Annual International Scientific Conference
"Competitiveness and Innovation in the Knowledge Economy"
September 26-27, 2025
Chisinau, Republic of Moldova

DOI: https://doi.org/10.24818/cike2025.06

SCIENTIFIC ASSOCIATIONS AS DRIVERS OF EDUCATIONAL AND RESEARCH POLICY: COMPARATIVE INSIGHTS FROM JAPAN AND MOLDOVA

LARISA SAVGA
Habilitated Doctor, University Professor
Economy and Business Administration Department
Trade C-operative University of Moldova
Chisinau, Republic of Moldova
Department of Applied Studies
Dunarea de Jos University of Galati
Galati, Romania
e-mail: savga.larisa@gmail.com or larisa.savga@uccm.md
ORCID ID: 0000-0002-9691-7475

Abstract: Disciplinary scientific associations are key actors in educational and research arthitecture, capable of strengthening academic communities, facilitating knowledge transfer, and shaping strategic development in research, education, and innovation. The aim of this research is to conduct a comparative analysis of the Japanese and Moldovan models of scientific disciplinary associations, highlighting differences in terms of size, functionality, and the impact on public policies, including educational policies, as well as on society. To advance the research, a comprehensive methodology was applied, integrating both quantitative and qualitative approaches and drawing upon a wide range of relevant information sources. These included policy documents, statistical data, secondary sources, and comparative studies.

Research has found that Japanese scientific societies are characterized by an institutionalized system integrating research, education, and innovation, supported by mixed funding mechanisms, and providing expertise to the government in the formulation of educational and research policies. In the Republic of Moldova, disciplinary scientific associations are fewer in number and institutionally fragile, with activities focused primarily on conferences and publications, playing only a limited role in decision-making processes and enjoying modest international visibility. The results of the study highlight the need to strengthen the institutional capacities of these structures in the Republic of Moldova through public support, integration-oriented policies, and internationalization measures. The findings further emphasize that adapting selected best practices from the Japanese model could significantly contribute to enhancing the role of scientific associations as relevant actors in educational policy-making and in advancing the development of a knowledge-based society.

Keywords: scientific associations, research-education-innovation ecosystem, public policies
JEL Classification: A29, O1, O2, Q01

1 Introduction

Scientific associations are central actors in research and innovation ecosystems, facilitating knowledge exchange, interdisciplinary cooperation and influencing scientific and educational policies. They constitute frameworks for the aggregation of intellectual capital, playing a pivotal role in advancing knowledge transfer, promoting both interdisciplinary and international collaboration, and supporting the development of scientific networks. These organizations have a distinct role in society, due to their ability to bring together academic communities, to promote professional standards, and to influence the directions of research and higher education development. However, the level of development of scientific societies and their involvement in the process of developing public policies in the field of education and research varies considerably between the Republic of Moldova and other countries. These differences are determined by factors

such as academic tradition, available institutional resources, funding mechanisms and the extent to which the scientific community is integrated into the governance architecture of education.

In this context, examining the experience of countries where such organizations exert a significant impact on research, education, and innovation, Japan being a particularly illustrative example, provides valuable insights into the mechanisms of institutional consolidation and helps identify good practices that can be adapted to the realities of the Republic of Moldova. It is worth noting that Japan hosts one of the densest ecosystems of scientific associations worldwide, owing to its strong academic tradition, systematic state support, and deliberate fragmentation into specialized niches. The rapid transformations of recent decades in the Republic of Moldova highlight the need to reconsider the role of scientific associations in the formulation and implementation of educational and research-innovation policies.

The purpose of this research, conducted within the HESPRI project (WP3), is to evaluate the role of Japanese scientific societies in the research–education–innovation ecosystem, including an analysis of their contribution to shaping and influencing higher education policies. At the same time, the study aims to identify best practices generated by these organizations, with the goal of adapting and transferring them to the education and research system of the Republic of Moldova, in order to strengthen institutional capacity, increase their impact on public policies, and foster international collaboration.

The research employed a comprehensive methodology integrating the following methods: document and public policy analysis, statistical analysis, focus groups, network and partnership analysis, comparative analysis, and international benchmarking. This approach enabled a thorough evaluation of the role of Japanese disciplinary scientific societies within the research–innovation–education ecosystem and the identification of best practices relevant to the Republic of Moldova.

2 Scientific Associations and their Influence on Educational and Research Policies

2.1 The Role of Scientific Associations in the Education–Research–Innovation Ecosystem

In a knowledge society, scientific associations occupy a central position within the research ecosystem. They function as nodes of connectivity and intermediaries between the academic community, government institutions, the economic sector, and society at large. By their nature, these organizations represent forms of self-organization among researchers, aimed at ensuring both professional cohesion and the consolidation of disciplinary or interdisciplinary identity, while facilitating collaboration, information exchange, the establishment of professional standards, and dialogue with other sectors (public authorities, industry, and civil society).

Based on the review of the literature, three main dimensions of the role of scientific associations in contemporary society can be identified: *governance/ethics and standards*, *knowledge dissemination and community building*, and *the development of institutional capacity*.

Scientific associations make a significant contribution to *defining and implementing ethical standards, regulating research conduct, and establishing accountability mechanisms in research*. They develop codes promoting responsible research leadership, guidelines for academic behavior, and procedures that foster a culture of integrity. These organizations can play a crucial role in the formulation and adoption of policies in the fields of research, education, innovation, industry and business development. (Bendiscioli *et al.* 2020; Frankel 1993; AAAS 2000).

Dissemination, a traditional role of disciplinary scientific societies, remains fundamental in the digital and global era. Through journals, conferences, and workshops, scientific associations ensure the circulation of ideas, peer-review validation, and interdisciplinary exchanges (Delicado *et al.* 2014). In this way, they facilitate the generation of shared resources for professional development, research dissemination, and network building (AAAS, 2020). Thus, through dissemination activities, these organizations contribute to academic validation, the facilitation of

collaborations, scientific mobility, research outcome validation, and the strengthening of disciplinary academic communities.

Another particularly important role of scientific associations is to support the *development of research capacity*, both at individual and institutional levels. In this regard, they can contribute to facilitating access to resources (infrastructure, equipment), supporting institutions to improve research management, advising on grant writing, supporting young researchers (mentoring, scholarships, training), mediating international cooperation for skills exchange, mobilities, partnerships. These scientific organizations can encourage relevant local research, by providing training in research methods, mentoring, financial support (Klinsky *et al.* 2022, Harris 2004).

Thus, through the actions mentioned above, scientific associations can become pivotal actors in the research-education-innovation ecosystem. They not only support individual researchers, but also contribute to impacting public policy and building a scientific community oriented towards excellence and responsibility.

Countries where disciplinary scientific associations are well developed and positioned in the academic environment have a strong impact on innovation, economic and social development. Among these, the USA, Great Britain, Germany, Japan, Canada, Australia, etc. stand out, where scientific societies function not only as professional organizations, but as key institutional actors in the governance of science, education and innovation.

Within the HESPRI project, I had the opportunity to participate in a study and research visit to Doshisha University in Kyoto, Japan. This experience proved invaluable for understanding and analyzing internationally recognized educational and research models and served as a valuable starting point for conducting a comparative analysis of the Japanese and Moldovan models of scientific associations. The visit highlighted both best practices that could be adapted to the Moldovan context and specific challenges that require innovative solutions.

2.2 Scientific associations as key actors in shaping educational and research policies: a comparative analysis of the Japanese and Moldovan Models

Disciplinary scientific societies in Japan constitute fundamental pillars of the academic community, many with traditions spanning over a century. They play a crucial role in consolidating scientific identity and promoting research excellence. These societies operate as autonomous entities organized by specific fields, bringing together faculty, researchers, and professionals, thereby facilitating knowledge exchange. They are recognized not only as forums for academic debate and scientific publication but also as key actors in shaping educational and research policies, possessing substantial capacity to influence the strategic directions of higher education development. In Japan, there are over 2,000 scientific societies (Japan Foundation), of which approximately 1,200 are officially recognized by the Science Council of Japan (e.g., The Physical Society of Japan), covering a wide range of scientific disciplines. These societies collaborate directly with universities, supporting early-career researchers through scholarships, research competitions, and mentoring networks. Japanese scientific associations play a distinct role in promoting prestigious publications, with the majority publishing internationally indexed journals (via platforms such as J-STAGE, an online platform for academic journals), thereby ensuring the global visibility of Japanese research and facilitating its integration into international networks. The funding sources for these organizations are diverse, including membership fees, public grants and subsidies, registration fees for scientific events, revenues from publications and editorial services, private sponsorships, and others. The majority of university faculty members belong to at least one such association. In many cases, universities provide support to researchers for covering membership fees. Japanese scientific societies are distinguished by the integration of research and education, the efficient dissemination of scientific results, and their direct involvement in decision-making processes.

In the Republic of Moldova, disciplinary scientific associations are at a less consolidated stage of development compared to the Japanese model. Their number is considerably lower, estimated at between 70 and 100 associations, or according to some sources, between 100 and 300 organizations, while their international visibility remains limited. Most operate as non-profit associations with autonomous legal status, yet they face constraints in terms of institutional capacity and available resources. These associations have a narrow disciplinary focus, typically in fields such as medicine, law, history, and economics, and are mainly concentrated around the Academy of Sciences of Moldova or key university centers and research institutes. Unlike in Japan, their involvement in the formulation of educational and research policies is sporadic and less institutionalized. Collaboration with international scientific networks exists but remains fragmented, often limited to externally funded projects or individual initiatives by members. Funding primarily relies on membership fees, voluntary contributions, and occasionally grants or sponsorships, while public support is modest.

Based on desk research, discussions and questioning of representatives of the academic environment in Japan, in private, of professors at Doshisha University, but also from the Republic of Moldova, analysis of publications of Japanese and Moldovan authorities, data on the activity of scientific associations in Japan and the Republic of Moldova, using the benchmarking method, we attempted to make a comparison of the Japanese and Moldovan model of establishment and functioning of scientific associations in both countries. For the purpose of this comparative study, nine dimensions were identified as the most relevant for capturing the role of scientific associations in society. The summary of this comparative analysis is presented in Table 1.

Scientific associations in Japan play a central and institutionalized role in the elaboration of research and education policies, contrasting strongly with the fragmented system in the Republic of Moldova. Nipon associations have a major influence on the performance of research-innovation and development of cognitive and research skills of young people enrolled in higher education. Among the main mechanisms of influence of research and higher education policies can be highlighted: formal integration (official governmental advisory status) in the design of public policies; financial leverage (directing public funds through Japan Society for the Promotion of Science - JSPS, Japan Science and Technology Agency - JST) to research priorities aligned with national objectives (e.g. artificial intelligence, decarbonization); education-career interconnection (associations co-develop curricular standards with Ministry of Education, Culture, Sports, Science and Technology MEXT – e.g., Japanese Society for Engineering Education); stable partnerships with industry, co-financing projects, guiding applied research (e.g., Keidanren).

Table 1. Comparative analysis of the characteristics of scientific associations in Japan and the Republic of Moldova

Criteria	Japan	Republic of Moldova
Legal status	Non-profit organizations/legally regulated foundations	NGOs, voluntary structures
Degree of organization (organizational maturity)	Very high. National network	Degree of organization
Funding	Dues, public funds, industry sponsorships	Low dues, extremely limited public and private support (practically absent)
Relationship with universities	Intense and structured cooperation	Reduced institutional involvement

Relationship with industry	Joint projects, active technology transfer	Occasional collaboration
Role in public policies	Formal consultative, active participation	Marginal, episodic
Main activities	Conferences, publications, professional training	Isolated events, limited influence on research outcomes
Institutional recognition	High, integrated into national	Limited, without an active role in decision-making
Internationalization	Extensive, global partnerships	Low, limited access to external networks

Source: own work

Scientific associations in Moldova have not yet become an important pillar in the research-education ecosystem, as such structures have been established in Japan. They are marginalized in policy involvement (no formal advisory role; associations are excluded from educational reforms); they are financially fragile (dependence on low dues limits strategic activities); they represent isolated systems (weak university-industry links hinder research relevant to workforce qualifications/skills).

Despite these differences, on certain criteria/dimensions the gaps are major. Based on a comparative qualitative analysis, on the evaluation of the structure, financing and functioning of scientific associations, their role in public policies and the relationship with the academic and business environment, national policies and reports in the field of research and higher education, data from scientific associations, discussions with representatives of the academic environment – members of various scientific associations and other relevant information, the radar chart (Figure 1) was developed, which reflects ***the general trends and relative levels of development of each dimension analyzed in the mentioned countries.***

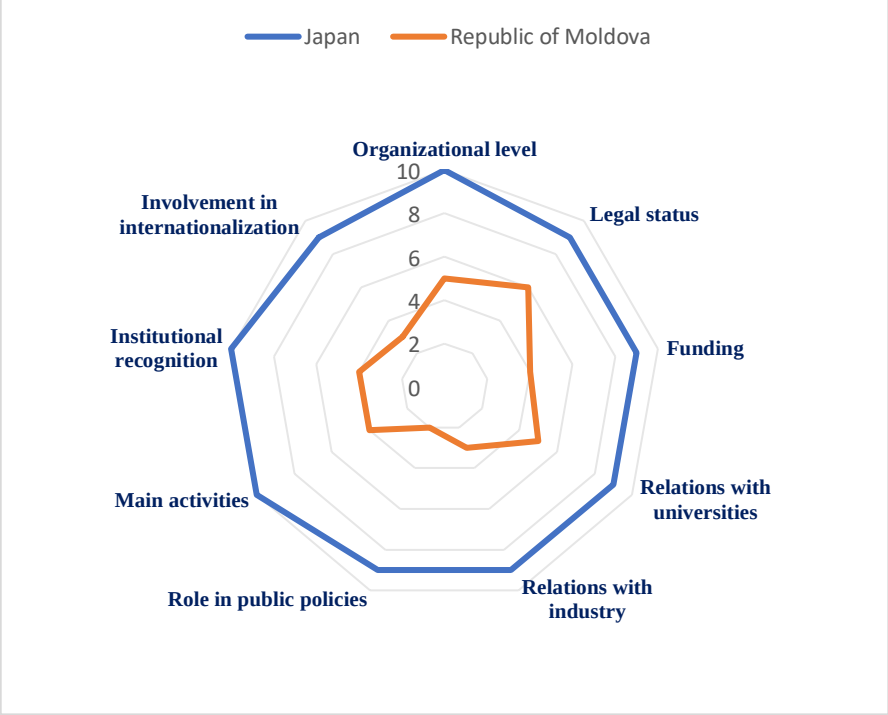

Figure 1. Evaluation of the role of scientific associations in Japan vs. the Republic of Moldova

Source: own work

As can be seen from Figure 1, Japan has a balanced and high performance in all 9 dimensions, indicating a mature and functional ecosystem. The Republic of Moldova shows significant weaknesses in policy influence, collaboration with industry and internationalization, as well as modest values in the other dimensions.

It can be concluded that in contrast to the situation in Moldova, scientific associations in Japan have a strong impact on development policies, especially those in the field of research and higher education, due to the following 4 pillars: *a legally framed role* (e.g. SCJ recommendations shape the 5th Basic Plan for Science and Technology); *close links with education* (e.g., the Physical Society of Japan co-authors the national curriculum guidelines for physics); *integration with industry* (e.g., the Japan Statistical Society develops industry standards adopted by the Ministry of Economy (METI); *global networks* (e.g., SCJ hosts the World Science Forum 2025, positioning Japan in global science governance). In Japan, associations drive coherent national strategies (e.g., the Society 5.0 initiative). In the Republic of Moldova, policies remain reactive/fragmented due to the marginalization of associations.

In the Republic of Moldova, scientific associations face multiple institutional and financial constraints, limiting their capacity to act and their impact on public policies. Although notable initiatives exist within specific fields, the involvement of these organizations in decision-making processes remains fragmented, and their international visibility is modest. This gap prompts an examination of how well-established best practices and experiences from other contexts, particularly Japan, might be adapted to reinforce the role of these organisations within the Moldovan higher education and research system.

Thus, the comparative analysis of the Japanese and Moldovan models of disciplinary scientific associations not only highlighted the structural and functional differences between them, but also allowed highlighting opportunities for the transfer of Japanese experience to the academic environment of the Republic of Moldova and alignment with international good practices, thus contributing to the shaping of more efficient and sustainable educational and research policies.

In light of the above, we argue that harnessing the potential of scientific associations in our country requires a strategic approach, encompassing the following measures: the clear legal and institutional regulation of the status and role of scientific associations; institutionalizing their participation in the formulation of national policies and strategies; establishing a public funding mechanism to support their activities on a competitive and transparent basis; promoting internationalization through membership in global networks; fostering inter-associative collaboration and the engagement of researchers from the diaspora; and supporting the leadership of young researchers by involving them in the governance structures of these associations.

3. Conclusion

Disciplinary scientific associations are important actors in the research-education-innovation ecosystem. These organizations not only reflect the internal needs of the scientific community, but also exert structural influence on on how research is organized, evaluated, and integrated into society.

International experience, including that of Japan, demonstrates that scientific associations can perform multiple roles: representation and advocacy; promotion of research excellence; influence on public policies; professional development; standard-setting; advisory functions in policymaking; facilitation of networks and collaborations; support for early-career researchers; science communication; and engagement with academia, public authorities, and the economic sector. In Japan, membership in at least one disciplinary society has become a professional norm for university faculty, reinforcing a sense of belonging to the academic community and fostering integration into international research networks. These associations are not limited to serving as disciplinary platforms for disseminating research results; they also function as institutional

structures capable of generating expertise, mobilizing resources, and intervening in decision-making processes at both national and international levels.

In the Republic of Moldova, these roles are not fully leveraged, manifesting only partially, sequentially, and within limited contexts. The activities of scientific associations focus primarily on organizing academic events, publishing research, and supporting young researchers, while their function as influencers of public policy and as a bridge between universities and industry remains largely unexplored. Consequently, despite their significant potential, the actual impact of these organizations on educational and research policies remains limited. These constraints highlight the need to strengthen the organizational capacity of scientific associations in Moldova and to promote their more active integration into the research–innovation–education ecosystem and international networks.

Leveraging the potential of scientific associations, their active involvement in advisory processes (through consultative councils) to public authorities, participation in the development and implementation of national strategies, and engagement in legislative processes relevant to research and higher education could enhance the coherence and relevance of the national research–education–innovation system and contribute to the promotion of sustainable reforms.

Acknowledgments. This study has received support from HESPRI project (HORIZON-MSCA-SE, G.A. no. 101086224). Views and opinions expressed are those of the author only and do not necessarily reflect those of the European Union or the granting authority.

Disclosure of Interests. The author has no competing interests to declare that are relevant to the content of this article.

1. **References**

2. Bendiscioli, S., Garfinkel, M., 2020. *Governance of research integrity: Options for a coordinated approach in Europe*. EMBO. [online] Available at: <https://www.embo.org/documents/science_policy/governance_of_ri.pdf > [Accessed 6 July 2025].
3. Delicado, A., Rego, R., Conceicao, C.P. et al., 2014. What Roles for Scientific Associations in Contemporary Science? *Minerva,* 52, pp.439–465. [online] Available at: <https://doi.org/10.1007/s11024-014-9260-3 > [Accessed 18 July 2025].
4. Frankel, M., 1993. Professional Societies and Responsible Research Conduct. In: *Responsible Science: Ensuring the Integrity of the Research Process: Volume II. The* National Academy Press, Washington, D.C. [online] Available at: <https://www.ncbi.nlm.nih.gov/books/NBK236199/> [Accessed 22 July 2025].
5. Harris E., 2004. Building scientific capacity in developing countries. EMBO Rep., pp. 7-11. [online] Available at: <https://www.embopress.org/doi/full/10.1038/sj.embor.7400058> [Accessed 14 June 2025].
6. Japan Foundation, Sydney (n.d.). Directory of academic societies in Japan. [online] Available at: <https://sydney.jpf.go.jp/webliographyjapan/gakkai-meikan/> [Accessed 15 July 2025].
7. J-STAGE. [online] Available at: <https://www.jstage.jst.go.jp/static/pages/JstageOverview/-char/en> [Accessed 24 July 2025].
8. Klinsky, S., Sagar, A., 2022. The why, what and how of capacity building: some explorations. *Climate Policy*, 22(5), pp.549–556. [online] Available at: <https://doi.org/10.1080/14693062.2022.2065059> [Accessed 21 July 2025].
9. The Physical Society of Japan. History of the Physical Society of Japan. [online] Available at: <https://www.jps.or.jp/english/about-jps/history.html> [Accessed 17 July 2025].
10. The public face of science in America. Priorities for the Future, 2020. AAAS, Cambridge, Massachusetts. [online] Available at: <https://www.amacad.org/sites/default/files/publication/downloads/The-Public-Face-of-Science-in-America.pdf> [Accessed 22 July 2025].
11. The Role and Activities of Scientific Societies in Promoting Research Integrity. A report of a conference, 2000. Washington: DC. AAAS. [online] Available at: <https://ori.hhs.gov/documents/role_scientific_societies.pdf> [Accessed 22 July 2025].