. Sacrifice your life for your country. Justification for nationalistic reason.
7. **Aeschylus 'Oresteia' – amazing trilogy giving a great picture of militaristic world of Agamemnon. 'Deus Ex Machina' making final decision in support of Orestes.** This is a 'Great Act of Reconciliation' like many tragedy specialists call this. This reconciliation between Orestes and Furies takes place after the son of Agamemnon kills his mother and he faces trial in Athens – not Argos or Sparta – but in Athens – and he is deserving punishment for the death of his mother. But Orestes represents the order of Agamemnon – the order of Zeus – the order of Military Industrial Machine – and he needs to be forgiven. In this case forgiveness is not peace – it is a continuation of war and violence – this verdict given by Athena and Apollo – Gods out of the Machine - this is already the firm establishment of the NEW WORLD ORDER – military industrial order of Agamemnon.

**Kingdom of Pelasgus as a Peace Zone in the 16th century BC?..**

Dr. Rismag Gordeziani talks about the well-known expression by Aeschylus – PATHEMATA MATHEMATA – learning through suffering – learning through emotion. This is very important part of the narrative of writers and drama. In 'The Suppliant Maidens' King Pelasgus is ruling Kingdom of Argos – it borders Paeonians in the North, the River Strymon to the East the slopes of Pindus Mountains, Dodona and the sea to the west. King Pelasgus in the 16th century BC has ruled over North of Thessaly, West of the

Strymon to the shores of Peloponnesian Argos where Danaides landed during the time described in the play. King Pelasgus is the son of Palaichthon – ancient earth. Aeschylus describes original home of Pelasgians as the region around Mycenae.
So, in this very play that describes some of the oldest occurrence in the Greek history we are learning that Danaids landed in the Kingdom where the rights of women were protected and which accepted political refugees in this very distant time. It is worthy to note that King Pelasgus is proudly serving his people and the interests of the oppressed people around his kingdom. It comes out that the Kingdom of Argos – long time before Agamemnon – has respected rights of women and minorities as well as political prisoners much more than Agamemnon and Menelaus did. This means, that after the takeover of the Kingdom of Argos by Aegyptus and settlement of Danaids there – the situation has deteriorated and became difficult to bear for independent women. At the same time we can see the picture where violence and militarism are taking over the nonviolence and justice. King Pelasgus sacrifices himself to the cause of protecting the week and for the rights of women. This is happening in the 16th century BC. That is that we are witnessing the last years of Pax Minoica – the civilization that was built on principles of creativity, empathy and nonviolence – words of Johan Galtung.
In this amazingly told story by Aeschylus we see true PATHEMATA MATHEMATA – learning through emotion – King Pelasgus commits heroic act – he sacrifices his life and kingdom for the freedom of 50 young women – to defend their rights as women – to be able to stand up to violence. This event – historical event – is so significant – that only the story of Prometheus can come close to it – that is also created by Aeschylus. It is very obvious that the great Greek playwright is not accepting the order based upon violence and patriarchy. It is also becoming very apparent that the new kind of discipline of war in beyond Aeschylus.

**Conclusion**

*By peace we mean the capacity to transform conflicts with empathy, without violence, and creatively- a never-ending process*
***Johan Galtung***

Creativity together with empathy and nonviolence is the only alternative for the organized form of mass destruction. Today, the civilization of Zeus has achieved its final stage. Through the times of the battles of Zeus with Prometheus and Trojan War, we have seen the absurdity of war. Great playwrights of epic and tragedy have helped us to understand this very well. However, social and political scientists have failed to elaborate the system that would be based on something rather than GOD COMING OUT OF MILITARY INDUSTRIAL MACHINE. Now we stand at the crossroads: either we find the God of Peace – Science for Peace – Arts for Peace – or we have to sacrifice our small planet to massive destruction by DEUS EX MACHINA. Great history of Greek Drama – and not just – has suggested that Dionysian way of creative action – action expressed Orphic poetry or Sappho – are much more productive than mass destruction brought upon humanity by the organized and military campaigns – like Trojan War. Kign Pelasgus of Argos at the 16th century BC is a good example for this kind of existence together with Prometheus, who is expecting to be unbound – just when the time of Zeus will be over. This is the great wisdom of intuitive work of writers like Homer, Aeschylus, Sophocles and Euripides.

Sources:


1. Dr. Rismag Gordeziani, “Greek Civilization”, Bakur Sulakauri Publishing House, 2019
2. Dr. Rismag Gordeziani, “Greek Literature – Prose and Poetry of Hellenic Literature”, Logos, Tbilisi, 2019
3. Dr. Lasha Beraia (edited by Rismag Gordeziani) – ‘Trojan War” – ‘Logos’, Tbilisi, 2002
4. Dr. Keti Nijharadze – ‘Myth and Poetic Perception of Trojan War by Homer” – ‘Logos’ Publishing, Tbilisi, 2009
5. Dr. Rusudan Tsavanav, ‘Mythic People’ – ‘Logos’ Publishing, Tbilisi, 2013
6. Dr. Dimitri Uznadze, ‘Psychology of Mindset”, Tbilisi State University Publishing, 1940
7. John W. Burton "Resolving deep-rooted conflict: a handbook" (1987)
8. John W. Burton "Conflict resolution as a political system" (1988)
9. John W. Burton "On the need for conflict prevention" (1989)
10. John W. Burton "Conflict: resolution & provention [The Conflict Series vol 1]" (1990)
11. John W. Burton "Conflict: human needs theory [The Conflict Series vol 2]" (1993)
12. John W. Burton "Conflict: readings in management and resolution [The Conflict Series vol 3]" (1990)
13. John W. Burton "Conflict: practices in management, settlement and resolution [The Conflict Series vol 4]" (1990)
14. John W. Burton "Conflict resolution: its language and processes" (1996)
15. Johan Galtung *Europe in the Making* (1989)
16. *Johan Galtung Peace By Peaceful Means: Peace and Conflict, Development and Civilization* (1996)
17. *John Paul Lederach The Little Book of Conflict Transformation*, Good Books, 2003, ISBN 1-56148-390-7
18. *John Paul Lederach The Moral Imagination: The Art and Soul of Building Peace*, Oxford University Press, 2005, ISBN 0-19-517454

19. Louise Diamond, The Peace Book: 108 Simple Ways to Make a More Peaceful World, 2000
20. George Orwell, "All Art Is Propaganda" – Mariner Books, Boston-New York, 2008
21. Kuhn, T. S. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1962. ISBN 0-226-45808-3
22. Dennis J.D. Sandole, Capturing the Complexity of Conflict: Dealing with Violent Ethnic Conflicts of the Post-Cold War Era. London and New York: Pinter (Cassell/Continuum International), 1999.
23. Dennis J.D. Sandole, Conflict Resolution Theory and Practice: Integration and Application, co edited with Hugo van der Merwe. Manchester (England): Manchester University Press and New York: St. Martin's Press, 1993.
24. Clark, Mary E. (1998) "Aggressivity and Violence: An Alternative Theory of Human Nature," *Peace and Conflict Studies*: Vol. 5 : No. 1 , Article 3.
25. Rohrlich (1977), p. 36 and see p. 37 ("Minoan matriarchate" (subquoting, at p. 37 n. 7, Thomson, George, *The Prehistoric Aegean* (N.Y.: Citadel Press, 1965), p. 450)), Baruch, Elaine Hoffman, *Introduction*, in Pt. Four (*Visions of Utopia*), in Rohrlich & Baruch (1984), p. 207 ("matriarchal societies, particularly Minoan Crete"), and Rohrlich (1984), p. 6 ("the Minoan matriarchy" & "Minoan Crete").
26. Three quotations: Rohrlich (1977), p. 37
27. *Lattimore, Richmond (2011). The Iliad of Homer. Chicago: University of Chicago Press. Book 1, line 155, p. 79. ISBN 978-0-226-47049-8.*
28. Hornblower, S. and A. Spawforth (1998). *The Oxford Companion to Classical Civilization.* pp. 3, 347, 352.
29. Kullmann, Wolfgang (1985). "Gods and Men in the Iliad and the Odyssey". *Harvard Studies in Classical Philology*. **89**: 1–23. doi:10.2307/311265. JSTOR 311265
30. Dunkle, Roger (1986). "ILIAD", in *The Classical Origins of Western Culture*, *The Core Studies 1 Study Guide*. Brooklyn College. Archived from the original December 5, 2007.
31. Armstrong, James I. (1958). "The Arming Motif in the Iliad." *American Journal of Philology* 79(4):337–54.
32. Lendon, J.E. (2005). *Soldiers and Ghosts: A History of Battle in Classical Antiquity*. New Haven, CT: Yale University Press
33. Ruby Rohrlich, **State Formation in Sumer and the Subjugation of Women,** Feminist Studies, Vol. 6, No. 1 (Spring, 1980), pp. 76-102 (27 pages), Published By: Feminist Studies, Inc.
34. Plato, *Republic* 2,379e.
35. Apollodorus, *Epitome* 3.1, Hesiod Fragment 204,95ff.
36. *Berlin Papyri, No. 9739*; Hesiod. *Catalogue of Women Fragment 68.* Translated by Evelyn-White, H G. Loeb Classical Library Volume 57. London: William Heinemann, 1914
37. Apollonius Rhodius 4.757.
38. Aeschylus, *Prometheus Bound* 767.
39. Scholiast on Homer's *Iliad*; Hyginus, *Fabulae* 54; Ovid, *Metamorphoses* 11.217.
40. Apollodorus, *Library* 3.168.
41. Pindar, *Nemean* 5 ep2; Pindar, *Isthmian* 8 str3–str5.
42. Hesiod, *Catalogue of Women* fr. 57; *Cypria* fr. 4.
43. Photius, *Myrobiblion* 190.
44. P.Oxy. 56, 3829 (L. Koppel, 1989)
45. Hyginus, *Fabulae* 92.
46. Apollodorus *Epitome* E.3.2
47. Pausanias, 15.9.5.
48. Euripides *Andromache* 298; Div. i. 21; Apollodorus, *Library* 3.12.5.
49. Homer Iliad I.410
50. Apollodorus, *Library* 3.13.8.
51. Apollonius Rhodius 4.869–879;
52. Apollodorus, *Library* 3.13.6
53. Sophocles, The Three Theban Plays: Antigone; Oedipus the King; Oedipus at Colonus Paperback – January 3, 2000 by Sophocles (Author), Robert Fagles (Translator), Bernard Knox (Introduction)
54. Euripides, Iphigenia in Aulis, http://classics.mit.edu/Euripides/iphi_aul.html
55. EURIPIDES, COLLECTION PLAYS PAPERBACK – AUGUST 31, 2014, BY EURIPIDES EURIPIDES (AUTHOR), GILBERT MURRAY (TRANSLATOR), & 1 MORE
56. Aeschylus: The Complete Plays, Vol. I 1st Edition, by Aeschylus (Author), Hugh Denard (Author), Carl Mueller (Translator)

# The Use of Blogs in Learning a Foreign Language

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**Abstract**

One of the tools that has been increasingly used in foreign language teaching is blogs. Regardless of the popularity of this tool, various open questions remain about how best to include it in the conceptual teaching framework, as well as in practical application. Therefore, the current work presents an overview of research on the use of blogs in the context of foreign language learning, with a focus on English and German language learning. The paper gives practical recommendations in relation to learning foreign languages for the target groups, namely English and German language teachers and researchers.

*Keywords:* Blog, Learning, Foreign Language.

## 1. Introduction

Blogging is a widespread social activity that has an interactive effect. A blog represents, to put it simply, the point where texts and visual elements intersect, that is, it is a kind of protected space. As Godwin-Jones (2003) states, a Weblog (or blog) is a web-based writing space where the writing and editing of information is managed through a web browser and is immediately publicly visible on the Internet, while Helmann et al. (2010) point out that the popularity of weblogs continues to grow, while the automatic assessment of the quality of user-generated content is increasingly oriented towards the focus of scientific and commercial discussions. Namely, in the last few years, a large number of papers from conferences and articles in magazines have been dedicated to elucidating this issue (Dohn, 2010). Information and communication technologies have become an integral part of our lives (Buran, 2015), in the manner that they provide different opportunities for learning English and German.

According to Korovina et al. (2016), the basic purpose of teaching foreign languages, both English (and German), at universities is the formation of communicative competence. One of the key issues to which special attention should be paid is the way of incorporating blogs into teaching activities as a frame of reference from the adopted curricula. Hundreds of papers have been published in this area and the topic is still highly positioned in terms of its topicality. When it comes to the field of education, as Hamuddin et al. (2018) point out, the blog has been widely used in recent years as a very effective tool in the function of global teaching results. In educational circles, this phenomenon is given a lot of attention. Hamuddin (2016) points out that the blog-based class has a positive perception among bloggers, on the one hand, and is used through various modalities to increase students' knowledge base and increase students' critical thinking, on the other hand.

The paper is structured as follows. The first chapter provides an introduction to the issue of language learning through blogging. The second chapter is about blogging as a form of online discourse whereas the final one contains concluding remarks.

Publication of articles in professional journals, which publishes papers for specialists and do not ordinarily pay for contributions, may benefit a person in many ways. Such publications are likely to increase career advancement, to increase your circle of your professional acquaintances, to get feedback of your ideas, etc. Usually, papers submitted to the journals are very large and many a times they are either rejected or returned with a request for major/ minor revisions. A paper is turned down for a number of reasons, which is not only due to the quality of work but also due to the quality of presentation. Although quality of work and presentation are equally important (Singh *et al*, 2002).

### 2. Language learning through blogging

Learning is the process of connecting specialized nodes or sources of information (Bremer, 2012). Every learning process, regardless of the way it is implemented, has both its advantages and disadvantages. Thus, training in English and German has certain obstacles when it comes to the application of blogs as a medium. Higher educational sectors form an important part of societies and their economies, from which society members expect individual and collective future benefits (von Alberti-Alhtayba et al., 2017). In order to maximize the result of this type of education, removing existing restrictions as much as possible is of the utmost importance. Information needs are often aimed at gaining insight or reducing uncertainty (Griesbaum et al., 2015). In this context, the same author is of the opinion that as far as answers are concerned, factual information is the dominant type of content and has the greatest value when it comes to knowledge because it is the strongest predictor in terms of generating new knowledge. Internet

communication tools such as m-learning, email, blogs, and chat provide an integrated environment for teachers and students (Saruca & Cavus, 2009). Bloggers typically publicly post their opinions and ideas, and the resources they cover include text, images, audio, videos, maps, hyperlinks, hypertexts, and so forth (Yang, 2011).

Blogs are used by various interest groups, researchers, academics, teachers and students in a variety of educational contexts (Bartlett-Bragg, 2003). This raises the question of the importance of investigating the possibilities in this regard. The basis of popular blogs about German and English language learning run by teachers has an impact on foreign language learning and leads to the development of teachers' intercultural competence (Gorąca-Sawczyk, 2013). Blogs in different countries differ not only according to one criterion, which is the language of the texts but there are also differences in many other aspects, especially when it comes to cultural differences between countries. In addition, it has been found that if teachers can provide students with insight into their own progress and experience success, students will gradually build confidence and will be more motivated to work hard (Mynard, 2008). "Research has confirmed the blog's positive uses, including writing for an audience and peer review" (Hussein, 2021).

Language learners could use a personal blog, linked to the course, as an electronic portfolio that shows development in the course of time (Saruca & Cavus, 2009). Research results (Wu & Wu, 2011; Hamuddin, 2018; Hung & Huang, 2015; Mynard, 2008) have shown that blogs have the potential for developing reading and writing skills. Educators often emphasize the numerous benefits for language learners through blogs, however, none of the available researches focuses on the potential of blogs as a medium for reflecting on learning (Bremer, 2012). Shih (2010) states that "free access, ease of revision, and interesting material for learning were major factors that enhanced students' learning satisfaction by motivating them to learn effectively".

### 3. Blogging as a form of online discourse

Blogging is such a kind of learning platform that provides a wide range of opportunities for learning English and German which has multiple advantages (Bond et al., 2018). As Amir et al. (2011) state, firstly, it can improve students' knowledge of their language performance in writing, and secondly, how students see themselves in the role of author (public display). In blogging, teachers and students become partners beyond the classroom walls (Stevens, 2004; Dieu, 2004). Roters (2015) states that "many Internet tools, email, discussion forums, and chats are familiar to many language teachers and learners". According to Azdemir & Aydin (2015), several studies have been conducted on the effects of blogging, especially on writing achievement in English as a foreign language.

Digitization in higher education institutions is an issue that concerns various stakeholders in education (Bond et al., 2018). The increasing popularity of computer and Internet technology, on the one hand, as well as the growing interest in blogging, on the other hand, have given educators an impetus to orient themselves towards the application of Web 2.0 technologies such as blogs or podcasts, bearing in mind the numerous advantages this way of learning possesses. Some of the advantages are: more personalized form of learning, more interactive, more dynamic, more efficient flow and exchange of ideas, an increase in the visibility of student work, and others.

The wide use of blogs in education is due to its multimedia features, easy web publishing, interactivity and ability to support cooperative and autonomous learning (Ahluwalia et al., 2011). Thus, bloggers can read other blogs, make their comments on them and refer to them in their own blogs, which gives a stamp of interactivity and visibility, encourages students' motivation through receiving feedback about what is published on the blog.

Taking into account the fact that blogs have a simple and open approach, it can be said that as a result of their communicative and collaborative possibilities, and their increasing use, educational blogs appear in different educational contexts. A review of the literature suggests that blogs can serve in many different ways to cover different learning objectives (Jimoyiannis, 2013). Although certain groups of students are very familiar with computers and the Web, it happens that they have very little prior experience with educational blogs and blogging.

## 4. Conclusions

A blog is one of the most innovative tools to help students find opportunities to practice English writing outside the classroom. It can also be pointed out that speech blogs are an important predictor of students' oral presentations. Stronger interaction between teachers and students has a positive impact on foreign language learning outcomes. Despite the fact that the use of blogs as a learning tool varies among countries, it is highly developed and researched in many countries and has shown good results so far.

Today's classrooms, through the application of new media, influence the simplification and efficiency of the learning process in various dimensions. New technology trends expand the capacity of English teaching in authenticity and literacy, such as students' reading, writing, speaking and listening skills. Modern technologies (based on the web) and fast internet connections lead to the development of a wide range of new possibilities in learning foreign languages, both for teachers and for students. The advances in the area of technology are helping students deliver more meaningful content.

**References**


Ahluwalia, G., Gupta, D., Aggarwal, D. (2011). The Use of Blogs in English Language Learning: A Study of Student Perceptions. *Profile Issues in Teachers` Professional Development*, 13(2), 29-41. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S1657-07902011000200003&lng=en&tlng=en, pristupljeno 22.1.1.2023.

Amir, Z., Ismail, K., & Hussin, S. (2011). Blogs in Language Learning: Maximizing Students' Collaborative Writing. *Procedia - Social and Behavioral Sciences*, 18, 537–543. doi: 10.1016/j.sbspro.2011.05.079.

Bartlett-Bragg, A. (2003). The Knowledge Tree, eclass.uoa.gr.

Bond, M., Marín, V. I., Dolch, C., Bedenlier, S., & Zawacki-Richter, O. (2018). Digital transformation in German higher education: student and teacher perceptions and usage of digital media. *International Journal of Educational Technology in Higher Education*, 15(1), doi:10.1186/s41239-018-0130-1.

Bremer, C. (2012). New format for online courses: The open course future of learning. Universitätsbibliothek Johann Christian Senckenberg.

Buran, A. (2015). How to Use Blogs in Creating Special Opportunities for Language Learning. *Mediterranean Journal of Social Sciences*, 6(1), 532. Retrieved from https://www.richtmann.org/journal/index.php/mjss/article/view/5494.

Dieu, B. (2004). Practice view: Blogs for language learning. *Tesol EssentialTeacher*, 1(4), 26-30.

Dohn, N. B. (2010). Teaching with wikis and blogs: Potentials and pitfalls. In Proceedings of the 7th International conference on networked learning (pp. 142-150). Lancaster University.

Godwin-Jones, B. (2003). Blogs and Wikis: Environments for On-line Collaboration. *Language Learning & Technology*, 7 (2), 2-16, https://www.learntechlib.org/p/95551/.

Gorąca-Sawczyk, G. (2013). Using blogs for foreign language teaching and learning. Glottodidactica. *An International Journal of Applied Linguistics*, 40(2), 87-99.

Griesbaum, J., Mahrholz, N., von Löwe Kiedrowski, K. and Rittberger, M. (2015). Knowledge generation in online forums: a case study in the German educational domain, *Aslib Journal of Information Management*, 67(1), 2-26. https://doi.org/10.1108/AJIM-09-2014-0112.

Güttler, F. (2011). The use of blogs in EFL teaching. *BELT - Brazilian English Language Teaching Journal*, *2*(1). Retrieved from https://revistaseletronicas.pucrs.br/index.php/belt/article/view/9240.

Hamuddin, B. (2016). Using blog to Promote English Skills for EFL Students: The Students" Perception". *ELT-Lectura Journal, 3(2), 1-8.*

Hamuddin, B. (2018, May). Blogs as powerful learning tools: the perception from efl students in riau main island Indonesia. In IOP Conference Series: Earth and Environmental Science (Vol. 156, No. 1, p. 012060). IOP Publishing.

Hamuddin, B., Kurniawan, K., Syaifullah, S., & Herdi, H. (2018). Detecting major problems in learning English through blog-based class. *Journal of Education and Learning* (EduLearn), 12(3), 529-537.

Hellmann, R., Griesbaum, J., Mandl, T. (2010). Quality in Blogs: How to Find the Best User Generated Content. In: Abramowicz, W., Tolksdorf, R. (eds) Business Information Systems. BIS 2010. Lecture Notes in Business Information Processing, vol 47. Springer, Berlin, Heidelberg. https://doi.org/10.1007/978-3-642-12814-1_5

Hung, S.-T. A., & Huang, H.-T. D. (2015). Blogs as a learning and assessment instrument for English-speaking performance. *Interactive Learning Environments*, 24(8), 1881–1894. doi:10.1080/10494820.2015.105774.

Hussein, A. A. M. (2021). Using Blogs as a learning tool for the improvement of Writing Skills and Enhancing Attitudes Towards Learning English for Iraqi university students, *Iraqi Linguists Asso*, 31(1.2.3.4), 538-558.

Jimoyiannis, A., Tsiotakis, P., & Roussinos, D. (2013). Social network analysis of students' participation and presence in a community of educational blogging. *Interactive Technology and Smart Education*, 10(1), 15–30. doi:10.1108/17415651311326428.

Korovina, S., Pushkina, A., & Gurova, N. (2016). Online blogs in the process of development of students' reading skills. Education, reflection, development. *The European proceedings of social & behavioural sciences*, 18, 298-305.

Mynard, J. (2008). A blog as a tool for reflection for English language learners. *The Philippine ESL Journal*, 1(1), 77-90.

Özdemir, E., & Aydın, S. (2015). The Effects of Blogging on EFL Writing Achievement. *Procedia - Social and Behavioral Sciences*, 199, 372–380. doi: 10.1016/j.sbspro.2015.07.521.

Roters, B. (2015). Preservice Teachers' Professional Growth as Leaders: Empowerment through Research-Oriented Reflective Practice and Didactic Expertise in Germany, International Teacher Education: Promising Pedagogies (Part B) (Advances in Research on Teaching, Vol. 22B), Emerald Group Publishing Limited, Bingley, pp. 31-49. https://doi.org/10.1108/S1479-368720150000025022.

Sarica, G. N., & Cavus, N. (2009). New trends in 21st Century English learning. *Procedia - Social and Behavioral Sciences*, 1(1), 439–445. doi: 10.1016/j.sbspro.2009.01.079.

Shih, R.-C. (2010). Blended learning using video-based blogs: Public speaking for English as a second language students. *Australasian Journal of Educational Technology*, 26(6). https://doi.org/10.14742/ajet.1048.

Stevens, V. (2004). Tools for building online communities. Essential Teacher, 1(2), 32-36.

von Alberti-Alhtaybat, L., Abdelrahman, N. and Al-Htaybat, K. (2017). The effect of different higher education fee policies on education: A comparison between England and Germany, *International Journal of Public Sector Management*, 30(2), 189-208, https://doi.org/10.1108/IJPSM-04-2016-0085.

Wu, H. J., & Wu, P. L. (2011). Learners' Perceptions on the Use of Blogs for EFL Learning. Online Submission.

Yang, Y. F. D. (2011). Learner interpretations of shared space in multilateral English blogging. *Language Learning & Technology*, 15(1), 122-146.