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**INITIAL TRAINING AND INEQUALITY IN SCIENTIFIC
RESEARCH. AN EXPLORATORY SURVEY**

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Abstract

In recent years, research has been constantly debated and represented a main public concern. Specific topics such as national and international financing of research, visibility of research outcomes, brain drain, research ethics, or recognition of research achievements have represented the main core of debates that involved not only researchers and academics, but also the wider public. The present paper analyses the issue of equality in the domain of scientific research with special emphasis on the topic of equal opportunities, respectively unequal opportunities in research based on the idea that factors such as complexity of research practices, values and axiological hierarchies established in the process of research, accreditation and recognition system, or dominant practices in education and professional research can generate inequality. The authors conducted a survey to identify the perceptions of Romanian researchers about types of inequality affecting their work, awareness of the sources generating such inequality, opinions about their own readiness to cope with the requirements of the international research market. The authors advocate for development of research skills to students during their university education. Research skills may be seen as professional skills for many students in universities or as skills that may help students in their university life. The paper clarified important aspects regarding initial training of future researchers and identified possible solutions and actions in universities in order to diminish and eliminate this source of inequality for future researchers.

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Keywords: Scientific research, sources of inequality in scientific research, initial training of future research



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1. Introduction

It is widely accepted that social and economic progress is primarily generated by empirical research, experimental development and innovation (Academia Romana, 2014). In recent years, research has been constantly debated and has been a main public concern. Related topics have also been debated, including national and international financing of research, visibility of research outcomes, brain drain, research ethics, and recognition of research achievements. Such topics have been a concern of researchers, academics, as well as of the wider public.

This study is approaching, highlighting and discussing equality of chances in scientific research. The complex nature of research practices, the processes of establishing axiological hierarchies, accreditation and recognition systems, dominant educational and research professional practices can generate inequality (OCDE, 1995). Therefore, the paper provides answers, albeit provisional, to the following questions: (1) Is it possible that the quality of human resources involved in scientific research to generate inequality in this domain? (2) Is the quality of research depending on initial training of human resources involved in?

2. Initial Training – Potential Source of Inequality in Scientific Research

A fundamental question is on when you need to start the training of the future researchers. The training capacities of experimentation, observation, cultivating creativity, curiosity, formation of research skills etc. stays in school task (COM, 2005). For example, the children are faced with doing experiments in the natural sciences, to compile projects, essays, portfolios and other works that stimulates thinking skills, generalization, abstraction, experimenting, searching, and systematization of information. They are the basis of the future career in research (OECD, 2002).

Some authors talk about certain "critical transitions" covered by future researchers the process of becoming professional moments that can "propel" a person in scientific research or professional route diverts to other domains. Some of these events are visible, others hidden. For example practicing gender roles in childhood is important for future career in research and in some areas of research (the boys are oriented especially towards science and engineering). Among the visible "critical transitions" there are some included such as: the scientific organizing at the level of faculties, hiring and working as a researcher (Etzkowitz, Kemelgor, and Uzzi, 2000; Etzkowitz, 2007).

At the university level, training for the future career in research is more explicit. We meet disciplines in the curricula of universities which approach the issue of research (the scientific research methodology), student scientific communication, scientific seminars, guidance and tutors etc. All these aim to empower students and research capabilities to be exploited in the works for evaluation / graduation or in the future career of researchers / teachers (canberra manual; frascati manual,). Unfortunately, not all faculties have in the curricula of undergraduate cycles such disciplines.

The guidance practice and the participations in scientific communication are not uniform. In some cases the subjects of the research methodology are found in the curricula of programs for master or doctoral school, which we appreciate it very late to develop the real student research skills and the turn to practice as researchers. We consider this a major impediment in the development of future researchers.

3. Research Skills Training at Bucharest University of Economic Studies

The lack of preparation still minimal in research methodology during the undergraduate program, insufficient guidance from mentors of researchers, non-involvement or low involvement of students in research projects are factors contributing to a poor involvement of students / graduates in research.

An analysis of the curricula for undergraduate at the Bucharest University of Economic Studies shows that for certain specialization the training and the development of students research skills is achieved by means of specific disciplines (AMP, BT MAN, REI). In the curricula we find explicit but also some related disciplines, which can serve to shape research universe (ex. Sociology, Statistics). It is worrying that in some faculties there is really no specific discipline to develop future researchers in the domain (FABIZ, IGC as EAM). In all faculties we find, in the final year, the support for preparation of license works, works that must be pronounced as having a scientific character.

Table 01. Courses in the curricula of faculties of the Academy of Economic Studies in Bucharest in 2015 - 2019, processing by: <http://planinvatamant.ase.ro/>

Nr. crt.	Faculty	Courses – undergraduate 1 st year	Courses – undergraduate 2 st year	Courses – undergraduate 3 st year
1.	BUSINESS ADMINISTRATION WITH TEACHING IN FOREIGN LANGUAGES	-	Statistics for Business	Preparation of the Graduation Paper
2.	ADMINISTRATION AND PUBLIC MANAGEMENT Specialization Public Administration	Sociology Introduction to social research methodology	The Theory of Polls/ Surveys	The Theory of Polls/ Surveys in Public Administration Preparation of the Graduation Paper
3.	ADMINISTRATION AND PUBLIC MANAGEMENT Specialization Human Resources	Introduction to social research methodology Social Statistics	The Theory of Polls/ Surveys	Analysing Data Preparation of the license works
4.	BUSINESS AND TOURISM	Statistics in trade, tourism and services Methodology elaboration of scientific papers	-	Preparation of the Graduation Paper
5.	CYBERNETICS, STATISTICS AND INFORMATICS Specialization Cybernetics	Fundamentals of economic statistics Statistics	Macroeconomic Statistics	Research operational bases Sociology Preparation of the Graduation Paper
6.	CYBERNETICS, STATISTICS AND ECONOMIC INFORMATICS Specialization	The Basics of statistics Statistics	Macroeconomic Statistics	Economic research Data analysis Statistical surveys and polls investigations

	Informatics			Sociology
				Preparation of the Graduation Paper
7.	ACCOUNTING AND MANAGEMENT INFORMATION SYSTEMS	-	-	Statistics Preparation of the Graduation Paper
8.	AGRICULTURAL AND ENVIRONMENTAL ECONOMY	-	-	Preparation of the Graduation Paper
9.	THEORETICAL AND APPLIED ECONOMICS	Economic Statistics	Statistical Surveys and Investigations	Economic Sociology Preparation of the Graduation Paper
10.	FINANCE, INSURANCE, BANKING AND STOCK EXCHANGE	Statistics	-	Preparation of the Graduation Paper
11.	ECONOMIC MANAGEMENT	Research & Developing Management	Statistics	Preparation of the Graduation Paper
12.	MARKETING	Introduction in the scientific research methodology Statistics Marketing research	Analysing the data with SPSS Surveys and statistic investigations	Advanced techniques for marketing research Preparation of the Graduation Paper
13.	INTERNATIONAL ECONOMIC RELATIONS Specialization Economics and International Business	-	Operational Researches Statistics	Macroeconomic Statistics Marketing researches Preparation of the Graduation Paper Critical Thinking
14.	INTERNATIONAL ECONOMIC RELATIONS Specialization Applied Modern Languages	Academic and Study Skills	Qualitative Research Methodology in the Social Sciences Research Methods in Social Sciences: Quantitative Research	Current Trends in Applied Linguistics Research Preparation of the Graduation Paper Project and Final Exam

The development of human resources in research must take into account an integrated approach, both in terms of initial training and continue, and the universities must take measures to promote this aspect.

4. Methodology

In the survey we have conducted, the hypothesis was that initial training of future researcher is a potential generator of unequal opportunities in scientific research. We have to mention that initial training of future researcher was one of the issues we have analyzed in a more complex survey we have conducted on perceptions of Romanian researchers regarding the types of inequality that affects their work and awareness degree in respect with the sources of respective inequality.

Data were collected through a primarily qualitative empirical research which enabled engagement in the setting and in-depth exploration of respondents' views through qualitative semi-structured interviews. Eleven one-to-one interviews were conducted in March-April 2016 with academics under obligation to undertake research activities and communicate their results.

The semi-structured interview was selected as the most appropriate sociological research tool in accordance with the study objectives. It enabled direct contact with the people whose perceptions we set out to explore (academics whose professional obligations include teaching and research) and were conducted in a familiar university setting. The relevant topics were approached in formal language appropriate to the issues under investigation (Chelcea, 2001).

The group of respondents was fairly homogeneous as they were all academics teaching social sciences subjects (education, management, modern languages, economics, physical education and sport), with a minimum of 10 years of experience in higher education and research and involved in writing and conducting research projects. By participating in the survey, all respondents had the opportunity to reflect on their own experience, to understand it better, and to articulate their thinking about issues of wide concern.

The methodological approach entails inevitable limitations: the findings are valid for the respondents and context of the interviews, they cannot be generalized to a wider population as is the case with most qualitative research endeavours. Nevertheless, they should be taken into account by researchers investigating a similar topic in other settings.

5. Findings

The structure of human resources involved in research and pre-service research training is a source of inequality. All respondents described personal experiences related to the topic under investigation. Their opinions are relevant both in terms of their personal relevance and in terms of future drafting and adoption of an institutional strategy meant to diminish inequality effects. The key issues highlighted by respondents in their description of institutional constraints are discussed below.

All respondents acknowledge the necessity of initial (pre-service) research training and most of them complain about the delayed inception of training and the lack of a coherent pre-service training system. Many of them experienced research training no sooner than during their MA studies and others as late as during their doctoral studies (R3, R5, R7, R8, R9, R11). Pre-service training tends to focus on transmission of knowledge rather than on building research competences („how to conduct research and how to communicate results”) or transferable ones useful in research work: critical thinking, communication, teamwork, self-evaluation, creative thinking, etc. „We are not less competent than other researchers but we suffer from lack of coherent initial training and many of us try to overcome this shortcoming through self-development” (R11).

Development of research management competences is equally useful. Several respondents highlighted the fact that one can have research competences but not necessarily abilities to manage research processes and products, (R1, R5, R9, R11). Such additional abilities reflect skills in evaluating existing norms and standards (regarding publication, journal or conference indexing) or in adopting a suitable, systematic pace of work. In the absence of an institutional training framework, academics are responsible for developing their research skills. Wider ranging initiatives are isolated and patchy. Researchers use the opportunities they happen to identify and the connections they have, without receiving any financial support for continuous learning (money for books, conference participation,

publication) (R 2, R 3, R5, R6, R8, R10). Several other respondents have mentioned their attempt to draft research articles following existing models, in the absence of any form of training.

The absence of mentors and advisers to guide and inform the work of junior researchers (lecturers or researchers from research institutes) generates inequality (R5, R6). Without receiving consistent initial training, doctoral students work on their own most of the time and present the results to their supervisors.

Work overload can hamper researchers' work. The amount and range of professional tasks takes up time which otherwise would be devoted to research work (R2, R3, R5, R7, R8, R9, R10). A heavy teaching load, pressure of internal evaluation and the need to publish, involvement in projects are all tasks that take up valuable research time. Such tasks are distributed unevenly and researchers use the time which remains available when other activities are not predominant. Participation in several projects at one time (because of financial needs or the willingness to make the most of professional opportunities) can be counterproductive for research. Research work is usually patchy and some respondents admitted they sometimes do it under evaluation pressure.

All respondents use their research findings to improve their teaching: they revise the content, provide relevant examples, introduce new disciplines in the curriculum of existing programmes (R1, R 9, R10, R11).

Specific barriers relate to human resources as sources of inequality. Apart from the major sources of inequality discussed so far, the respondents identified several other such sources they encountered in their research work: (1) human resources related barriers; (2) inappropriate communication inside the university; (3) difficult access of junior researchers to academic institutions; (4) bias and stereotypes; (5) research ethics and integrity; (6) researchers' ideological affiliation.

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Respondent 6 brought up the unethical practice of using students to perform certain activities related to research projects: translation, drafting reference cards, data processing, student research. Such contribution is required as a prerequisite of passing exams or getting high marks. Such practice is unethical as students' contribution is not acknowledged properly.

All respondents pointed out the absence of consistent links among university staff as members of various departments do not know one another or their research work (R1, R6, R10, R11), citations are the result of personal connections or service offers (I will do it for you, I will cite your work and include you in the board of my publication. I expect you to do the same for me).

Inequality is equally generated by means of accessing research networks. In most cases this is done through personal relationships (R2, R5, R7, R11), or opportunities that may arise, if somebody happens to

need us in their projects, R1). The problem is that such collaboration cannot be properly envisaged and planned for.

Such fortuitous accessing of international research networks can lead to loss of motivation by those interested (R1, R11). Networks are efficient when objectives and leadership roles are clear to all participants (R3).

The majority of respondents believe that there is appropriate staffing of research activity in terms of numbers and age categories primarily due to regulated access to higher education institutions. It is difficult, though, for newcomers to access academic institutions. Permanent contracts of existing staff do not leave enough vacancies for new staff. Academic staff mobility is quite low in Romania compared to other European universities. It is equally difficult for those working temporarily abroad to return. The respondent commented that the higher education system is closed and it allows only controlled access to the clientele” (R6). Respondent 6 also highlighted the low salaries of young researchers who should be at the forefront of research’ and the consequences of poor payment in terms of such researchers taking on various extra duties and jobs to increase their income. Such income is easier to obtain than research income which is subject to many conditions (winning grants, the effort of conducting and finalising projects, etc).

Although the respondents did not personally come across bias and stereotypes, they seem to exist and have been indicated as sources of inequality. For example, researchers tend to believe that partnership with ‘big names’ facilitates publication in high-profile journals (R1 about her own research results), or that team publication is a strategy for pushing the barriers and getting published (R2). Another respondent believes that such stereotypes do not generate unequal opportunities but „tend to block researchers’ creativity” (R6). There is bias related to researchers’ age. Young age (or perceptions of it) is associated with lack of experience or of perseverance. (R2).

Unethical practice is to be found in research. Plagiarism and taking on someone else’s work continues to be encountered, but ‘it tends to be committed only by those naive enough to believe it will not be eventually revealed.’ As revealed by R6, students’ work still goes unacknowledged by their teachers. Superficial behaviour exists for researchers in a hurry to publish without sufficient validation or verification of their work. This usually happens under evaluation or promotion pressure (R6, R7).

Research evaluation is done according to quantitative rather than quality criteria. Those who spend long time verifying their findings will publish less and will be evaluated with lower scores.’ Formal compliance with criteria for publication in certain journals does not encourage caution and preoccupation for quality.” (R6, R11).

Lack of blind review is a source of inequality because ‘in Romania it matters who you are’. The practice of blind review will remove inequality. (R2).

Inequality could be sometimes generated by researchers’ ideological stance or beliefs. This particular source of inequality was mentioned by biomedical researchers through informal accounts. They mentioned the case of Paulescu, the Romanian researcher who did not receive a well-deserved Nobel prize because of his antisemitic beliefs. Such claims are difficult to verify and they may be simple idiosyncrasies.

Respondent 3 mentioned a situation whereby she withdrew from a research team because of beliefs different from the other team members (she believes in the world creation while her colleagues favoured

evolutionism and were interested in research on genetic modification in view of production increase and improved economic performance). Respondent 6 noticed that such beliefs can generate inequality in social and humanistic sciences where truth is usually a matter of consensus. Those who do not consent are usually excluded through lack of financing (the example of east European researchers who were discriminated against during Cold War with effects that are still visible).

6. Conclusions and recommendations

The hypothesis underpinning this study was confirmed and validated by the research findings. Research work is accompanied by many sources of inequality perceived differently as regards their effects and implications by the participants in the study.

A key theme arising from the findings refers to the need for universities to support development of human resources involved in teaching and research, to stimulate their work so as research outcomes can make a definite contribution to teaching and general socio-economic progress. Based on respondents' suggestions and those in the literature, a set of recommendations for universities to work towards diminishing the effects of inequality will be put forward.

There is clear need for training future researchers through developing students' research abilities as early as their undergraduate studies through: introduction of academic skills and research disciplines in the curriculum, mentoring in research activities, and involvement in research projects. Such initiatives can lead to the professional and personal development of graduates and to their increased interest in research while longer term they can contribute to institutional development (research skills need time to develop, R11).

Development of research management skills of junior researchers (applying for funding, managing research projects and self-management) is equally needed and can be addressed through training and involvement in research projects.

Continuous development of researchers/lecturers can be conducted through training in new research methodologies/technologies (R10), participation in research networks (learning by doing, discipline-specific networks to tackle research topics of current interest, interdisciplinary research teams (R1, R3, R5, R7, R11). Such developments can usefully take place in combination with development of mentors and doctoral supervisors mainly through involvement in international networks.

Interdepartmental and interdisciplinary links need to be strengthened through joint research conferences and events. Overall, universities need to approach research honestly – they claim research is important but do little to support it. (R1, R11).

It is the university responsibility to provide resources (properly equipped space, access to information), to implement measures meant to encourage research (research as a strategic priority, strengthening relations with the socio-economic environment who can implement research outputs, financing of research, support for researcher participation at conferences, support for publication, a reward system), to identify and support the efforts of cascading researchers, those who can generate change in terms of research benefits and outputs (R11).

Apart from such administrative measures, a proactive attitude of each and every researcher is required. Availability, the genuine desire to do research, perseverance in undertaking new initiatives

when old ones failed, permanent development (, benchmarking yourself against other researchers , R11), building relationships with other researchers, securing research funding and active participation in conferences are characteristics of a dedicated researcher.

References

- Academia Romana, (2014). *Creatia stiintifico-tehnica si formarea cercetatorilor*. Universul Ingineresc, nr. 9/2014. http://www.agir.ro/univers-ingineresc/numar-9-2014/creatia-stiintifico-tehnica-si-formarea-cercetatorilor_4437.html
- Chelcea, S. (2001). *Metodologia cercetarii sociologice. Metode cantitative si calitative*, Bucuresti, Editura Economica, 2001/2007
- COM (2005). Commission Recommendation of 11 March 2005 on the *European Charter for Researchers and on a Code of Conduct for the Recruitment of Researchers* (Text with EEA relevance) (2005/251/EC). Official Journal of the European Union L 75/67, 22.3.2005. <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32005H0251&qid=1490680447086&from=en>
- Etzkowitz H. et al., (2000), *Athena Unbound: The Advancement of Women in Science and Technology*. Cambridge University Press, New York, 2000. <https://bioscience.oxfordjournals.org/content/51/6/504.full>
- Etzkowitz H., (2007). The "Athena Paradox:” Bridging the Gender Gap in Science, in *Journal of Technology Management & Innovation*, Vol. 2, Issue 1.
- OCDE (1995). OCDE/GD(95)77 The Measurement of Scientific and Technological Activities Manual on the Measurement of Human Resources Devoted to S&T "Canberra Manual". Organisation for Economic Co-operation and Development, Paris 1995. http://www.tubitak.gov.tr/tubitak_content_files/BTYPD/kilavuzlar/Canberra.pdf
- OECD (2002), *Frascati Manual 2002: Proposed Standard Practice for Surveys on Research and Experimental Development*, OECD Publishing, Paris. <http://www.oecd-ilibrary.org/docserver/download/9202081e.pdf?expires=1490682471&id=id&accname=guest&checksum=334DE0155457E36ACBBB66775F8C67A4>