

A NEW APPROACH TO SCIENCE ASSESSMENT: USING THE TIMMY INDEX

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Abstract: The article analyzes the issue of evaluating scientific research. Evaluation should recognize both quantitative and qualitative contributions, taking into account the objectives, discipline and institutional context. Capitalizing on international experience, primarily European, should be part of the evolution of the system in the Republic of Moldova. All knowledgeable stakeholders should be involved in the transition to new research evaluation systems. In this sense, the use of an indicator for the evaluation of national scientific organizations is proposed.

Keywords: evaluation, research, metrics, Open science.

JEL classification: I23, I25, I28.

Introduction

Evaluation has become an essential part of the research process, essential for measuring policy objectives, making decisions on programme budgets, project selection, funding awards and career development. Since the 2008 financial crisis, economic constraints on public funding have intensified, leading to increased policy demands for the scientific community to measure its wider impact to demonstrate its value to society.

At the same time, there is a growing consensus that the current evaluation system needs to be rethought for an era of Open Science, big data, digitisation and the demand for interdisciplinary methods and skills. There are calls to improve the use of evaluation indicators, to better balance quantitative and qualitative factors, and to broaden the scope of evaluation to reflect the full diversity of inputs, outputs and practices in 21st century science (European Commission, 2016; OECD, 2015).

The aim in the world is to establish a more appropriate set of indicators and approaches to lead to a more equitable and nuanced system. In this context, the European Commission has carried out a consultation and 'co-creation' exercise with research and innovation stakeholders to define principles and boundary conditions for new, improved evaluation systems. In June 2022, the process was endorsed by EU science ministers, leading to an action plan setting out the main lines along which the evolution of evaluation systems should take place (European Commission, 2017; FOSTER).

The main objective of the reform is to move away from the inappropriate use of journal- and publication-based metrics in the evaluation of research, towards a combination of metrics and narratives that reflect the value of research outputs and (researchers' activities) in a more nuanced way. At the same time, the challenge is to benefit from the objectivity of accountable metrics, while

embracing the variety of research outputs and tailoring research evaluation to the objectives of that evaluation.

Inevitably, the key question now becomes: what next in terms of implementation? Can the shift from rhetoric to action be driven by genuine innovation and experimentation, towards an agreed set of defined and pragmatic outcomes? How can we better reach beyond academia to engage the whole research and innovation community? And as Europe embarks on its own transformation, is there really an appetite for change and a willingness to align approaches in the Republic of Moldova?

Research methodology

The study included an analysis of relevant literature in the field (studies, reports, public debates), which was synthesised to establish the main problems in the evaluation of scientific research in Europe and the Republic of Moldova. Following the identification of the main shortcomings of the existing indicators in science evaluation, a composite index was developed, capturing the different impacts of scientific research and experimental development.

As empirical sources were used statistical data, openly available from various institutions in the Republic of Moldova, the National Bureau of Statistics, the Academy of Sciences of Moldova, the Ministry of Education and Research and others.

Results and discussions

What is the best way to evaluate science?

In the Republic of Moldova, as in Europe as a whole, science needs to move decisively to a point where evaluation is based on a broader view of researchers' achievements, one that looks beyond the number of publications and the prestige of journals. This is the subject of many researchers' studies and the concern of policy-makers.

Mattias Björnmalm, secretary-general at the European Schools Conference for Advanced Engineering Research and Education, argues that in the current system, researchers have to divide their time between "playing the game" by publishing in appropriate journals and working on real achievements (Bazley, 2010). Stephen Curry, chair of the Declaration on Research Assessment (DORA), calls for less emphasis on the number of publications in prestigious journals (Elsevier, 2019).

Arguing that the academic community does not represent the society it claims to serve, Professor Curry highlights the interconnectedness between the need for assessment reform and addressing gender and racial inequalities. "Another factor, I think, that I see both in the UK and in Europe and elsewhere is the links between research evaluation and efforts to address inequalities in academia, which has been given increasing attention" (American Society for Cell Biology, 2013; Hicks et al., 2015).

Regional inequalities also persist as access to research funding varies from country to country. Oleksandr Berezko, President of the European Council of Doctoral Students and Young Researchers, noted that the implementation of open science requires resources and funding, and this creates gaps between European countries. For example, while France is implementing its second open science

plan, in Ukraine the first plan has just been adopted. "If the reform is not implemented properly, it will increase the inequalities that already exist," he warns, adding that co-creation should be at the heart of the reform (Bonn and Pinxten, 2021).

Several authors stress that serving society is among the main goals of science, and the contribution of research should have practical implications. Thomas Palstra of Twente Research University mentions the importance of interacting with citizens to provide solutions in areas that serve them, such as healthcare or disaster relief management.

Speaking of practical ideas on how to support multi-stakeholder interaction, Michael Arentoft, head of the Open Science Unit in the European Commission's research directorate, calls on the private sector to participate in workshops and seminars on research evaluation. He agrees that CoARA is "a learning platform" to equip researchers and research organisations with the right tools (Campbell et al., 2010).

Timmy Index - a relevant and challenging approach

Focusing in the Republic of Moldova only on the use of quantitative indicators (especially when the score awarded does not take into account the effort made to obtain different types of publications), without a qualitative assessment leads to the rush for publications, which is reflected in such phenomena as low quality publications, segmentation of results obtained in several publications, avoidance of fundamental, in-depth research, publications in pseudo-scientific (predatory) editions, with a reduction in the overall level of quality of scientific research. In view of these findings, new approaches are needed, capturing scientific performance in its totality. To this end, we have developed a new index - the Timmy index. It is named after my dog, who is young, vigorous and hard-boned, measuring everything in bones. The Timmy index shows how many thousands of kilograms of bones can be bought from the income (remuneration) earned in a year by a person working in research. We applied it to the heads of research and innovation organisations, since the data for them are public (figure 1).

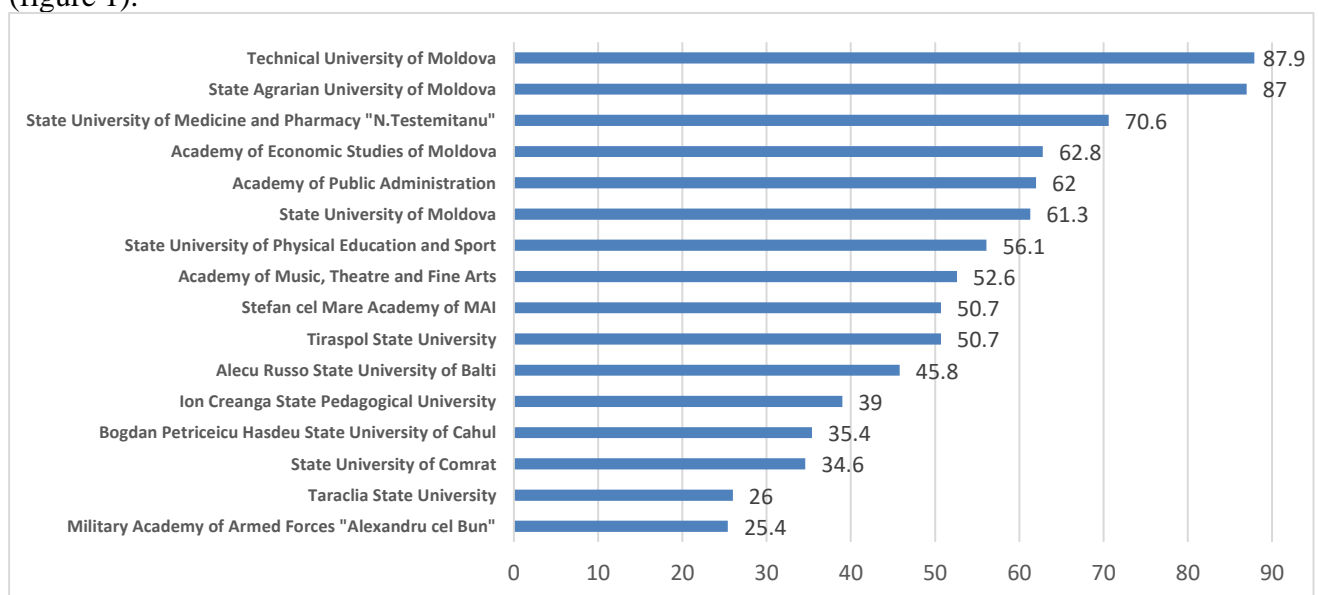


Figure 1. Universities in the Republic of Moldova according to the Timmy Index

Source: developed by the author using ASM and ANI data

In our opinion, it shows very well the scientific performance of the leaders of the institutions and the institutions themselves. In a knowledge society it is obvious that the more knowledge an organisation produces, the higher the remuneration of its leaders by the state.

In this way, there is no need to use complex and numerous indicators, which have many shortcomings. It is known, for example, that bibliometric evaluation has many shortcomings: it cannot capture the impact of research outside the academic community, in economics or in education; not all valuable publications are present in databases (e.g. monographs and many articles in languages other than English in the humanities); it is difficult to use bibliometric indicators to compare researchers between different fields, as there are significant variations in frequency and volume of citations between disciplines, etc. In this way, using only the Timmy index, we can in one shot solve multiple problems - we are once again convinced that everything simple is brilliant.

Conclusions

Our study showed that evaluation reform should rebalance the use of metrics, as the current system relies too heavily on publications from prestigious journals. However, the process should be an evolution rather than a complete replacement of the existing system with a new one.

There is no single perfect system, and respect for diversity is crucial. Evaluation should recognise both quantitative and qualitative contributions, taking into account objectives, discipline and institutional context.

Harnessing international, primarily European, experience should be part of the evolution of the system in Moldova. The transition towards a properly balanced use of qualitative and quantitative inputs is global and many countries are already taking important steps in this direction.

The implementation of any new framework needs to be measured and transparent, giving both early-career researchers and their senior colleagues sufficient time to adapt. Evaluation should encourage the achievement of research objectives rather than create challenges.

All knowledgeable stakeholders should be involved in the transition to the new research evaluation systems. The interests of government funders should be taken into account. Input from private companies employing researchers, journals, publishers, and review experts should also be considered. In general, stakeholders should respect the diversity of contributions and results without compromising quality.

In this sense, the use of the Timmy index meets all the requirements stipulated above and we warmly and confidently recommend it for use in the Republic of Moldova.

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