TWO DECADES OF CONSTANTIN BRÂNCUȘI UNIVERSITY PUBLICATIONS IN WEB OF SCIENCE: EVOLUTION AND CITATION VISIBILITY

DĂNĂCICĂ DANIELA-EMANUELA
FACULTY OF ECONOMICS, "CONSTANTIN BRÂNCUȘI"
UNIVERSITY OF TÂRGU-JIU, ROMANIA
e-mail: danadde@yahoo.com

Abstract

The aim of this paper is to examine the dynamics of scientific productivity and visibility for Web of Science (WoS) Core Collection articles that include at least one author affiliated with "Constantin Brâncuși" University of Târgu-Jiu, over 2005-2025. The analysis is based on a bibliometric dataset of 484 articles, retrieved from the Web of Science Core Collection on 11 February 2026. We document temporal changes in WoS output, the collaborative and institutional profile of publications, and patterns of scientific visibility proxied by WoS citations. Descriptive results indicate a marked intensification of publishing activity in 2017-2025, accompanied by larger teams and increasing internationalisation of first-author leadership. Citation counts are highly right skewed, with visibility concentrated in a small segment of highly cited papers. To analyse correlates of citation rates, we estimate a Negative Binomial model. Citation rates are significantly associated with open access status, first-author affiliation, and index category.

Keywords: *Web of Science, Negative Binomial, citations, articles*

JEL Code: *I23, C25*

1. Introduction

In recent decades, the assessment of scientific research and academic performance in higher education has become increasingly intertwined with bibliometric indicators, derived from international publications and the citations received by these publications (Wilsdon et al., 2015; Hicks et al., 2015). This shift reflects the need to underpin the allocation of public resources with comparable criteria, while also managing academic careers through transparent standards (Wilsdon et al., 2015; Hicks et al., 2015; Abramo et al., 2011). A substantial body of scholarship has highlighted the tension between peer-review based evaluation and bibliometric assessment, emphasising both their respective advantages and their inherent limitations (Abramo et al., 2011; Abramo and D'Angelo, 2011; Bornmann, 2013).

Evidence from countries such as Norway and the United Kingdom, together with cross-country analyses including Italy, suggests that when publication performance in journals indexed by Web of Science or Scopus is embedded within research evaluation and funding rules, universities and academic staff tend to adjust their publication strategies accordingly (Sivertsen, 2016; Checchi et al., 2019; Pinar and Horne, 2022; Khan et al., 2023). One consequence of implementing such criteria is the expansion of collaboration networks, the reorientation of research agendas, and the targeting of journals with recognised impact metrics (Wilsdon et al., 2015; Hicks et al., 2015). At the same time, the literature cautions that the relationship between rules and research quality is not mechanical: effects depend on the scientific field, collaboration opportunities, research infrastructure, and institutional maturity (Hicks et al., 2015; Sivertsen, 2016; Checchi et al., 2019).

In Romania, national minimum standards for promotion to associate professor and full professor positions, as well as for habilitation, have been gradually introduced under the former National Education Law no. 1/2011 and, more recently, the Higher Education Law no. 199/2023, and further specified through subsequent government decisions and ministerial orders, alongside

procedures for the periodic evaluation of doctoral schools and research units. For the field of Economic Sciences and Business Administration, Ministerial Order no. 6129/2016 sets mandatory minimum criteria concerning articles published in WoS indexed journals and citations in WoS journals, required for the conferment of academic titles and habilitation. In parallel, research funding schemes, such as the national UEFISCDI competitions, place emphasis on the international visibility and publication impact, further consolidating the role of WoS publications and WoS based citations in shaping academic behaviour.

Against this background, the aim of this article is to analyse the evolution and visibility of Web of Science indexed scientific articles associated with "Constantin Brâncuși" University of Târgu-Jiu (CBU), over the period 2005-2025. The analysis is grounded in a bibliometric dataset extracted from the Web of Science Core Collection platform. Three complementary directions are pursued in this study: the temporal dynamics of WoS scientific productivity and structural changes across relevant time windows; the collaborative and institutional profile of publications (team size, first-author affiliation and the degree of internationalisation); and the determinants of scientific visibility, proxied by WoS Core Collection citations, with particular attention to the role of open access and the type of indexation (ESCI/SCIE/SSCI). This approach supports a clearer understanding of CBU positioning within the WoS ecosystem and informs institutional reflection on the potential effects of evaluation policies on publishing behaviour. As methodological approach, we employ a Negative Binomial (NB) regression model with control for the citation window. The resulting estimates provide a concise picture of the factors associated with the relative visibility of publications.

The rest of the paper is structured as follows: section 2 describes data collection and the definition of the study variables; section 3 presents preliminary descriptive statistics for the analysed dataset; section 4 reports the results of the Negative Binomial regression for WoS citations; and the concluding section summarises the implications and limitations of the analysis, while outlining potential directions for further research.

2. Data gathering and variables

The empirical analysis is based on a corpus of articles indexed in the Web of Science Core Collection, retrieved using a query that identified publications with at least one author affiliated with "Constantin Brâncuși" University of Târgu-Jiu (CBU), over the period 2005-2025, with the filter *Document Type=Article*. The query was executed on 11 February 2026. The dataset was downloaded using the *Export* function and imported into SPSS 26.0, with the article as the unit of analysis. The final dataset contains 484 records. To ensure data quality and the uniqueness of observations, we checked for duplicates using both the unique WoS identifier (WoS ID) and article titles. The analysis confirmed that no duplicate records were present, and the dataset therefore remained unchanged at 484 observations.

Based on the bibliometric metadata provided by the WoS export, we constructed the following variables: num_authors (a numeric variable capturing the total number of authors per article), first_author_ro (a dummy variable indicating whether the first author is affiliated with an institution in Romania), first_author_cbu (a dummy variable indicating whether the first author is affiliated with "Constantin Brâncuși" University of Târgu-Jiu), OA (a dummy variable constructed from the Open Access Designation field), and period (a categorical variable designed for comparative analysis and to capture structural changes over time). Table 1 summarises the operational definitions and coding of these variables.

Table 1. Variable definitions

Variable	Type	Definition	Coding
num_authors	numeric	Total number of authors for each article	integer≥ 1
first_author_ro	dummy	First author has an affiliation in Romania	1=yes; 0=no
first_author_cbu	dummy	First author has an affiliation at CBU	1=yes; 0=no
OA	dummy	Article is labelled Open Access in WoS	1=yes; 0=no
period	categorical	Time window for comparisons, chosen to reflect major shifts in the national research evaluation context	2005-2010; 2011-2016; 2017-2025

Source: Author's calculations based on WoS data.

3. Preliminary descriptive statistics

The distribution of WoS articles by publication year is presented in Table 2. The data reveal an uneven pattern, characterised by relatively low productivity in the early years of the interval and a marked intensification of publishing activity in more recent years. Over 2005-2010, the number of WoS articles published was 71, corresponding to an average of approximately 12 articles per year, with no clear upward trend. In the subsequent period, 2011-2016, WoS indexed scientific output consolidated, reaching 165 articles, or roughly 28 articles per year on average. Over 2017-2025, a total of 248 WoS articles were published, corresponding to an average of about 28 articles per year. Notably, approximately one-fifth of the sample articles are concentrated in the last three years, and more than half of the CBU WoS publications in the analysed sample fall within the most recent period, 2017-2025.

Table 2. Distribution of WoS articles by publication year

Year	Number of articles	Percent
2005	12	2.5
2006	9	1.9
2007	8	1.7
2008	19	3.9
2009	13	2.7
2010	10	2.1
2011	22	4.5
2012	25	5.2
2013	29	6.0
2014	27	5.6
2015	33	6.8

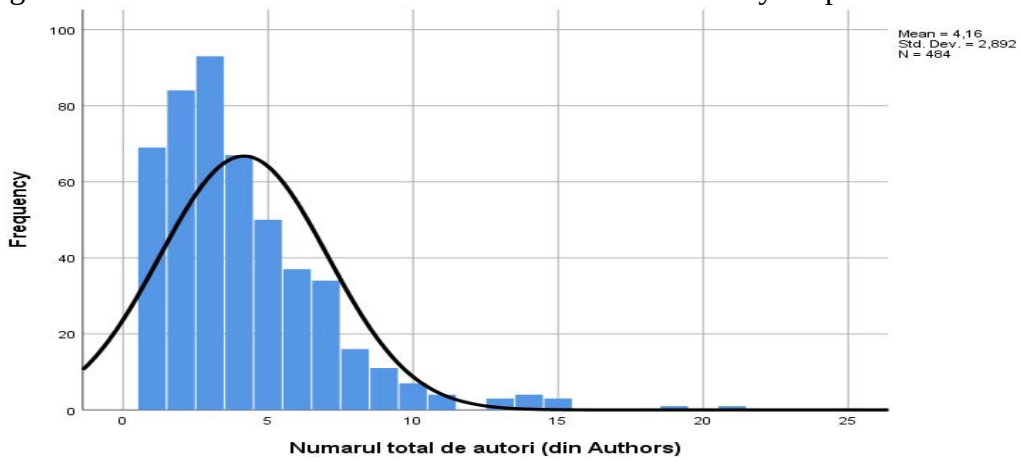
2016	29	6.0
2017	33	6.8
2018	20	4.1
2019	19	3.9
2020	20	4.1
2021	25	5.2
2022	28	5.8
2023	38	7.9
2024	30	6.2
2025	35	7.2
Total	484	100.0

Source: Author's processing using SPSS 26.0.

In terms of publication outlets (Source Title), output is partially concentrated in a small set of journals. The five most frequent source titles are Revista de Chimie (66 articles, representing 13.6% of the total corpus), Metalurgija (33 articles, 6.8% of the total corpus), Sustainability (27 articles, 5.6% of the total corpus), Romanian Journal of Morphology and Embryology (25 articles, 5.2% of the total corpus) and Industria Textilă (23 articles, 4.8% of the total corpus). Taken together, these five journals account for 174 articles, approximately 36.0% of the analysed sample, while the remaining publications are dispersed across a broad range of outlets, consistent with the multidisciplinary profile observed in subsequent classifications.

Figure 1 presents the histogram of the number of authors over 2005-2025. The distribution of authors per article is asymmetric. The mean is 4.16 authors per article. However, most papers are produced by small to medium sized teams (2-6 authors). Across the period analysed, 69 single-author articles were published, while 84 articles had two authors and 93 articles had three authors. Only a small proportion of publications involve very large teams (more than 10 authors), producing a long right tail in the distribution.

Figure 1. Distribution of the number of authors over the analysed period



Source: Author's processing using SPSS 26.0.

The co-authorship structure suggests a transition from a predominantly individual model (2005-2010) towards a collaborative production model with medium and large teams (2017-2025). After 2011, and particularly after 2017, the share of WoS articles with a single author declined to 4.4%, while articles with ≥ 6 reached 39.1%. This shift in co-authorship may be associated with institutional transformations and academic policy changes in Romania concerning evaluation, funding, and career advancement, which have strengthened the role of WoS publications and collaborations. It should be emphasised that this interpretation is purely descriptive. The contribution of structural factors, such as disciplinary composition, research grants, and internationalisation, requires separate and more in-depth analysis.

Of the 484 WoS articles analysed, 366 (75.6%) have a first author affiliated with a higher-education or research institution in Romania, and 234 (48.3%) have a first author affiliated with CBU. The three-period windows indicate a substantial shift in the leadership profile of WoS publications associated with CBU. The share of articles with a first author affiliated with CBU decreases from 77.5% in 2005-2010 to 58.8% in 2011-2016 and further to 33.1% in 2017-2025. In parallel, the share of articles led by a first author affiliated with an institution outside Romania increases from 5.6% (2005-2010) to 11.5% (2011-2016), reaching 38.3% in 2017-2025. This pattern points to an intensification of institutional collaborations at the level of article leadership.

The distribution of Web of Science citations (Times Cited, WoS Core) for the 484 articles is highly heterogeneous and strongly right skewed. The mean is 10.41 citations per article, while the median is only 3 citations and the mode is 0, indicating that the average impact is driven by a relatively small number of highly cited papers. Overall, 21.9% of the analysed articles have received no citations in WoS Core, confirming the presence of a sizeable segment with very low citation counts. The citation distribution shows pronounced positive skewness (skewness = 5.057) and is leptokurtic (kurtosis = 30.763). Ninety per cent of articles have at most 23 citations, while the 95th percentile threshold is approximately 43 citations. These results suggest that the visibility of CBU publications is concentrated in a narrow group of highly cited works, whereas a substantial proportion of articles accumulate few citations, particularly in recent years, when the citation window remains limited.

In terms of total citations, the portfolio is sustained primarily by several thematic clusters, including Mathematics, Applied; Mathematics (519 citations; N=33), Computer Science, Theory & Methods; Mathematics, Applied; Statistics & Probability (445; N=6), Green & Sustainable Science & Technology; Environmental Sciences; Environmental Studies (311; N=27), as well as Chemistry, Multidisciplinary; Engineering, Chemical (277; N=66) and Developmental Biology (265; N=25). The Economics category also contributes substantially (212; N=29). With respect to mean citations, some low-volume combinations concentrate particularly high impact per article, especially in the computing–mathematics–statistics area (74.17 citations per article, N=6) and in sustainability/environment-related topics (49.40, N=5), whereas high-volume domains display lower average impact, such as Chemistry, Multidisciplinary; Engineering, Chemical (4.20 citations per article, N=66).

Within the analysed sample, 39.5% of articles are labelled open access in Web of Science, while 60.5% do not carry an open access label. The distribution across the three periods highlights a strong structural change. In 2005-2010, only 8.5% of articles are classified as open access. This rises modestly to 13.3% in 2011-2016, and then increases substantially in 2017-2025, reaching 65.7% of articles designated as open access.

The distribution of articles by Web of Science Index indicates the dominance of SCIE indexing (64.9% of articles), alongside meaningful diversification over time. In 2005-2010, 83.1% of publications are indexed in SCIE, whereas after 2017 the share of "pure" SCIE declines to 50.4%, simultaneously with an increase in SSCI (14.1%), SCIE; SSCI (16.95%), and ESCI (18.1%). This evolving structure suggests disciplinary diversification and a stronger orientation towards interdisciplinary journals and outlets in the social sciences, a tendency consistent with the

earlier observed changes in co-authorship, internationalisation, and the growth of open-access publishing in recent years.

Regarding WoS categories, the most frequent classification in the dataset is the combination Chemistry, Multidisciplinary; Engineering, Multidisciplinary (66 articles, 13.6% of the total), followed by Metallurgy & Metallurgical Engineering (43 articles, 8.9%) and Mathematics, Applied; Mathematics (33 articles, 6.8%). The Economics category ranks fourth, with 29 articles (6% of the total), indicating a relevant presence, albeit numerically smaller than the STEM domains within the WoS article set associated with CBU. Overall, the distribution of WoS categories depicts a heterogeneous publication portfolio, with a strong scientific component and a visible socio-economic branch, given that WoS labels may be assigned singly or in combination, suggesting interdisciplinarity for part of the publication output.

4. Econometric analysis

In this section, to examine the determinants of the scientific visibility of the analysed publications, we estimated a Negative Binomial (NB) regression model. The dependent variable is the number of WoS Citations, while the explanatory variables include the natural logarithm of the number of authors (ln_authors), open access status (yes/no), first_author_ro, first_author_cbu, and Web of Science Index. Exposure time is controlled for using an offset ln_age, where ln_age=ln(age) and age is the number of years since publication, approximated as 2026-publication year, with age≥ 1 in the sample. We employ the Negative Binomial specification because WoS citation counts are highly right-skewed and over-dispersed, and the inclusion of the ln_age offset allows us to model citation rates while accounting for the unequal time available for citation accumulation across older and more recent articles. The NB results are reported in Table 3.

Table 3. Negative Binomial regression results

Variable	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	df	Sig.
(Intercept)	1.114	.2330	.657	1.571	22.869	1	.000
CPCI-S; SCIE	-1.377	1.1157	-3.563	.810	1.522	1	.217
ESCI	-.951	.2206	-1.383	-.519	18.577	1	.000
SCIE	-.070	.1885	-.439	.300	.137	1	.711
SCIE; CPCI-S	.482	.4337	-.368	1.332	1.235	1	.266
SCIE; SSCI	.332	.2293	-.117	.782	2.100	1	.147
SSCI	Reference Category						
Non-Open Access	-.268	.1257	-.515	-.022	4.555	1	.033
Open Access	Reference Category						
First_author_ro	-.930	.1393	-1.203	-.657	44.571	1	.000
First_author_abroad	Reference Category						
First_author_cbu	-.031	.1461	-.317	.256	.044	1	.833
First_author_noncbu	Reference Category						
ln_authors	.052	.0925	-.130	.233	.310	1	.578

Source: Author's processing using SPSS 26.0.

The Negative Binomial estimates indicate that scientific visibility, measured by WoS citations and adjusted for exposure time through the ln_age offset, is associated primarily with open access status, first-author affiliation, and the WoS index category. By contrast, team size (ln_authors) and first_author affiliation with CBU do not exhibit statistically significant effects in this specification.

Specifically, non-open access (closed) articles have a significantly lower citation rate than open access articles, suggesting a visibility advantage for open access publications ceteris paribus. In our specification, however, the strongest association emerges for first_author_ro, indicating that articles led by a first author affiliated with an institution in Romania have a substantially lower citation rate than those led by a first author affiliated abroad, pointing to systematic differences in scientific visibility between national and international leadership.

Index category has a significant effect on WoS citations. Relative to the reference category SSCI articles indexed in ESCI display a significantly lower citation rate (B=-0.951; $p < 0.001$), whereas differences relative to SSCI are not statistically significant for SCIE and the combined index categories (SCIE; SSCI and SCIE; CPCI-S). Consistent with this, first_author_cbu is not significant (p=0.833) and ln_authors is likewise not statistically significant (p=0.578), suggesting that, once index category, access status, and first-author affiliation are accounted for, neither team size nor first-author affiliation with CBU explains additional variation in WoS citations.

Expressed in incidence-rate terms (IRR), non-open access publication is associated with approximately 24% fewer citations, while first_author_ro is associated with roughly 60% fewer citations relative to the respective reference categories.

Finally, the estimated relationships should be interpreted as descriptive-associative rather than causal. They may reflect underlying differences in disciplinary composition, collaboration networks, and journal quality. Therefore, causal interpretation should be avoided, and further, more granular analyses are required.

5. Conclusions

The aim of this article was to examine the dynamics of scientific productivity and visibility for publications indexed in the Web of Science Core Collection that include at least one author affiliated with "Constantin Brâncuși" University of Târgu-Jiu (CBU), over the period 2005-2025. The empirical analysis relies on a bibliometric dataset comprising 484 records extracted on 11 February 2026. Methodologically, we employed descriptive statistics to characterise temporal patterns and the collaborative profile of the publication output and a Negative Binomial regression model, with WoS citations as the dependent variable and with the citation window controlled via the ln_age offset.

The results point to a substantial intensification of publishing activity in the most recent years, with more than half of the articles concentrated in the 2017-2025 window. This pattern is consistent with a broader set of institutional and policy developments, including changes in higher education funding, regulations governing academic promotion, and the increasing weight attached to WoS publications and citations in career advancement. The observed trajectory may therefore reflect both a consolidation of CBU presence within the WoS ecosystem and an adjustment of publishing behaviour in response to national legislative and institutional changes. In terms of co-authorship, the evidence suggests a transition from a relatively individualised model towards a predominantly collaborative one. The distribution of authors per article is right-skewed, with a mean of 4.16 authors per paper, alongside an increased share of publications produced by teams of six or more authors in 2017-2025.

The analysis of institutional leadership and internationalisation indicates a marked structural shift. The share of articles with a first author affiliated with CBU declines sharply, from 77.5% in 2005-2010 to 33.1% in 2017-2025, in parallel with an increase in publications led by a first author affiliated outside Romania, reaching 38.3% in the same period. These developments point to stronger external collaborations at the level of article leadership and a re-positioning of CBU within broader co-authorship networks.

WoS citation counts are highly heterogeneous and strongly right skewed, with a median of 3 citations and 21.9% of articles receiving no citations. This indicates that scientific visibility is

concentrated in a narrow segment of highly cited works. In terms of total citations, the portfolio is sustained primarily by STEM-related areas (mathematics, computer science, chemistry, statistics, and environmental fields), while Economics also makes a visible contribution to total WoS citations, even though its share of publications remains smaller than that of STEM domains. At the same time, the proportion of papers designated as open access increases rapidly, reaching 65.7% in 2017-2025, which suggests an important shift in publishing strategy in the recent period.

The Negative Binomial regression results, estimated with an offset for article age, indicate that scientific visibility is significantly associated with open access status, first-author affiliation, and WoS index category. Articles published in a non-open access (closed) format exhibit a significantly lower citation rate than open access publications, while articles led by a first author affiliated in Romania show a significantly lower citation rate relative to those led by a first author affiliated abroad. Indexing is also relevant: ESCI articles display a significantly lower citation rate than SSCI articles (the reference category), whereas SCIE and the included combined-index categories are not significantly different from SSCI. By contrast, the number of authors and first-author affiliation with CBU do not exert statistically detectable effects on WoS citations in the current specification, suggesting that, once access, leadership, and indexing are accounted for, team size and CBU first-authorship do not explain additional variation in citations.

From an institutional perspective, these findings support several directions that may be useful for CBU. The growth of open access publishing and its association with higher citation rates may justify targeted support policies for open access publication, particularly where article processing charges are relevant, while prioritising credible journals and avoiding predatory channels (Røeggen, 2021). Encouraging publications led by CBU-affiliated first authors also remains a plausible avenue for strengthening internal capacity, leadership, and the overall quality of scientific output, even if its effect on citations is not detectable in the present model. Furthermore, the indexing-related results suggest that publishing strategy should take account of indexing profiles, without reducing publication decisions to bibliometric indicators alone, given the continuing importance of article quality, disciplinary relevance, and journal standards.

Finally, the results should be interpreted within the methodological limits of the study. The econometric analysis focuses on WoS citations and does not explicitly control for disciplinary differences in citation practices. Moreover, the estimated relationships are associative rather than causal. The ln_age offset adjusts for differences in citation exposure, nonetheless, very recent publications remain disadvantaged due to the incomplete maturation of citations, and the combination of over-dispersion and thematic heterogeneity may call for alternative model specifications in future work.

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