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DOCTORAL (Ph.D.) PROGRAMMES IN THE USA UNIVERSITIES: INSIGHTS INTO COVERAGE OF RESEARCH ADMINISTRATION ASPECT

The study sought to identify how the doctoral (Ph.D.) programmes in US universities cover the research administration aspect, and how compatible the equivalent programmes delivered in universities in Ukraine with the above programmes are. It used the qualitative data collection methods used for empirical or explorative studies, specifically, for a systematized review. The study found categorisations of Ph.D. programmes in the USA. These programmes differ in structure, length, admission prerequisites, and other features. The programmes under study seem to be mostly elective and of specific/professional type. Importantly, almost all the programmes included or offered courses that fostered students' transferable skills, which are indispensable for research management and administration. These courses were dedicated to writing, speaking, research ethics, networking, social entrepreneurship, project management, law, and leadership. The study discovered that Ph.D. programmes of specific/professional type are also dominant in universities in Ukraine. However, these programmes mostly focus on theoretical subjects related to the student's area of research and writing a thesis. That's why the courses that address issues related to research ethics, grant proposal writing, project management, research-related law, finance, and strategic planning, leadership could be added to the curriculum to add the international value of these programmes. Further research is needed for identifying how the recommended academic disciplines can influence the effectiveness of doctoral programmes and how these could be perceived by the students.

Keywords: higher education; doctoral (Ph.D.) programmes; US universities; research management and administration

ПРОГРАМИ ПІДГОТОВКИ ДОКТОРІВ ФІЛОСОФІЇ В УНІВЕРСИТЕТАХ США: ВИСВІТЛЕННЯ АСПЕКТУ НАВЧАННЯ АДМІНІСТРУВАННЮ НАУКОВИХ ДОСЛІДЖЕНЬ

Метою дослідження було визначити, як програми підготовки докторів філософії (Ph.D.) в університетах США охоплюють аспект навчання управлінню науковими дослідженнями та наскільки сумісні еквівалентні програми, запроваджені в університетах України, з наведеними вище американськими Ph.D. програмами. Застосовано якісні методи збору даних, що використовуються для емпіричних досліджень, зокрема, для систематизованого огляду. Виявлено класифікацію докторських (Ph.D.) програм, що пропонуються університетами в США. З'ясовано, що ці програми відрізняються структурою, тривалістю, передумовами вступу, є

переважно вибірковими або конкретно-галузевого/професійного типу. Встановлено, що майже всі програми включають або пропонують курси, що сприяють розвитку в студентів універсальних навичок, що вважаються вкрай необхідними для адміністрування наукових досліджень. Ці курси спрямовані на розвиток навичок та вмінь з письма, комунікації, нетворкінга, соціального підприємництва, управління проєктами, лідерства, на надбання знань з дослідницької етики та законодавства. Виявлено, що програми підготовки докторів філософії конкретно-галузевого/професійного типу також є домінуючими в університетах України. Однак ці програми більше зосереджені на теоретичних дисциплінах, що відносяться до галузі досліджень студентів та написання дисертаційної роботи. Тому навчальні курси з питань дослідницької етики, написання грантових заявок, управління науковими проєктами, законодавства у сфері науки, фінансів, стратегічного планування та лідерства рекомендовано додати до навчальних планів, і, таким чином, підвищити міжнародну цінність цих програм. Подальші дослідження можуть бути спрямовані на визначення, як рекомендовані академічні дисципліни можуть впливати на ефективність докторських (Ph.D.) програм, якість навчання студентів та сприйняття ними цих навчальних курсів.

Ключові слова: вища освіта, програми підготовки докторів філософії, університети США, адміністрування наукових досліджень.

Introduction of the issue. The doctoral (Ph.D.) training programmes – often referred to as the ones for early career researchers (ECRs) in literature (Sala-Bubaré et al., 2020) – have undergone changes in priorities, principles, and expected outcomes in recent years worldwide (Bogle & Maes, 2014; Cardoso et al., 2022; Sala-Bubaré et al, 2020). Being focused on two key domains such as fostering postgraduates' research skills and teaching skills to build careers in academic settings, those university programmes seek to retain highly skilled graduates and create the environment to develop a student researcher with strong team player skills. The retaining process is implemented by getting the Ph.D. students engaged in lecturing, tutoring, and teaching, participating in the activities such as research group meetings, seminars, and journal club gatherings. The purpose of creating the environment is to bring up an international academic research and education market player who is a "creative, critical, autonomous intellectual risk-taker" (Bogle & Maes, 2014; Jorgensen, 2020). There seem to be some other issues that necessitate Doctoral (Ph.D.) training programmes in universities, specifically US universities. Those issues are as follows: a) research has become a casual part of a university job position, b) competition among the university staff is increasing because of limited career and employment opportunities for the research-only personnel with Ph.D. degrees, and c) methods and approaches to training teaching and research skills of Ph.D. degree holders need to be updated (McAlpine et al., 2020). Besides research and teaching, Ph.D. graduates are more frequently involved in research management and administration. Although the higher educational and in-service training institutions in the USA provide Master's programmes in Research Administration and Management, Ph.D. holders are considered more qualified for this career and are more often inclined to choose this

career (Reardon, 2021). Furthermore, Viágh et al., (2020) found that degree programmes, professional upgrading and refresher courses in research management and administration are popular at US universities. The reasons for popularity are financial and image-related. This encouraged the author of the research to explore how the doctoral (Ph.D.) programmes in US universities cover the research administration aspect and created the rationale for this investigation.

The current state of the issue in the literature. The study found sources that reviewed different perspectives of the doctoral (Ph.D.) training programmes. It was found that there has been a substantial boost in doctoral (Ph.D.) education over the last 15–20 years (McAlpine et al., 2020). The seemingly first attempt to review the research on doctoral training in the USA between 1990 and 2001 was performed by Golde (2001). Golde specified the key issues that were pertinent at that point in time. Those were as follows: a) quite a long time to earn the doctoral degree with an average length of 3 to 7 years, b) limitedness of completion which was referred to as attrition, c) limited retention, d) unavailability of financing that resulted in debt, e) insufficiency or absence of supervision along with the supervisory workload studied from the perspective of efficiency, f) low levels of satisfaction gained from doing the degree, or being the supervisor or overall doctoral training and its outcomes, and g) overproduction of Ph.D. graduates resulted in the need for training the graduates for other careers.

More studies that examined the above issues were reported from 2006 to 2022. For instance, Weisbuch and Cassuto (2016) studied retention and progress towards completion of doctoral degrees in the literature categorised as researchers, administrators and managers, research managers, and supervisors between 2006 and 2015. The typical issues related to the failure of Ph.D. students to gain doctoral degrees included the following: a) insufficient support from supervisors, b) graduates' poor skills in setting goals, meeting deadlines, or managing their time, c) maintaining contact with their supervisors, d) accepting supervisor's feedback, criticisms or recommendations, e) following the rules related to the academic integrity, and g) accepting the involvement in teaching at the department or faculty level.

Recent years have seen a change in the perception of training of future researchers. Specifically, doctoral (Ph.D.) education has become increasingly valued and is becoming a more conventional trajectory for successful university graduates. The above changes are driven by three main trends: the massification of doctoral education, the professionalisation of doctoral education and careers, and the development of various quality assurance systems (Andres et al., 2015). With regard to the massification of doctoral education, the examination of the publicly available data on education provided by the Organisation of Economic Cooperation and Development (OECD) for the member countries such as the USA, Canada, and European Countries the proportion of graduates who completed the doctoral programmes and earned Ph.D. degrees increased by more than a third throughout the years of 2000 to 2009, and this figure doubled by the year of 2022 (Auriol et al., 2013; OECD, 2010; OECD, 2012; OECD, 2014; OECD, 2022 (see Figure 1).

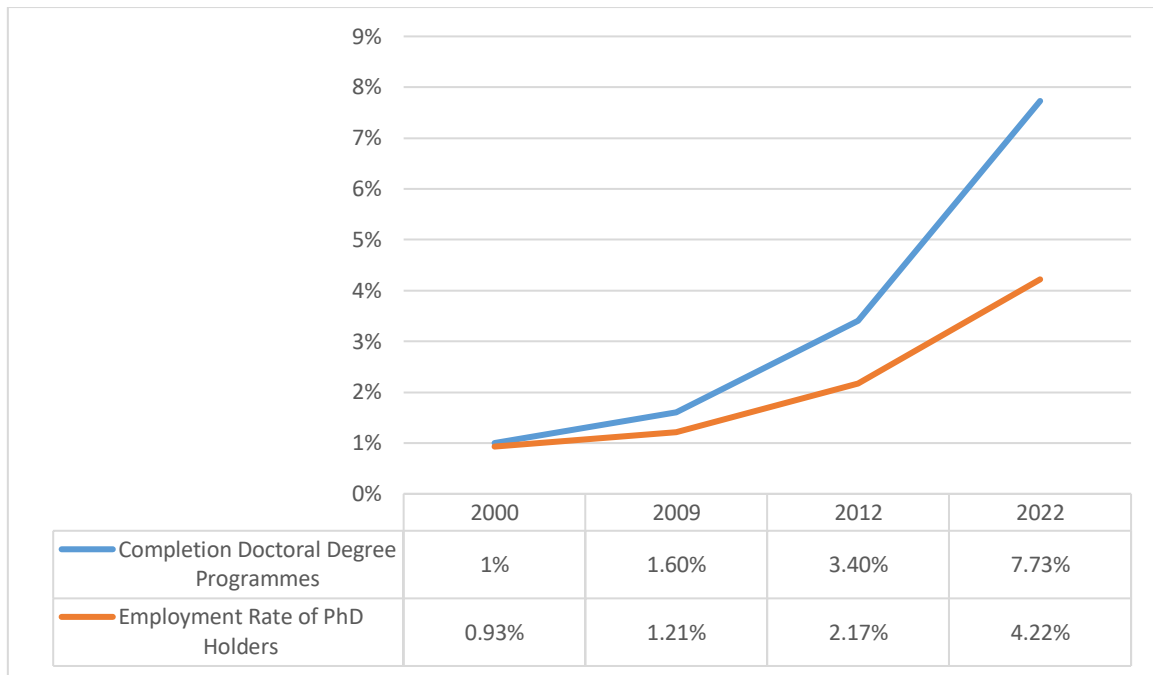|	2000	2009	2012	2022
Completion Doctoral Degree Programmes	1%	1.60%	3.40%	7.73%
Employment Rate of PhD Holders	0.93%	1.21%	2.17%	4.22%

Figure 1. Massification Trend of Doctoral Programmes in Universities in the USA, Canada, and European Countries (Based on Data Retrieved from OECD Reports for the years between 2000 to 2022)

Figure 1 illustrates two related trends, specifically the increase in the proportion of doctoral programme graduates in contrast to the weakening growth trend in the employment rate of those graduates. The above trends have brought a disbalance in doctorate degree holders across academic disciplines. The studies showed that the humanities are of lower interest to doctoral degree seekers than natural sciences (OECD, 2014; OECD, 2022). The study also found a disbalance in gender involvement in certain areas of research. Specifically, according to OECD (2022), females dominated in humanities such as education, psychology, health, and welfare while males were found predominantly in computing, engineering, manufacturing, and construction which are science disciplines. Whiting (2018) also found a disbalance in Ph.D. holders' earnings with males' exceeding the females' fees.

The trend in the professionalisation of doctoral education is proven by the fact that more universities adjust their curriculums to provide employment opportunities for their Ph.D. graduates in a wider range of economic sectors and more Ph.D. graduates decide to pursue their careers in non-educational spheres (Bennett, 2022; Peters, 2021; Sur, 2022). Studies showed that Ph.D. holders in natural sciences and engineering are inclined to choose research for their careers while Ph.D. graduates in social science choose non-research jobs (Yang et al., 2022). The recent influences driven by the emergence of the entrepreneurial culture are reshaping the curriculums of the doctoral (Ph.D.) training programmes to give more emphasis to 21st-century researcher competencies related to fundraising, self-branding, promoting the results of the studies through publishing, networking, dissemination practices, social media like LinkedIn or Facebook, for instance (Andres et al., 2015; Kanso, 2022).

The reviewed studies on the trend related to the adoption of quality assurance systems found that these are based on global ranking schemes including systematic benchmarking, and research evaluation of universities (Edler et al., 2012; Hauptman

Komotar, 2020). This trend concerns doctoral education because, in the setting of commoditisation of knowledge and an increase of qualification of the personnel, doctoral students are becoming recognised societal and economic assets.

Examination of the statistical data on the USA which was related to the above trends of massification discovered that the number of Ph.D. seekers is growing. The above is supported by the Surveys on Earned Doctorates conducted between 2010 and 2020 (Kang, 2020). The data for all the doctorate recipients drawn from Table 11 showed that the number of individuals who earned doctorate degrees increased by 13.12%, over the decade – it was 48028 Ph.D. holders in 2010 and it grew to 55283 ones in 2020. Interestingly, the doctorate fields such as science and engineering dominated in 2014. However, doctorates in Education Administration (Doctor of Education and Administration), Psychology (Doctor of Psychology), and Management (Doctor of Management) have doubled over the recent 5 years. This increase illustrates the typification of degrees by professional or practice areas. This trend also addresses the request of formal higher educational institutions for having a Ph.D. by lecturers (Cardoso et al., 2022).

Although the literature and other sources highlight the structure, length, and admission prerequisites to the doctoral (Ph.D.) programmes in US universities, the research administration aspect of the programmes still seems to be investigated limitedly. This created the gap for this study.

The purpose of the study is to identify how the doctoral (Ph.D.) programmes in US universities cover the research administration aspect, how compatible the equivalent programmes delivered in universities in Ukraine with the above programmes, and provide recommendations for universities in Ukraine.

Research methods. The study relies on the qualitative data collection methods used for empirical or explorative studies, specifically, for a systematized review (Grant & Booth, 2009). This type of review was chosen because it is similar to a systematic review but it can use different procedures within its elements such as a) the search of the programmes (courses); b) evaluation of the programmes (courses); c) synthesis of the relevant and appropriate data; and d) data analysis which is supposed to identify uncertainties around findings and produce recommendations to be implemented in the curriculums of similar programmes in universities in Ukraine. The search was conducted manually using several keyword strings based on the terms that follow:

1) TI and/or TW and/or AB and/or KW = (Doctor* AND/OR Ph.D. programmes OR Doctoral AND/OR Ph.D. courses AND features OR specifics OR research aspect training AND US Universities)

2) US Universities AND Doctor* AND/OR Ph.D. programmes OR Doctor* AND/OR Ph.D. courses AND research OR academic OR scientific integrity OR grant proposal writing OR leadership OR negotiations OR strategic planning OR budgeting OR academic writing OR project management

Results and discussion. The study found several categorisations of the Ph.D. programmes in the USA, which are claimed to be different in structure, length, admission prerequisites, and other features. One of the categorisations provides three

types of doctoral programmes such as standard, professional, and specific (Grace, 2022). The standard Ph.D. programme is considered a conventional type of programme of this type which is also known as the academic doctorate and the graduate completes it when they produce a dissertation thesis. Professional Ph.D. programmes rely on specific practical projects and case studies that lay the basics for dissertation research and serve as content for academic classes. These programmes are known as professional doctorates. The specific Ph.D. programmes are available to students who seek a degree in law or medicine which are considered regulated professions.

The GradSchools platform provides two types of those programmes and degrees such as research-oriented and professional doctorate ones (GradSchools, 2022; University of the People, 2022). The difference between the programmes is in the purpose, structure, and desired career. The research-oriented programmes are to perform deep academic research using existing academic theories/techniques to mainly identify the gaps in the theory. The professional doctorate programmes are for working professionals with 5-10 years of professional experience who are expected to conduct applied research that addresses practical issues. Concerning career expectations, the graduates-to-be can be employed to be either practice-oriented members for the faculty, consultants, or senior management leaders in academia or business, or industry.

Collegedunia website (2022) categorises Ph.D. programmes into STEM and non-STEM. STEM programmes are for majors that include health sciences, physics, engineering, and information technology. The non-STEM Ph.D. programmes are for degree seekers in Humanities, Arts, Literature, and Management.

The Carnegie Classification of Institutions of Higher Education (Wikipedia Programs, 2022) provides a more detailed classification of Doctoral Degree Programmes. These are as follows: a) single doctoral (education) (S-Doc/Ed), b) single doctoral (other fields) (S-Doc/Other), c) comprehensive doctoral with medical/veterinary (CompDoc/MedVet), d) comprehensive doctoral (no medical/veterinary) (CompDoc/NMedVet), e) doctoral, humanities/social sciences dominant (Doc/HSS), f) doctoral, STEM dominant (Doc/STEM), and g) doctoral, professional dominant (Doc/Prof). As can be noticed that the last-mentioned classification draws some features from the previous ones.

This study randomly examined the publicly available information on Ph.D. programmes that are delivered in eight highly-ranked US Universities (see Table 1). Those universities were as follows: Harvard University, Stanford University, Yale University, Northwestern University, Carnegie Mellon University, University of Washington, Johns Hopkins University, and the University of Pennsylvania.

Table 1. US universities, Ph.D. programme types, and courses aimed at developing skills in research administration

University	Programme type	Ph.D. majors	Research administration purpose courses
Harvard University	Specific/ Professional/	Healthcare; Engineering;	1) Scientific Integrity

(data retrieved from: http://bitly.ws/wwW4)	STEM	Physics; Business and Law	2) Professional Writing for Scientists and Engineers 3) Research Design/Proposal Writing 4) Leadership in Negotiation: Advanced Applications 5) Tax Law, Finance, and Strategic Planning 6) Introduction to Digital Fabrication 7) Project Management
Stanford University (data retrieved from: http://bitly.ws/wxet and http://bitly.ws/wxBW and http://bitly.ws/wxC8)	Specific/ Professional	Accounting; Economic Analysis & Policy; Finance, Marketing, Operations; Information & Technology; Organizational Behaviour; Political Economics	1) Relational Sociology 2) Networks & Organizations 3) Data-driven Politics 4) Project Management 5) Budgeting 6) Raising Finance
Yale University (data retrieved from: http://bitly.ws/wxDU and http://bitly.ws/wxEK)	Specific/ Professional	Accounting; Financial Economics; Marketing, Operations, Organizations, and Management; Physics	1) Responsible Conduct in Research for Physical Scientists 2) Writing Your K- or R-Type Grant Proposal 3) Leadership 4) How to Develop, Write, and Evaluate an NIH Proposal 5) Negotiations 6) Project Management
Northwestern University (data retrieved from: http://bitly.ws/wxIX)	Professional JD/Ph.D. Combined Degree Program	Law	1) Intellectual Property 2) Negotiation 3) Data Privacy: Law, Regulation, and Application 4) Fundraising

Carnegie Mellon University (data retrieved from: http://bitly.ws/wxLh)	Specific/ Professional	Computer science	1) Academic Writing 2) Public speaking 3) Thesis writing 4) Academic Integrity
University of Washington (data retrieved from: http://bitly.ws/wxMh)	Standard	Education Philosophy	1) Educational Leader as Change Agent 2) Educational Leader as Communicator 3) Proposal Writing 4) Ethics in Research and Professional Practice 5) Understanding Community Leadership
Johns Hopkins University (data retrieved from: http://bitly.ws/wxZ2)	Standard	Education Philosophy	1) Policymaking 2) Leadership 3) Research Procedure 4) Dissertation thesis writing
University of Pennsylvania (data retrieved from: http://bitly.ws/wxZy)	Specific/ Professional	Accounting; Education; Economics; Legal Studies & Business Ethics; Operations, Organizations, and Management	1) Grant Writing 2) Intro to Intellectual Property Law 3) Scientific & Ethical Conduct 4) Thesis/Dissertation Research 5) Project Management

As can be noticed in Table 1, the Ph.D. programmes delivered in US universities are mostly elective and of specific/professional type. Even though the study examined the courses for quite different majors, almost all the programmes included or offered courses that fostered students' transferable skills which are needed for research management and administration. These courses were dedicated to writing, speaking, research ethics, networking, social entrepreneurship, project management, law, and leadership.

The above exploration provided additional benefits in terms of training and retraining university (under)graduates for performing research administration and management functions. The study found relevant information on the Master's degree programmes and certificate programmes in research management and administration at US universities. It was discovered that the programme curriculums are mostly delivered online or in blended mode and include training future research managers and administrators in the use of Sage Accounting and Business Management Software, into the delivery of several elective courses such as "SAGE: Creating and Submitting eGC1s (electronic Grants and Contracts form 1)", "SAGE: Budget",

"SAGE: Creating NIH Proposals in Grant Runner", "Subawards in SAGE". It was also found that future research managers and administrators in the field of biology and medicine are trained to use electronic submission systems such as CLINCARD, DocuSign, Electronic sponsored Programs Route (Esproute), iLab Solutions, IRBNet, and OnCore (On-line Collaborative Research Environment).

Following the above, the study randomly examined the data retrieved from several official websites of the universities of different majors such as the Simon Kuznets Kharkiv National University of Economics (see the data at: http://bitly.ws/wzEP), Hryhorii Skovoroda University in Pereiaslav (see the data at: http://bitly.ws/wzFz), Bila Tserkva Agrarian University (see the data at: http://bitly.ws/wzHj), National Technical University of Ukraine «Igor Sikorsky Kyiv Polytechnic Institute» (see the data at: http://bitly.ws/wzIt) to identify how compatible the equivalent programmes delivered in universities in Ukraine were with the above programmes. The Proceedings of the conference on the issues related to the training of doctors of philosophy (Ph.D.) in the settings of higher education reform that took place in Zaporizhia National University in 2017) (see at: http://bitly.ws/wzDH) were also analysed to produce recommendations.

It was found that the Ph.D. programmes of specific/professional type are also dominant in universities in Ukraine. However, these programmes mostly focus on theoretical subjects related to the student's area of research and writing a thesis. That's why the courses that address issues related to research ethics, grant proposal writing, project management, research-related law, finance, and strategic planning, leadership could be added to the curriculum to add the international value of these programmes. The examples of the courses which are recommended to be included in the Ph.D. curriculums in Ukraine are as follows: "Grant Proposal Writing", "Research Budgeting", "Intellectual Property in Research", "Networking", "Raising Funds for the Research", "Research Ledership" (see Table 1). More courses are recommended to be included – as elective ones – are drawn from the Master's curriculums in research and administration of US universities and could be included in the training of the Ph.D. students in Ukraine are as follows: 'Essentials of Research Administration', 'Understanding Your New Award', and 'Research Administration Data: Visualisations and Reports' which cover the competencies in organisational learning through sharing best practices, and competencies in addressing problems and risks along with benefits managed in an effective and timely manner. The disciplines such as 'Sponsored Project Budgets', 'Award Administration: Fiscal Compliance', 'Preparing for Audit', 'Internal Controls in Purchasing', 'Salary & Cost Transfers and Compliance', 'Workshop: Preparing Sponsored Project Budgets', 'Direct Billing of F&A Type Costs', 'Understanding Cost Share', 'Timing of Expenditures & Benefit to Award', 'Managing NRSA Training Grant Budgets', 'SAGE: Budget', and 'Managing Cost Share' cover the competencies of ensuring and controlling of Economics of repetition and business continuity, adherence to project schedules and controlling budget, and dealing with a salary cap and faculty effort certification (FEC). The disciplines such as 'Governance and Regulatory Issues for Sponsored Programs', 'Leadership and Organisation Models in Research Administration', 'Intellectual Property, Technology Transfer, and Commercialization', 'Research Integrity for Research Administrators', 'SAGE: Creating and Submitting eGC1s', and 'Building

University-Corporate Relations' are supposed to train students' competencies related to project governance and coordination of several projects via supporting, directing, and controlling, prioritisation of projects, along with ensuring compliance with institutional policies and regulations, adoption of best practices and standards. The competencies adopting common ICT system platforms are covered with the academic disciplines such as 'SAGE: Creating NIH Proposals in Grant Runner', and 'Subawards in SAGE'. The examination of the Ph.D. programmes delivered in the universities in Ukraine also found that these lack training students in the use of technology to deal with the workflows and processes. The reason for including the above courses is in boosting graduates working opportunities and getting them ready for international certification in research management if they choose this career or decide to work internationally.

   Conclusions and research perspectives. The study found categorisations of Ph.D. programmes in the USA. These programmes differ in structure, length, admission prerequisites, and other features. The programmes under study seem to be mostly elective and of specific/professional type. Importantly, almost all the programmes included or offered courses that fostered students' transferable skills, which are indispensable for research management and administration. These courses were dedicated to writing, speaking, research ethics, networking, social entrepreneurship, project management, law, and leadership. The study discovered that Ph.D. programmes of specific/professional type are also dominant in universities in Ukraine. However, these programmes mostly focus on theoretical subjects related to the student's area of research and writing a thesis. That's why the courses that address issues related to research ethics, grant proposal writing, project management, research-related law, finance, and strategic planning, leadership could be added to the curriculum to add the international value of these programmes. Further research is needed for identifying how the recommended academic disciplines can influence the effectiveness of doctoral programmes and how these could be perceived by the students.

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