

Peer Review and Grant Management



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Introduction

- What are your first thoughts about peer review?
- Have you ever been involved in a peer review process?

Definitions

- Scientific peer review is the evaluation of scientific research findings or proposals for competence, significance and originality, by qualified experts who research and submit work for publication in the same field (peers).

<Sense about Science>

- “all of the agencies’ definitions or descriptions of peer review contained the fundamental concept of a review of technical or scientific merit by individuals with sufficient technical competence and no unresolved conflict of interest.”

<Guston: Public Research, Innovation and Technology Policies in the US>

- Assessment of work by one or more people of similar competence to the producers of the work
- Assessment of quality of work, which cannot be done by other means: No formal standards

Areas of application

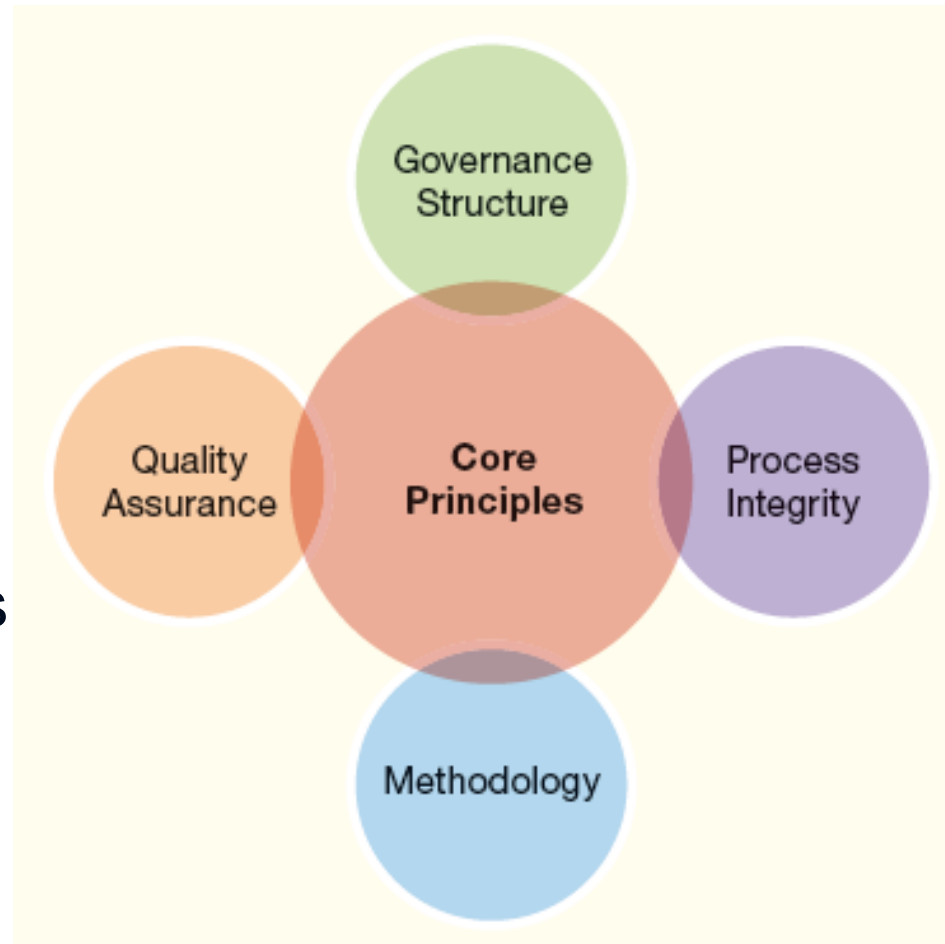
- The evaluation of research findings in the course of publication applications (editorial peer review)
- The evaluation of research and innovation proposals in the course of project funding decisions
- The evaluation of research and innovation activities of research teams and institutions.

Common principles of peer review processes

- First of all, the evaluation of scientific excellence or research quality constitutes the very core of any peer review process.
- Secondly, all peer review processes are linked to decisions with distinct consequences:
 - projects are being funded or rejected
 - publications are either being accepted, asked for resubmission after modifications, or rejected.

What matters?

- Design of the peer review process
 - Who? How? What?
- Execution of the peer review process
 - Embeddedness in decision procedures
- Strengths and weaknesses of peer review procedures
 - Quality control
 - Benefits and weaknesses
 - Modifications



Source: ESF (2011)

Design

Design of peer review processes

- Focus on the area of research funding.
- Decision making processes take place in organisations which pursue specific objectives.
- Peer review processes serve the purpose to fund best projects given scarce resources.

7 Core principles of peer review processes

- Excellence
 - Projects selected for funding must demonstrate high quality in the context of the topics and criteria set out in the calls.
 - The excellence of the proposals should be based on an assessment performed by experts.
 - These experts, panel members and expert peer reviewers should be selected according to clear criteria and operate on procedures that avoid bias and manage conflicts of interest.
- Impartiality
 - All proposals submitted must be treated equally.
 - They should be evaluated on their merits, irrespective of their origin or the identity of the applicants

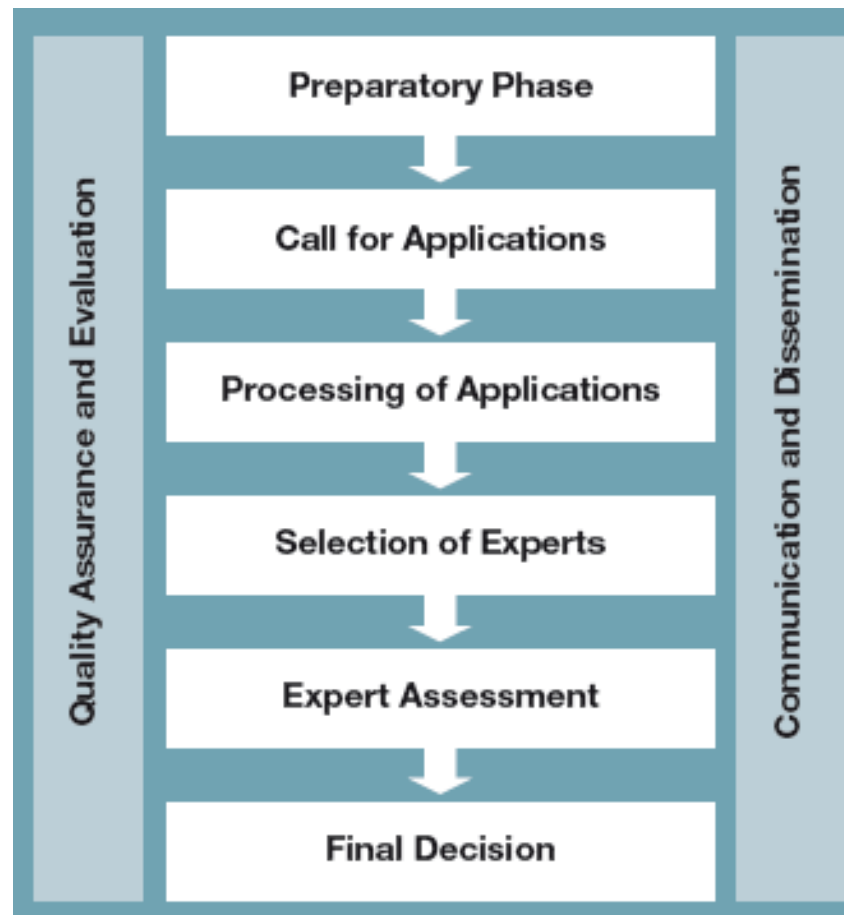
7 Core principles of peer review processes

- Transparency
 - Decisions must be based on clearly described rules and procedures that are published a priori.
 - All applicants must receive adequate feedback on the outcome of the evaluation of their proposal.
 - All applicants should have the right to reply to the conclusions of the review.
 - Adequate procedures should be in place to deal with the right to reply.
- Appropriateness for purpose
 - The evaluation process should be appropriate to the nature of the call, the research area addressed, and in proportion with the investment and complexity of the work.

7 Core principles of peer review processes

- Efficiency and Speed
 - The end-to-end evaluation process must be as rapid as possible, commensurate with maintaining the quality of the evaluation, and respecting the legal framework. The process needs to be efficient and simple.
- Confidentiality
 - All proposals and related data, intellectual property and other documents must be treated in confidence by reviewers and organisations involved in the process. There should be arrangements for the disclosure of the identity of the experts.
- Ethics and integrity
 - Any proposal which contravenes fundamental ethical or integrity principles may be excluded at any time of the peer review process.

Critical steps in a peer review process



Source: ESF (2011)

Preparation phase

- Main stages of peer review process
 - one-stage submission of full proposals vs. two-stage outline proposals followed by full proposals
- Main features required for the peer review model:
 - overall decision making process using panels
 - internal reviewers and/or individual/remote (external) reviewers and committees;
- The operational details and lower-level requirements such as timelines, workflow, reporting etc.
- The assessment process
 - identify specific features such as the nature and number of assessors, the source of identifying experts
 - multidisciplinary considerations
 - work load for external experts and panel members including rapporteurs
 - Schemes for the flow of information and documentation (IT tools, web-pages, online submission forms, guidelines etc.)

Who is an appropriate peer?

Applicants



Civil society



Scientific community



Business Managers around the globe?

Considerations when choosing peers and selecting panels

- Selection of peers has to be oriented towards overall objective of the call
 - Scientific excellence above all?
 - Relevance, applicability, & public interest
 - Social and environmental considerations
- Need to reduce complexity in decision making:
 - Define process from the beginning and consider unforeseen events...

How many peers/reviewers?

- No distinct rules but at least two!
- Rule of the Austrian Science Fund:
 - Up to EUR 300.000,- at least two reviewers
 - For any additional EUR 100,000,- one more reviewer
 - Starting from EUR 500.000,- even more reviewers.
- Number of peers also depends on:
 - Funding process: permanent applications vs. call for proposals
 - Dissens in between reviewers

„The Peer Hunters“: Who selects peers

- Programme Management
 - Selects a Jury that provides suggestions for peer reviewers
 - Appropriate for smaller research funding organisations
 - Specialists in research funding organisations
 - Appropriate for larger funding organisations
- „Kollegiat“: Elected members of the scientific community in a disting research area: applied in Science Funds like DFG
- International organisations
- Potential role of applicants:
 - Positive-list
 - Negative-list

Expert Assessment and Assessment Criteria I

- Clear set of evaluation criteria specific to the funding instrument is one of the most critical aspects in the review process.
- Major criteria mentioned in ESF guide:
 - Relevance and expected impacts (driven by programme policy)
 - Scientific quality of the proposed research
 - Research team / qualification of the applicants
 - Research environment.
- Core elements such as the scientific quality of the proposed research, the appropriateness of the methodology, and the qualification of the personnel are to be found in almost every evaluation criteria catalogue of funding agencies.

Expert Assessment and Assessment Criteria II

- Consider Pros and Cons of Numeric Judgements
- Take care of coherency between information provided to applicants and judgements requested from peers:
 - Main objectives, funding criteria, and questions provided to peer reviewers have to be aligned.
 - Objectives and funding criteria which have not been asked or don't have a foundation in programming documents
 - Too many objectives and criteria and too many questions posed to reviewers.
- What is the weight of the review in decision making process?
 - Depends upon programme design and programme objectives
 - Quality of reviews varies considerably
- Peers do not decide, decision making is with the funding agency/jury
 - Interpretation of reviews is important

Expert groups of the review process

- **External or individual remote reviewers**
 - assess the proposals on their own and separately from other members who may look at the same proposals.
 - These reviewers do not discuss the proposals with anyone and provide their assessments using known and clear criteria and scores.

- **Members of review panels**
 - collectively discuss and evaluate groups of proposals.
 - The main function of the panel is to evaluate and consolidate external assessments by experts on a group of competing proposals
 - and to rank or prioritise them based on clear and stated criteria and parameters.
 - The review panel's contributions are normally needed within the last phase of the peer review when final decisions are made.

The review panels

- Are responsible for arriving at consensus decisions on the competitive merits of the proposals using external assessments and possibly the replies from the applicants to the remote/individual assessments.
- Funding decisions should normally follow the ranking and prioritisation suggested by the review panels.
- Critical issues mentioned as regards the evaluation meeting are:
 - The selection of a Chair for the evaluation panel
 - Clear instructions on how to deal with the evaluation criteria, rules of procedures for the meeting, and list of results to be produced by the panel
 - Rapporteurs should be designated for each proposal, which provide information to the review panel. Normally two or three rapporteurs or reviewers should be designated for each proposal;
 - The discussion of the evaluation results of the panel needs to be summarised and for each evaluated proposal a summary of the assessment and the funding decision should be provided (consensus reports).

Decision making and communication of results

- Core steps in the proposal evaluation to be followed
 - A review and appraisal of the individual external assessments
 - A prioritisation and ranking of proposal
 - Setting funding thresholds level
 - Preparation of the pre-meeting assessment reports and evaluation summaries;
 - Preparation of the consensus reports summarising the decisions and feedback to applicants;

Payment and duration of funding procedures

- Peers are a scarce resource, nevertheless remuneration of peers is not common in the academic world. Exceptions are:
 - Stronger applied orientation of research, which requires peers from industry sector
 - Participation in Jurys/Expert panels that require to show up on site.
- The „Time To Grant“ (from application to evaluation results) varies in between 4-6 months up to a year (EU Framework Programmes).
- For editorial peer reviews time to publication can be approximately up to 12-18 months max.

Challenges and acceptance of peer review processes

- Peer review is both seen as a gatekeeper of good scientific practice but also known to engender bias, incompetence, excessive expense, ineffectiveness, and corruption.
- Common allegations regarding peer review take the following general forms: Peer review is unreliable, unfair, and fails to validate or authenticate.

Challenges: Bias

- Success-breeds-success bias
 - successful applicants are likely to become entrenched, using their grants to produce the outputs necessary to attract further funds, while others never even have the chance to get started.
- Insider bias
 - decisions are made by cliques of insiders, who think highly of, and award most grants to themselves and a small group of favourites.
- Dominant group bias
 - there is discrimination against groups such as women, ethnic minorities and lower-status institutions
- Conventional approach bias
 - grants are much more likely to support tried-and-true approaches, while challenging, innovative or unorthodox proposals are seldom funded
- Personal bias
 - administrators or referees obstruct researchers or projects that they do not like

See Brian Martin, Research Grants: Problems and Options, Australian Universities' Re-view, 2000. Vol. 43, No. 2, 2000, pp. 17-22.

Challenge: Different types of R&D activity

- gaining more comprehensive, more coherent and/or better validated *scientific knowledge*, where policymakers, or indeed scientist themselves, often are the main users
- developing new general *technologies*, often in partnerships between public and private organisations
- promoting *innovation*, i.e., effective *delivery of specific products and services* (to “end-users”, consumers) in markets.
- These variations have a profound impact on the type of research questions asked, which agents are to be involved, which types of activities that may be funded and which conditions that need to be taken into account for the objectives to be achieved effectively.

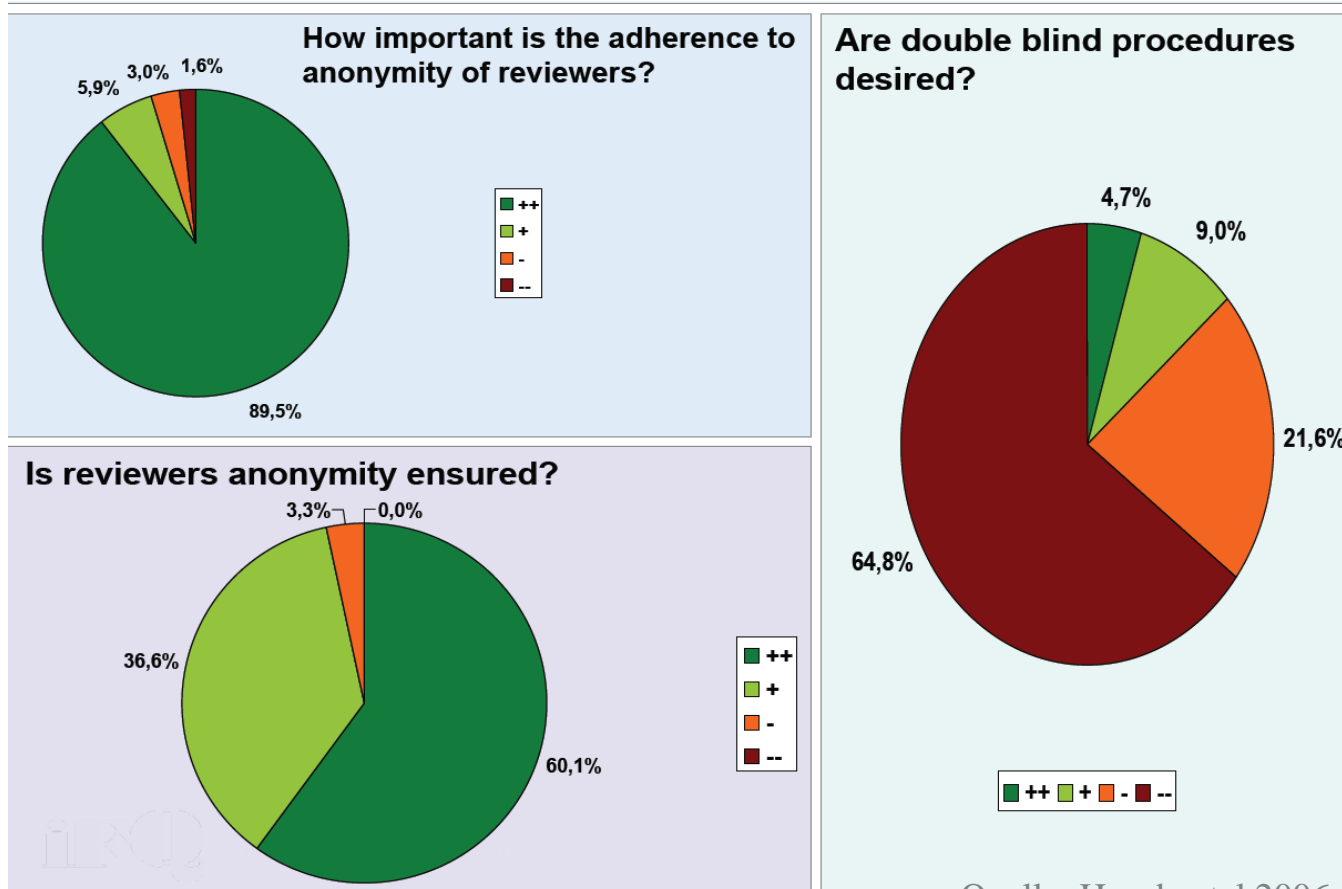
Challenge: Interdisciplinarity

- Three main challenges:
 - What defines the quality of interdisciplinary research?
 - Who judges interdisciplinary research?
 - What constitutes interdisciplinarity, and how it can be identified?
- Potential solutions:
 - The **mix of experts in a panel**, in terms of the overlap in the panlists' competencies is important. High overlap in disciplinary panels may induce a relatively tight disciplinary control between participants, while a multidisciplinary design in turn, seems to create a shared sense among panellists that they are accountable for their judgements to a number of different disciplinary communities
 - The **selection of panellists in terms of their degree of expertise in a specialty field** (i.e. including specialist and generalist (interdisciplinary) panellists). Interdisciplinary panellists are, from the start, capable of understanding, judging and comparing a wide variety of proposals without having fully developed expertise on the subject matters.
 - The **extent to which panellists hold themselves accountable to each other for their evaluative behaviour** is important for the peer review process.

Type of peer reviews

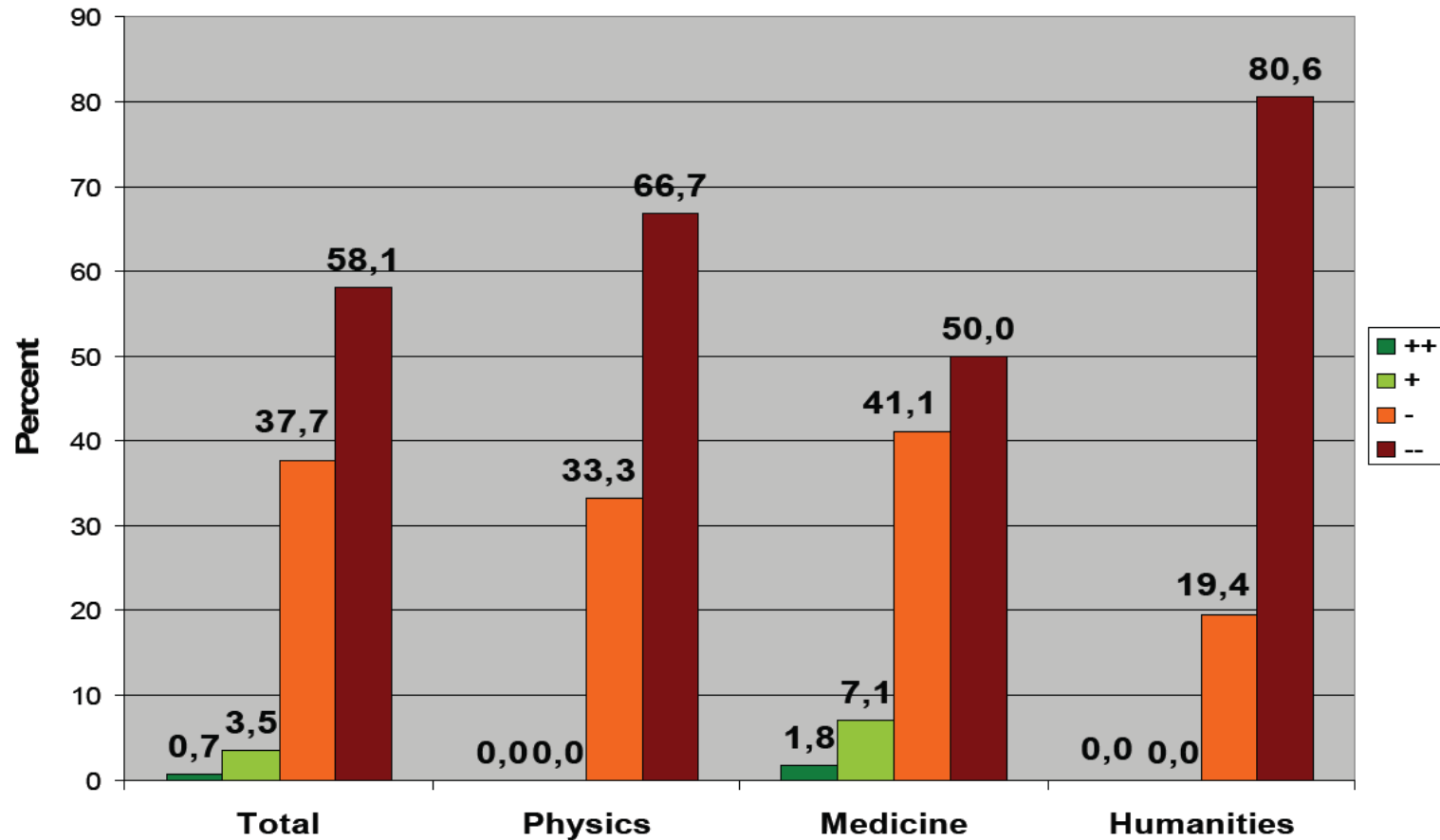
- Open Peer Review
- Blind Peer Review
- Double Blind Peer Review

Acceptance of peer review procedures: Survey DFG



Quelle: Hornbostel 2006

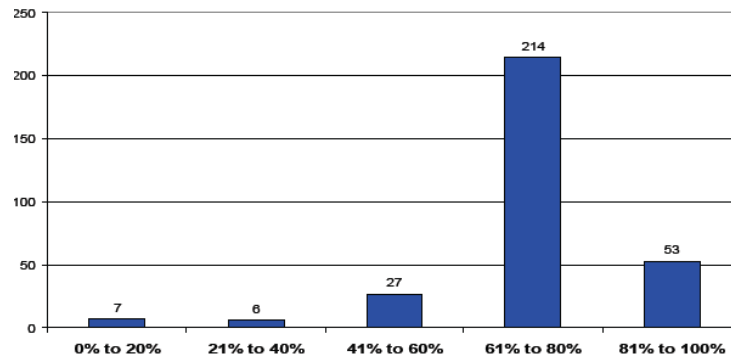
Statement: „The quality of foreign reviews is better than national reviews“



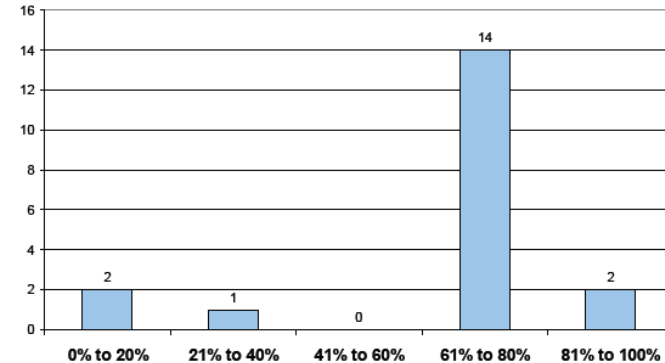
Quelle: Hornbostel 2006

How high do you estimate the % of reviews with an adequate quality

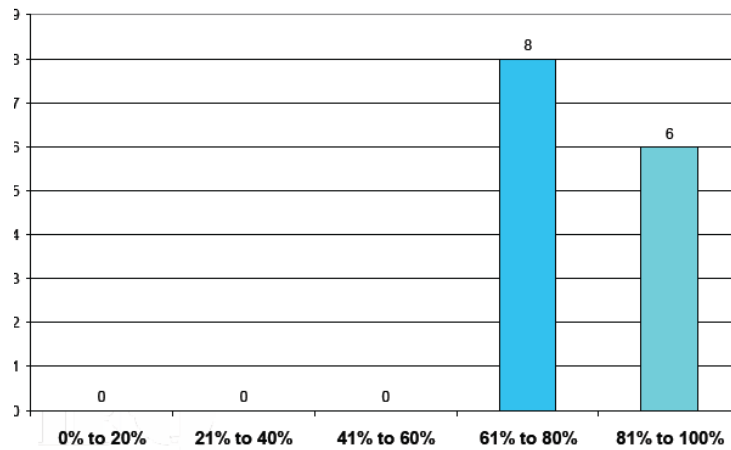
Total



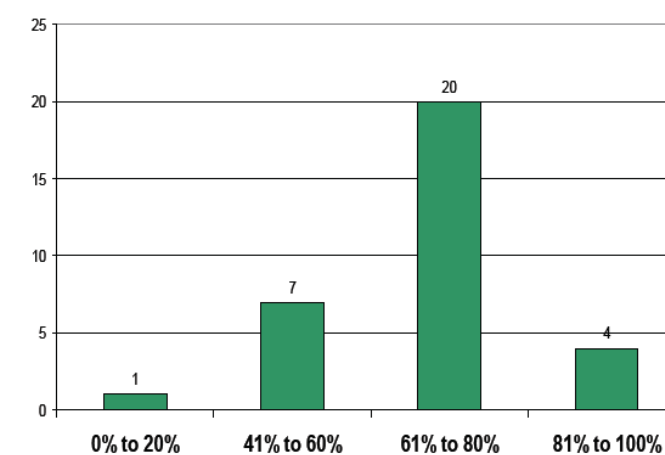
Electrical engineering, computer science



Physics



Social and behavioural sciences



Quelle: Hornbostel 2006

Round up...

- „Peer review is the only practicable method of assessment in the field of basic research, because it has the overwhelming support of the academic community. It must (also) be recognised that peer review is imperfect....“
 - ABRC, 1990 (The Boden Report)