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Factors influencing PhD scholars' degree progress: the case of Kazakhstan

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Abstract

The implemented research policy of Kazakhstan state for PhD programs is directed at the stimulation of publication activity and science-innovation development of the country. The state educational grants for personnel training by PhD educational programs grow yearly and reach 1900 in 2024. However, the share of the candidates awarded the PhD degree is still insufficient despite motivational initiatives such as an increase in scholarships and the research component of the educational program. This article aims to determine and map out a wide range of available evidence on the factors influencing PhD scholars' degree progress in Kazakhstan. Al-Farabi Kazakh National University case has been chosen as the country's leading multidisciplinary and national university with more than 29 thousand students, which takes 163rd place in the Global QS ranking in 2024. Furthermore, KazNU has a share of one-third of the state grants for PhD programs. The study was conducted based on the data of the graduating departments and PhD candidates for 2011-2023, which the authors collected. The research methodology is based on the Delphi Method, which involves rounds of surveys and interviews with experts (faculty, administrators, and experienced PhD students) to reach a consensus on the key factors and statistical analysis, enhancing the validity of identified factors. Obtained results allow us to create the recommendations for the requirement for PhD degree awarding from legal perspectives. Furthermore, the study's results can be used to develop doctoral program stimulation strategies in emerging countries.

Keywords. Higher education, publication, degree, science, candidates, postgraduate

JEL Classification Code (up to 3-5): I23; I25; I28

1. Introduction

Doctoral education is a fundamental pillar of academia, significantly shaping nations' intellectual and innovative capacities. Enhancing PhD programs is a strategic priority for developing countries like Kazakhstan, where higher education reforms have been crucial in aligning with global research standards. Despite increased state funding for PhD programs and incentives to boost scholarly productivity, the rate of successful doctoral degree completions still needs improvement. This disparity underscores the urgent need for a comprehensive understanding of the factors that influence the progress and success of PhD scholars.

This study examines Al-Farabi Kazakh National University, a prominent institution in Kazakhstan that exemplifies the potential and challenges in the country's doctoral education landscape. While KazNU benefits from substantial institutional support and research resources, it also faces systemic and contextual barriers that hinder the timely completion of PhD degrees. Factors

including stringent publication requirements in high-impact international journals, limited access to resources, and the dynamics of student-supervisor relationships emerge as critical areas meriting investigation.

This study explores the various factors influencing the degree progress of PhD scholars in Kazakhstan. By analyzing individual, institutional, and systemic determinants, the research seeks to provide actionable recommendations for policymakers, academic institutions, and stakeholders involved in doctoral education. The inquiry is situated within the unique context of Kazakhstan's educational reforms and its aspirations to integrate into the global academic community.

The literature review examines theoretical frameworks and empirical evidence regarding doctoral education, focusing on factors such as student motivation, institutional support, and the quality of supervision. The discussion pays particular attention to the Kazakhstani context, highlighting systemic challenges and potential areas for advancement. The methodology section describes the research design, data collection procedures, and analytical techniques to investigate the factors impacting doctoral degree progress. The results and analysis section outlines the key findings from the study, which uncover several critical challenges impacting doctoral progress. These include delays in fulfilling the mandatory publication criteria, inadequate supervisory support, and systemic inefficiencies within the program. Additionally, the research identifies disciplinary disparities, with doctoral candidates in the natural sciences exhibiting higher completion rates than those in the social sciences. The discussion synthesizes insights from the findings to propose actionable strategies for improving doctoral education in Kazakhstan, including policy-level reforms, institutional-level interventions, and recommended best practices for effective mentoring. The conclusion section of the article concludes by considering the broader implications of this study for doctoral education in other emerging economies, emphasizing the necessity of a coordinated, stakeholder-driven approach to overcome the existing challenges.

2. Literature review

Doctoral student performance is a key indicator of the effectiveness of higher education at the doctoral level. It is determined by many factors, including academic, personal, institutional, and external factors. In Kazakhstan, this issue is particularly relevant due to the reform of the education system associated with the integration into the Bologna Process and the modernization of the state Bolashak program for international study and research internships.

Academic research on determining doctoral student performance includes analyzing global theories and models and the specifics of Kazakhstan's educational system. This section presents an in-depth analysis of literary sources, allowing us to identify the main patterns, barriers, and prospects.

One of the most well-known models proposed by Tinto (1975) considers academic performance through the prism of academic and social integration. Success in doctoral studies is associated with academic integration, including interaction with a supervisor and participation in research projects, and social integration, which implies support from colleagues and the scientific community. Tinto's theory is relevant to Kazakhstan, where bureaucratic and institutional barriers often limit doctoral students' interaction with the academic community. Meanwhile, self-determination theory emphasizes the importance of autonomy, competence, and belonging in learning activities (Deci & Ryan, 1985). For doctoral students, intrinsic motivations, such as the desire to contribute to science, strongly impact academic performance. In the Kazakh context, motivation may be weakened by a lack of available resources for conducting research and limited access to international academic networks. Research by Maslach and Jackson (1981) shows that excessive academic demands can lead to burnout. This is relevant for doctoral students because they try to combine study, work, and administrative tasks.

The quality of interaction with the supervisor plays a decisive role. Research shows successful supervision includes supporting the research direction, providing feedback during the dissertation writing process, and stimulating independent work (Lee, 2008). The relationship with the supervisor is often cited as a critical factor. Adequate supervision, mentorship, and timely feedback are essential

for progress. Waheed et al. (2021) mention the role of supervisors, albeit in a negative context, suggesting its importance. The requirement for access to defense for PhD and publication in high-ranked international journals indexed in scientific databases must be considered, which enhances expectations and qualifications for PhD scholars' supervisors.

Moreover, there is a set of factors that influence PhD scholars' progress, divided into three directions: individual factors, institutional factors, and systematic factors. A student's intrinsic motivation, research interests, and commitment to completing the PhD are crucial and essential to preparation and motivation before starting a PhD. Meanwhile, prior research experience, academic skills, and the quality of previous education can significantly influence a student's progress. As the individual factor of balancing research demands with personal life, especially for students with families or other commitments, is often challenging, the stress experienced by PhD candidates after submission suggests challenges in work-life balance.

Institutional factors, such as institutional resources and support, which manifest access to research facilities, libraries, databases, and funding opportunities within the institution, can impact progress. Kuzhabekova and Mukhamejanova (2017) discuss the role of institutional support in research productivity within a post-Soviet context. The design of the PhD program, including coursework requirements, milestones, and examination procedures, influences the pace of PhD student's progress. Further, a supportive and collaborative departmental environment can foster productivity and well-being.

Authors consider that national research policies and funding priorities in higher education influence the overall research environment. The availability of academic and non-academic career opportunities after graduation influences student motivation and the perceived value of the PhD. In turn, broader socioeconomic factors, such as economic stability and cultural attitudes toward education, indirectly influence PhD progress (Narbayev et al., 2021).

Given Kazakhstan's context, additional factors might influence PhD studies, challenges in accessing international collaborations, publishing in reputable journals, and attending international conferences might exist. In Kazakhstan, the issue is often associated with overloaded supervisors and the need for a mentor training system. Furthermore, access to libraries, databases, and modern laboratories directly affects the quality of research. There is a need for such resources, especially in regional universities. The mandatory requirement to publish in high-impact journals in English creates additional difficulties. Research shows that language competence significantly affects the productivity of doctoral students. Depending on the field of study and the language of instruction, language barriers might challenge some students.

Kazakhstani researchers face significant pressure to publish a specific number of high-quality articles in prestigious journals to obtain tenure. However, this task is frequently challenging due to constraints on their time and financial resources (De Rond & Miller, 2005, p. 322). The State Program on the Development of Education for Kazakhstan has set targets for increasing the proportion of faculty publishing in high-impact, peer-reviewed journals. According to the program, the percentage of faculty engaging in this practice has risen from 9.1% in 2010 to 9.9% in 2015, representing an 8% increase over these five years (Shakirova & Nurakhmetova, 2015). This emphasis on publishing in influential journals is a significant factor in academic promotion and career advancement within the Kazakhstani higher education system. This figure remains low compared to developed nations, with barriers such as insufficient English proficiency and limited scientific writing skills posing significant challenges. Another obstacle is restricted access to information, as journal subscriptions are often prohibitively expensive. Despite these challenges, Kazakhstani researchers are among the most productive in Central Asia in terms of publication output.

Research universities in Kazakhstan play a key role in "knowledge transfer," which involves converting academic knowledge into practical innovations that benefit specific regions (Abdyrov et al., 2017, p. 4). Bentley and Kyvik (2013) note that university professors typically juggle teaching, supervising doctoral students, and administrative duties (p. 330). Similarly, heavy teaching loads in Kazakhstan often leave little time for research. Faculty at many institutions are expected to balance

teaching and research, with differing opinions on whether teaching or research should take precedence (Tennant et al., 2010).

Kazakhstan's case reflects global challenges and unique regional dynamics in doctoral education. Addressing these factors requires a multi-stakeholder approach involving policymakers, institutions, supervisors, and scholars. This research could examine the impact of recent educational reforms on PhD completion rates and explore strategies for fostering innovation and resilience among doctoral candidates.

3. Research Methodology

This study aims to investigate and map the factors influencing the degree progress of PhD scholars at al-Farabi Kazakh National University (KazNU) and provide actionable recommendations to improve the PhD awarding process. The questionnaire was sent to PhD candidates to identify the factors that influenced the thesis submission process and the challenges for the timely awarding of the degree. We received 1147 responses from PhD candidates who finalized a three-year PhD educational program but did not get a degree from 2011.

Then, the same questionnaire was sent to supervisors of PhD candidates to identify the reasons for not submitting to PhD by scholars from another point of view. Furthermore, as the faculty departments are responsible for the quality of the educational program, for the appointment of scientific supervisors, and for approval of the research title according to the State educational standard for postgraduate education, a questionnaire was sent to the 67 departments of the 15 faculties.

This approach allowed authors to test the obtained answers from PhD candidates against the input from faculty and supervisory departments, allowing the educational program developer to evaluate the educational service consumer's perspective. Furthermore, contradictions and gaps were identified among the PhD candidates and university representatives.

The faculties were asked to give information on graduated PhDs trained in the departments for 2011-2023. The obtained data were subsequently analyzed and synthesized. Descriptive statistical techniques were applied to examine the responses and assessments provided by the departments and faculties.

This rigorous research approach identified key factors impacting PhD degree attainment at KazNU. By synthesizing expert consensus and empirical evidence, the study developed a comprehensive framework to address challenges in PhD program completion. The findings inform policy recommendations to enhance doctoral education in Kazakhstan and other developing countries.

4. Results and analysis

This study explores and charts the factors influencing the degree of progress of PhD students and being PhD because of the program. The funding for personnel training through PhD programs has steadily increased, reaching 1,900 grants in 2024. As the country's leading multidisciplinary and national university with more than 29 thousand students, which takes 163rd place in the Global QS ranking in 2024, KazNU has a share of one-third of the state grants for PhD programs. Thus, there are about 1.5 thousand PhD students annually on the first, second, and third courses in fifteen faculties by 141 educational programs. The authors obtained the following results by surveying faculties, supervisors, and doctoral students' departments through surveying 1147 PhD candidates and 67 departments of the 15 faculties.

Table 1: The reasons for not submitting PhD by candidates

Reason	Description
Awaiting the Scopus/WoS/Committee article publication	The article was submitted and awaiting review or publication after reviewing
Thesis writing/ getting results	The student writing thesis (working on comments) or working on getting results for presented in the thesis

Awaiting pre-defense/defense	Pre-defense on the department and defense on the dissertation Council
Academic leave	Leave for various reasons (maternity leave, medical reasons)
Loss of communication	Migration, leaving the country for years, death
Expulsion	Expulsion on their own or due to academic failure

Table 1 illustrates the main reasons doctoral students and departments reorganize as milestones and challenges to successfully getting a degree after completing the main doctoral program, which lasts 3 years in the country. According to the "Rules for awarding degrees" in Kazakhstan, it is mandatory to publish articles by the dissertation title doctoral students in Journals indexed by the Scopus and Web of Science (WoS) databases, which are not less than 25 percent or the first three quartiles. There are two options for the defense, first with a dissertation and articles in the journals, and second without a thesis by at least three articles from Q1 and Q2 on the Web of Science database indexed by specific indexes. In submitting a PhD without a preparation thesis, the PhD candidate must be the first correspondence author for at least one article (Adilet Legal Information System, 2011a).

There are five options for submitting the thesis to get PhD degree:

- one article in the Journal indexed by Scopus at least 25 percentile or indexed by WoS in the first three quartiles by impact factor according to the Journal Citation Report (JCR) index and three articles in the journals recommended by the Committee Ministry of the Science and Higher education;

- two articles in the Journal indexed by Scopus at least 35 percentile or indexed by WoS in the first three quartiles by impact factor according to the Journal Citation Report (JCR) index;

- a chapter in the monograph published in specific international publishers listed in the Rules, PhD candidate's share must be at least 16 pages;

- one article in the Journal indexed by Scopus at least 35 percentile or indexed by WoS in the first three quartiles by impact factor according to the Journal Citation Report (JCR) index, and 1 article in the proceeding of the international scientific conference with an impact factor by JCR indexed in the WoS Core Collection database;

- one WoS-indexed article in the Journal in the first quartile of the impact factor according to the JSR.

Table 2: The reasons for not submitting PhD by candidates at the KazNU

Faculty Natural or Social Science	Awaiting article publication	Thesis writing	Awaiting defense/pre-defense	Academic leave	Communication loss	Expulsion	Total
Faculty 1 N	37	29	9	8	4	17	104
Faculty 2 S	27	3	6	3	1	0	40
Faculty 3 S	66	15	9	8	3	18	119
Faculty 4 N	32	33	6	1	12	21	105
Faculty 5 S	14	2	4	1	0	0	21
Faculty 6 S	21	5	6	2	0	5	39
Faculty 7 N	39	19	15	5	0	21	99
Faculrt 8 N	50	22	8	6	23	57	166
Faculty 9 S	98	10	7	5	3	0	123
Faculty 10 N	26	18	10	3	5	27	89
Faculty 11 N	25	5	4	0	0	0	34
Faculty 12 S	42	7	3	1	8	7	68

Faculty 13 S	92	8	2	3	0	0	105
Faculty 14 N	4	5	6	2	0	1	18
Faculty 15 S	9	1	2	1	3	3	19

Table 2 illustrates the combined data obtained from students, departments, and supervisors based on the six reasons challenging candidates to achieve a degree. In Kazakhstan, there are two directions of science: natural science (mathematics and mechanics, physics, medicine, geography, biology, and others) and social sciences and humanities (philosophy, philology, politics, history, law, sociology, economics, and others). KazNU faculties are also divided into natural and social directions. It is also well-known that getting results for publication in high-ranked international journals is more effective for natural sciences than social science and humanitarians. Figure 1 shows that the direction of the science influences the successful awarding of the candidates and, accordingly, the timely publication of scientific results in highly rated required journals. Detailed representation of the publication and award status is given across 15 faculties, categorized into two subgroups: N for natural sciences and S for social science and humanitarians, given by the bar chart.
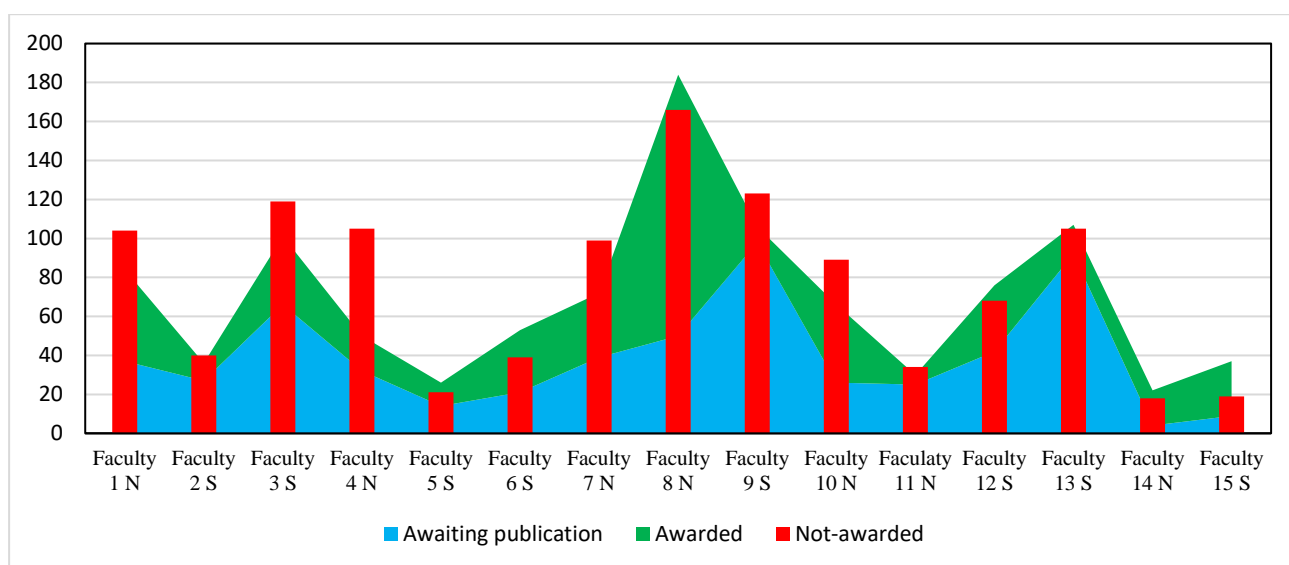

Figure 1. Awarded PhD degree and not-awarded candidates by faculties, 2010-2023

Faculties training candidates for natural sciences (N) generally have higher results in awarded PhD degrees and candidates who submitted and are waiting for publications than faculties training candidates for social science, suggesting greater research volume in faculties N. However, some social faculties demonstrate better efficiency in securing awards than submissions.

The findings indicate notable inconsistencies across academic faculties, particularly between the Natural and Social sciences. Faculties with high proportions of "not-awarded" cases should consider reviewing the quality of submitted work and enhancing mentoring for researchers to improve recognition rates. Conversely, faculties with low "awaiting publication" figures may benefit from strategies to encourage more submissions. Future investigations could explore the underlying factors contributing to these disparities, such as variations in resource allocation, research support, or faculty-specific assessment criteria. Moreover, analyzing the time interval between submission and publication may offer insights into the efficiency of the publication process.
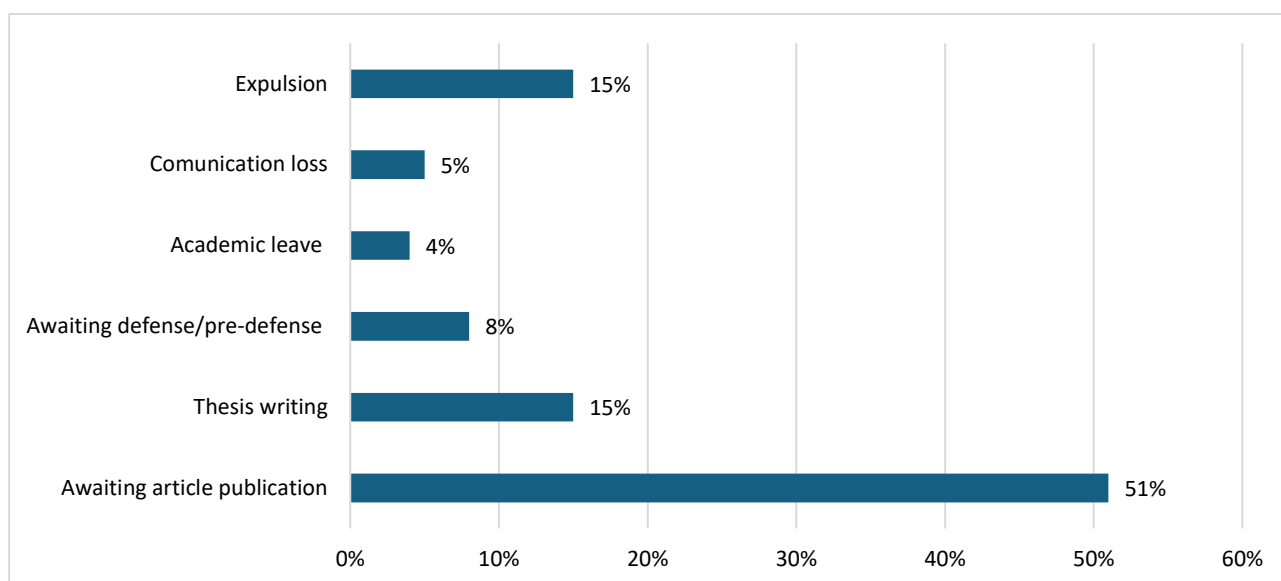
Figure 2. Factors influencing PhD scholars' degree progress, 2010-2023

The analysis of the results of surveying 1147 PhD candidates who finalized their PhD educational program but still need to submit the thesis for getting a PhD degree indicates that the primary reason for delays in the final year of study is the absence of publications in internationally indexed journals. 51% of the PhD candidates are awaiting their publications in the international journal. The lengthy publishing process in a high-quality journal with a Scopus database with at least 25 percentile or non-zero impact factor in the WoS database contributes to these delays. Additionally, incomplete dissertations are a common factor leading to late defenses, emphasizing the importance of closely monitoring dissertation progress during the certification period and throughout the entire program. 15% of the respondents are working on the thesis and have all necessary publications.

Furthermore, 15% of the PhD students were excluded during the study on the first, second, or third courses for different reasons, primarily because of the high requested GPA of 3.0 at the end of the year for the transition from course to course or for personal reasons. Unfortunately, according to the faculties' data, 4% of the candidates do not have any communication with the university after finalizing the program, and some leave their hometowns. While 5% of the future PhD are on academic leave, mostly women candidates on maternity leave or sick people with health problems. 8% of the candidates have fulfilled the requirements for thesis submission, published articles, finished thesis, and are waiting for the pre-defense or defense, as there is a special procedure for the Dissertation Council regulated by the Rules of the Ministry of Science and Higher Education (Adilet Legal Information System, 2011b). The defense procedure could take 2-3 months on average; the thesis must be given to reviewers at least one month before submission, and the thesis and information of the defense must be published on the website of the Dissertation Council at least one month before. 468 PhD got degrees compared to 1149 who did not, which is 29%.

Conclusion

This research thoroughly examines the factors shaping the progress and degree attainment of PhD students at Al-Farabi Kazakh National University, situated within the broader context of Kazakhstan's transforming higher education sector. Utilizing a mixed-methods design that integrates the Delphi Method and statistical analysis, the study pinpoints pivotal challenges and viable solutions to strengthen doctoral education. The study findings indicate that a complex interplay of individual, institutional, and systemic factors influences the success of PhD candidates. The most prominent challenges include rigorous publication mandates in internationally indexed journals, delays in dissertation finalization, and systemic barriers such as limited access to resources and overburdened

supervision. Institutional dynamics, particularly the disparities between natural and social sciences faculties, also significantly impact outcomes. The natural sciences demonstrate a higher proportion of successful degree completions, primarily attributed to the greater availability of research resources and institutional support mechanisms. The authors developed recommendations for the university and for the regulators who are stakeholders of the PhD program's success. At the university level, it is recommended that monthly scientific seminars on publication at the department be conducted in order to train doctoral students. It is also recommended that the attestation of students in each course be strictly according to the requirements for timely excluding students who have other reasons than getting a degree (stipend). For faculties, determining the number of required work hours of a doctoral student with a supervisor at the department per week and monitoring the performance could assist in the progress. On the part of the administration of faculties and universities, on an intermittent basis, conducting expanded academic councils of faculties to identify the main factors of untimely defense of candidates and discuss solutions to problems collectively could be helpful. We suggest a mechanism of financial impact on doctoral students and supervisors in the form of penalties for untimely submission of a thesis for a degree and financial award for timely defense and degree during three years for supervisors.

On the state level, it is recommended that the number of state grants be reconsidered by analyzing actual data on degrees awarded in the country and international experience. Moreover, a mechanism for returning the grant sum to PhD candidates after several years should be developed in case the result is not a PhD degree. This will stimulate the application of real candidates who plan to impact the country's scientific development to the state grant.

Kazakhstan's aspirations to harmonize its higher education sector with global benchmarks introduce various prospects and hurdles. By tackling the multifaceted obstacles uncovered in this investigation, policymakers and academic authorities can considerably improve the doctoral education landscape. The findings stress the criticality of a comprehensive approach to synthesizing individual, institutional, and systemic improvements.

Acknowledgments

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