



# Methodological foundations of assessing research impact in business and management

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## Abstract

**Motivation:** Assessment of research impact in the business and management field is more difficult than in the case of Science, Technology, Engineering, and Mathematics (STEM) disciplines and, therefore, it is justified to improve the approaches, methods and tools used in this field and social sciences in general. Methodological research concerning such assessment is quite a challenge as it is not easy to identify useful assessment methods, indicators and evaluation criteria for carrying out objective processes for conceptualizing and measuring research impact. Creating conditions for obtaining reliable results of research impact assessment is accompanied by the growing interest of scientists and public institutions sponsoring their study.

**Aim:** The article aims to indicate the current main methodological trends in assessing the impact of research in business and management.

**Results:** The paper presents the results of bibliometric research enabling the identification of leading study centers and main methodological solutions, which may be a source of progress in the field of research on systems and methods of research impact assessment in business and management. This is especially important for the scientific community and public sponsors from countries that are currently starting to implement impact assessment systems. It is worth drawing from the experience, good practices and vast resources of knowledge related to evaluation systems and models of knowledge exchange between academia and non-academic stakeholders.



*Keywords: research impact evaluation; methodological foundations of assessment; business and management study; basic and applied research*  
*JEL: C18; C52; D02; H43; I20; M21*

## 1. Introduction

While in some countries systems for assessing the impact of research are being currently introduced, in various other states, such systems are being improved in terms of the use of results not only by traditional audiences, namely scientists, researchers or students. The results of this type of evaluation are also important for decision-makers managing public funds allocated to research and experts assigning scientific units to various categories, which are taken into account in building their financial and scientific position, manifested, for example, in obtaining or losing the right to award scientific degrees. Universities with better-rated research have more funds at their disposal for further research, are classified as elite, selected groups and recruit students with better academic results. The outcomes of the research impact assessment are important not only for determining the position in rankings and the level of funding of scientific institutions, but also for individual scientists, because they can constitute a clear and credible justification for awarding grants to finance their research, and promotion to higher scientific positions.

One of the leading solutions in the field of research impact assessment is the Research Excellence Framework (REF) developed in the UK. Methodological foundations of assessing research impact have been improved in this country for almost 40 years and other countries have been drawing on this experience when introducing their own assessment systems (Morgan, 2014). The basic principle adopted during the improvement of this methodology is the isolation and separate analysis of the external broader socio-economic impact and not combining it with the scientific/academic impact. The intended and unintended consequences of the REF implementation are subject to positive and negative comments (Torrance, 2020). It follows that there is still a lack of truly universal and objective methodological frameworks, and no consensus has been reached on the selection of objective indicators and evaluation criteria that would be appropriate for carrying out effective conceptualization and research impact measurement processes.

In addition, the correctness and adequacy of the research impact assessment processes depends on individual disciplines and fields of study. In the field of business and management, it is more challenging to carry out such an assessment compared to Science, Technology, Engineering, and Mathematics (STEM). In general, in the case of the Social Sciences and Humanities (SSH), research impact analysis is often a source of considerable difficulty and controversy. There are significant discrepancies between the needs for impact assessment and the currently used methodologies for impact assessment, which are

often not adjusted to the specificity of the social groups receiving the results of these studies (Bonaccorsi et al., 2021a).

The literature emphasizes the importance of focusing attention on evaluation methods that enable reliable operationalization and objective research on social impact measurements e.g. using quantitative indicators and bibliometric studies (Petersohn & Heinze, 2018) as well as multi-scale models (Benneworth, 2015). Research impact assessment of study conducted under STEM is largely mastered, and currently the attention of many research centers is focused on the difficulties in capturing the diversity and multifaceted nature of measuring the impact of social research under the SSH (Muhonen et al., 2020).

In practice, it is not possible to use universal impact assessment methods operating under the REF, despite some similarities and analogies occurring in evaluation studies conducted for research related to STEM and SSH. The results of a number of currently conducted studies confirm greater difficulties for this second set of scientific disciplines, for example due to the usually larger number of stakeholders involved in the processes that are subject to evaluation (Bonaccorsi et al., 2021b).

For years, there has been a common belief that there is no possibility to make objective assessments of the impact of scientific research within the SSH and it is necessary to rely mainly on the subjective opinions of expert panels, presenting results that are often a source of doubts and controversy (Martin, 2011). It is well-established that the basis for building research excellence are two separate elements of assessment, i.e. ‘research quality’ and ‘research impact’; the evaluation of the latter element mainly consisting in the analysis of case studies qualitatively assessed by field experts working in panels (Grant et al., 2010).

In the fields of science related to SSH, and in particular within the business and management field, there is a need for universal coherent methods and methodological frameworks useful in the processes of implementing research impact assessments, as well as for objective indicators and evaluation criteria for carrying out effective conceptualization and measurement processes. Therefore, it is understandable that research related to the issue of impact assessment, as well as the improvement of approaches, methods and tools, is the object of growing interest in the academic community and public institutions that sponsor their research. The lack of a solid methodological basis may be a key factor hindering effective and reliable research assessments. The following research question can be formulated: what are the current methodological foundations for conducting research impact assessment in business and management field? The question posed in this way constitutes a clear justification for the conducting of the research presented in this article, the purpose of which is to indicate the current main methodological trends in the assessment of the impact of research conducted in this field.

## 2. Impact of SSH research

Recently introduced systems for assessing the social impact of scientific research (e.g. in Poland) or improved for years (e.g. in the UK, Australia, the USA, Norway, the Netherlands and assessment systems connected with EU programs) are research assessment systems that concern not only individuals and teams conducting these studies, but also scientific institutions. The impact of scientific research on the economy and society is assessed, and its results often determine the position of scientific institutions in the relevant rankings and the level of public funds allocated.

Impact of research is described in many ways and it has no clear definition. It is often defined as a multifaceted benefit of research (social, economic, environmental, cultural and/or others) that is received by representatives of the wider community and analyzes are carried out at the regional, national, international and global levels. The benefits achieved beyond academia are investigated and refer e.g. to society, quality of life, health, environment, economy, politics, public services or culture (Morgan Jones et al., 2017).

Research impact is therefore an emphatic expression of the public value of research (Watermeyer, 2012). Due to the fact that the notions of public value of research and its impact are most often not treated as equivalent to traditionally understood research quality, it is necessary to use separate methodological approaches, methods and evaluation criteria. The research impact assessment criteria are more multifaceted, to some extent similar to those used in the context of responsible development and sustainable evaluation (Grzeszczyk & Waszkiewicz, 2020), and they definitely relate to the assessment of long-term outcomes identified outside the scientific community. The value of indicators and impact assessment criteria can be analyzed at various levels (scientific, social and political), and the conducted research may generate significant changes among the general public and, secondly, in science (Reale et al., 2018). In recent years, practical approaches to measuring public value and conducting impact analyzes of social research have become increasingly important, the results of which are seriously taken into account by policy and decision makers in research co-funding institutions (Hills & Sullivan, 2008). Therefore, it is necessary to improve the evaluation systems enabling the estimation of the multifaceted impact resulting from research conducted by individual scientists, teams of researchers and the institutions employing them. The estimated values of this impact are a measure of changes resulting from the obtained research results, which may significantly improve the efficiency of the economy and its productivity and welfare of the general public, and also mean an increase in the scientific competitiveness of people and institutions (Reale et al., 2018).

Among the many objectives that justify making decisions about conducting research impact assessments are, among others, the following (Penfield et al., 2014):

- overview of scientific institutions and higher education facilities to enable monitoring and management of their performance in terms of disseminating the contribution that is brought to local, national and international communities;
- demonstration of accountability and proper provision of the public value of research expressed in the form of socio-economic benefits that justify spending public money;
- applying evidence-based cases and providing information justifying the concentration of public funds on supporting research related to the largest contributions to society and the economy;
- increasing the understanding of the cause-and-effect mechanisms linking the implementation of specific research methods and their greatest possible impact and findings.

The need to conduct an overview of higher education facilities may result from the introduction of regulations that require these institutions to conduct assessments and present their outcomes, which are then checked and modified by representatives of public research funding organizations. The results of the impact research evaluation are used to support the implementation of state and regional policies, as well as to monitor the multifaceted contribution of research, the accountability of spending public funds, and to increase the acceptance of wide social circles for the necessity to incur significant budget expenditures in this respect and allocate funds from international community budgets. Research financed by this type of funds should be subject to extremely strict evaluation rules and professionally managed in order to meet the complex challenges associated with the need to support the increasingly complex interdisciplinary activities carried out by people caring for the positive social impact of research results (Schuetzenmeister, 2010). Demonstrating accountability and ensuring proper public value of research means the need to provide mature research outcomes and requires mature human capital management focused on the personal development of people who are leaders not only in research conducted in individual institutions, but also leaders in various scientific fields and disciplines (Olsson & Meek, 2013).

In addition to human capital aspects, the availability and knowledge of useful approaches and methods play an important role in the research impact assessment processes. Particular difficulties in building methodological foundations of assessing research impact are related to study conducted in scientific disciplines connected with social sciences, especially in the discipline of business and management. Certain experiences in this area are related to the evaluation of the social and economic impact of university research surveyed by REF (Hughes et al., 2019).

Possibilities for conducting evaluation research on estimating the impact of business and management research are more limited and less clear-cut compared to STEM sciences. In the case of hard sciences, it is possible to successfully use indicators that are relatively simple to apply, such as: the number

of patents, technology transfer effects, spin-off companies using research results, measurable results of research on new technologies, commercialization of research results and revenues obtained from granted licenses. There are difficulties in conducting reliable and objective evaluation studies related to estimating the impact of business and management research because it is hard to select equally objective indicators and evaluation criteria compared to those mentioned in the previous sentence.

In the case of business and management research assessments, quantitative criteria are of less importance and are difficult to define unequivocally. It is necessary to rely primarily on qualitative criteria which are usually difficult to quantify. It is therefore mainly based on the use of expert panels, which is an additional source of uncertainty. Those experts come from different social circles, have different knowledge and experience, as well as different social and cultural attitudes. The decisions made by individual experts can vary widely for similar assessment circumstances due to the existing influences of the immediate and distant environment, as well as personal, cultural, psychological and other factors that are difficult to predict. One of the attempts to deal with the multifaceted nature of research impact assessment related to business and management is the use of logic models and analysis of cause-and-effect relationships. Building and analyzing logical structures of activity and long-term effects of scientific research and R&D projects are important issues related to the field of evaluation (Grzeszczyk, 2018).

Cause-and-effect relationships and logic models can support processes for measuring the impact of scientific research that can relate to society, subjective well-being, quality of life, economy, environment, climate, health, culture and others. The results of these measurements should take into account transfers of interdisciplinary knowledge, extensive experiences and relationships between various stakeholders in rich ecosystems, and this impact can be classified and measured in the following five ways: instrumental impacts, conceptual impacts, capacity building impacts, attitude or cultural change as well as enduring connectivity (Meagher & Martin, 2017). Instrumental impacts deal with products and services that result from research and can be of use to policymakers, practitioners and organizations of all kinds. Conceptual impacts mean new and sometimes innovative understanding and awareness-raising of potential recipients of research results. Capacity building impacts is tantamount to researching and developing cooperation skills, as well as various types of education and training. Attitude or cultural change is a study of excellence in the exchange of knowledge between individuals and institutions. Enduring connectivity means building long-term external relationships (Meagher & Martin, 2017). The focal point of the aforementioned considerations is clearly the methodological aspect of research impact analysis.

### 3. Approaches and methods used to assess impact of research in business and management

Approaches and assessment methods are being developed in various countries to support the operationalization of research impact, and academics and research institutions are expected to prove the usefulness of research results outside universities. The research innovations that are the source of this impact can be analyzed as technology transfer as well as knowledge transfer, exchange and creation (Davenport, 2013). The social impact of research can be understood as a positive or negative impact (caused by research) on society, economy, environment, culture, health and quality of life (Samuel & Derrick, 2015).

Multiple classifications of approaches, models and methods can be defined that assist in research impact assessments. Within one of the classifications, they are mainly focused on (Hourneaux Junior & Sandes-Guimaraes, 2020):

- measuring performance and ways of direct and indirect impact on various spheres of society;
- relationships and interactions initiated as part of research processes and determining their meaning in relations with various spheres of society.

Table I presents the main features, advantages and disadvantages of the models classified in this way. The REF is of key importance among the models included in the first type.

Compared to other countries, the British concept of REF is particularly interesting, as it may be an inspiration in developing other national approaches and methods to assess impact of research. In line with the REF, impact measurement is generally presented in the form of knowledge transfers between academic and non-academic stakeholders (Maythorne, 2019). If these transfers are supported with public funds, they should be assessed for efficiency and effectiveness using the Knowledge Exchange Framework (KEF), which supports the Teaching Excellence Framework (TEF) (Johnson et al., 2020).

Among the approaches and methods supporting the evaluation of the social impact of research (conducted under the SSH), the following can be mentioned: Payback Framework (mixed methods and case studies), Social Impact Assessment Methods for Research and Funding Instruments (SIAMPI) based on case studies, Social Impact Open Repository (SIOIR) using social impact scores, Successful Actions (measuring results coming from research), Opportunity Approach (case studies) and Agora Model (multi-actor interactions in open debates) (Reale et al., 2018). Another approach to the classification of methods is the following division of methods and approaches of assessment: experimental and statistical, oral, arts-based and textual, indicator-based approaches, systems analysis methods and evidence synthesis approaches (Reed et al., 2021). In general, the research methods used can be divided into quantitative methods (e.g. bibliometric analysis, based on statistical indicators and models), qualitative methods (e.g. case studies, document analysis, peer reviews and surveys of expert opinion) and methods used in an integrated manner (mixed).

If the research impact assessment methods are based on the opinions of experts, they may be subjective due to the diverse experiences and attitudes of people working in the panels. As a result, evaluation problems are often poorly structured, and decisions are made under conditions of high uncertainty. Contrary to the hard and exact sciences, assessing research impact in social sciences, and in particular in business and management, the guidelines and rules for determining research impact are not very clear and ambiguous. It is difficult to unambiguously choose the methods supporting the research impact assessment processes in this field.

#### 4. Research design and methodology

The conducted research leads to a preliminary identification of the current state of knowledge regarding methodological foundations of assessing research impact in business and management field. The literature was reviewed using bibliometric data collected applying two world-leading citation databases i.e. the Web of Science (WoS) multiple databases and Scopus. The analysis of the results and the discussion was supported by performance indicators, such as e.g. the number of papers, total number of citations, Sum of Times Cited per Year (STCY) and the organizations-enhanced. The collection and analysis of bibliometric data made it possible to achieve the goal of discovering the current main methodological trends in the assessment of the impact of research in business and management.

Data from WoS databases were collected in April 2021 and the following search parameters were used: a basic search for ‚research impact’ topic, time-span 2000–2020 and refined by the following WoS Categories: Management, Business, Business Finance, and Operations Research Management Science. In the case of the selected WoS categories significant publications were noted in the databases used. These categories were given in the order resulting from the number of publications related to the chosen topic.

After the initial research conducted in April 2021, additional in-depth analysis of Scopus was performed in November 2021 in order to verify whether similar or analogous publications and methodological trends concerning subject areas existed. Bibliometric research using Scopus databases was carried out also for the period 2000–2020 and the following two subject areas: ‚Business, Management and Accounting’ as well as ‚Decision Sciences’ (237 publications in total). Comparisons were obtained for the top ten research centers in this field and countries where particularly intensive research is undertaken.

The extensive scope of research related to the manual identification of the main methodological solutions was limited to the WoS ‚Business’ category, which enabled the planned work to be carried out efficiently. Due to the significant limitations of the applied research methodology, the obtained research results are only preliminary. The selected WoS and Scopus databases do not contain bibliographic descriptions of all publications important for the analyzed issues.



It is doubtlessly necessary to continue research towards using more categories, other databases and a variety of literature sources.

## 5. Results and discussion

In the analyzed period, 154 publications on ‚research impact’ were found in the selected WoS categories. Since the beginning of this century, a significant increase in interest in research in this area has been observed, which is reflected in the increase in the STCY parameter from 9 in 2003 to 457 in 2020. Sum of Times Cited is 2555 (without self citations 2507), and average number of citations per item is 16.6.

Research centers associated with a large number of publications of key importance for the area of research impact were identified (Chart 1). Nearly half of them are UK and Australian universities. The obtained results of bibliometric analyzes are not surprising, as previous studies had shown that the interdependent development of methodological foundations supporting research impact assessment in Australia and the UK was complementary and had a positive impact on this evolution (Williams & Grant, 2018). The list of 15 organizations-enhanced also includes organizations from other countries, namely: the USA (5), Canada (1), Taiwan (1) and Brazil (1). Most authors are related to the USA (49), the UK (35), Australia (22) and Canada (17). As far as the assessment systems in the USA are concerned, they are specific and constantly improved as a result of large-scale activities. In the USA, research funding is not about awarding grants whose value depends on the number of students in each university, but is primarily based on the use of expert panels and carrying out multidimensional assessments and review proposals submitted to government agencies and funding organizations (Moed & Halevi, 2015). The research results obtained using Scopus databases confirm the tendencies noticeable during bibliometric analyzes based on WoS. In these databases, most publications are related to the following countries: the UK, the USA and Australia.

The indicator of the number of publications does not fully reflect their quality, but it may to some extent determine the intensity of research in a given field, which is confirmed by publications significant enough to be in reputable databases. The number of publications in individual countries (where specific central methodological recommendations apply) may also indicate the importance of methodological foundations regarding the assessment of research impact in a particular field. Chart 2 shows the intensity of the study on research impact assessment (in business and management field) with the indication of the following methodological frameworks for different states: Research Excellence Framework (REF), National Science Foundation (NSF), Engagement and Impact Assessment (EIA), Research Impact Canada (RIC), Netherlands Organisation for Scientific Research (NWO), French National Agency for the Evaluation of Research and Higher Education (AERES), Performance-based Research Funding (PRF) and other National Systems (NS).

The leading methodological solutions were manually identified on the example of the WoS 'Business' category (34 out of 50 papers were analyzed). Comprehensive and universal solutions were not observed, and fragmentary approaches and methods were used, and the following were identified: Bibliometric Analysis (29%), Case Studies (21%), Statistical Models (18%), Document Analysis (12%), Mixed Methods (6%), Field Study (3%), Interviews (3%), Logic Models (3%), Narrative Approaches (3%) and Survey Research (3%).

The bibliometric research shows that mainly methods well known in business and management field are used. There is some space for developing research into application-oriented methods needed in the different research environments of various countries. The British REF is undoubtedly considered to be the most known ex post assessment system of academic units at present, and it is also a model example for carrying out similar assessments in other countries, such as, e.g., Norway, Hong Kong and Poland (Wróblewska, 2021).

## 6. Conclusions

The initial review of publications (under the selected WoS and Scopus categories important for business and management scientific fields) is a good basis for continuing research in this area and developing methodological study into building new approaches and assessment methods. It may be helpful to draw on inspiration from observing the research impact assessment systems applied at the national levels as well as the OECD and EU policies guidelines when continuing research.

Various countries are developing different approaches, systems and assessment methods to support evaluating the research impact. Some of them are the result of many years of experience (e.g. in the UK), while others are only in the initial phase (e.g. in Poland). Valuable inspiration for these newly introduced solutions can be found by familiarizing oneself with the existing and leading approaches proposed by research centers with significant scientific productivity in this field. Some of such good examples are undoubtedly the approaches and frameworks developed in the UK and Australian research centers, based on models related to knowledge exchange between academic and non-academic stakeholders.

An interesting opportunity to develop a new type of approach may be the implementation of models of continuous and iterative improvement of multifaceted processes for assessing the impact of research carried out using the experience gained so far regarding interdisciplinary concepts and solutions resulting from the progress in ICT. Continuation of such methodological research should be preceded by a precise determination of the current state of knowledge with the application of a larger number of scientific databases and search categories than those used in this research, as well as observations and analyzes of existing evaluation systems proposed in leading research centers in this field.

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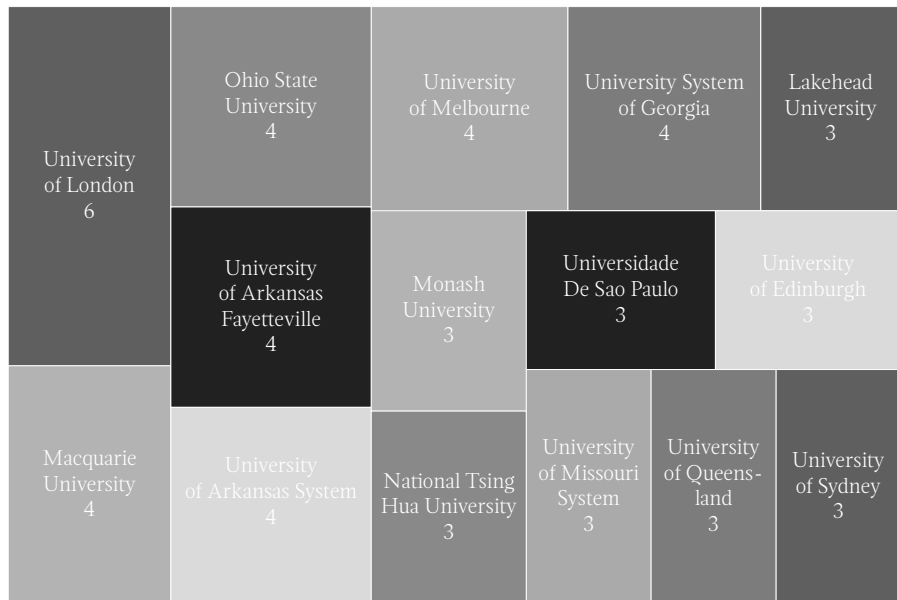
## Appendix

**Table 1.**  
**Systematics of models and methods for research impact assessment**

Type	Models	Features	Advantages	Disadvantages
performance	payback framework, research impact framework, research excellence framework	logic model, five categories of potential benefits of research, four impact categories	standard impact categories, explicit research planning, clear societal impact categories	difficulties with modelling nonlinear relationships and uncertainties
process	SIAMPI, contribution mapping	research impact plan, criteria of assessment, study of interactions between researchers and key users, map of research contribution and the interaction with stakeholders	more suitable for SSH, clear products as research results, identification of a research impact plan, facilitated ongoing assessment of research steps	support only for the carrying out of assessments to a limited extent

Source: Own preparation based on Hourneaux Junior & Sandes-Guimaraes (2020).

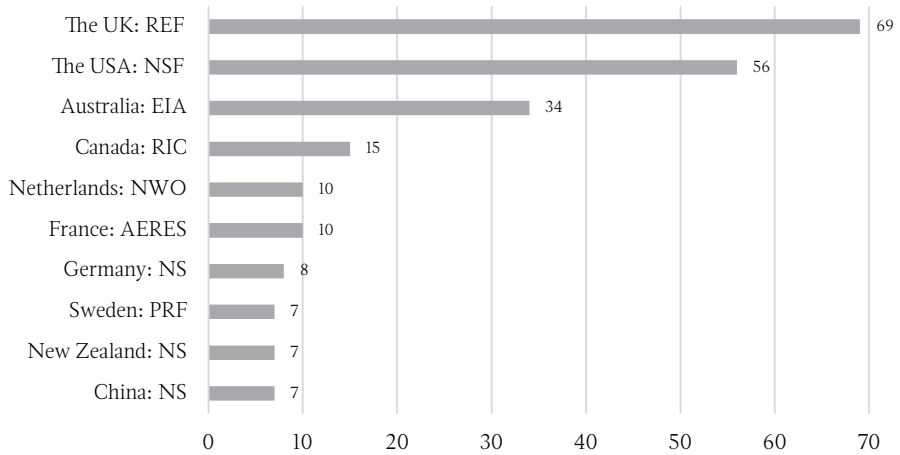
**Chart 1.**  
**Leading study centers in the research impact field**



Source: Own preparation based on WoS.

Chart 2.

The intensity of study on research impact assessment (in business and management field) with the indication of the methodological frameworks used in individual countries



Source: Own preparation based on Scopus.

