DISCUSSION PAPER

Leibniz Institute of Agricultural Development in Transition Economies

The state of doctoral research in Uzbekistan: Results of a survey of doctoral students in agricultural economics

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ABSTRACT

The present study assesses the state of doctoral research and postgraduate education in agricultural economics in higher education institutions (HEI) in Uzbekistan and outlines initiatives for change. To better understand the content, process, and outcomes of postgraduate education and doctoral research, a survey of 72 doctoral students in HEI was conducted. The survey data show that the respondents cooperate little with their peers outside of Uzbekistan, lack international peer-reviewed publications and training in relevant theories and methods, and are underrepresented in international scientific events and associations. Furthermore, the scarcity of research funds and individual research space, as well as an excessive teaching load were indicated as key factors affecting the quality of doctoral research. Almost all respondents were satisfied with their current supervision, but were interested in being co-supervised by foreign professors. Most PhD students wish to continue their professional career within academia. Future reforms should enhance the quality and relevance of structured education programmes for PhD students, raise the incentives for conducting high-quality research that is published internationally, and support national and international collaboration between researchers.

JEL: I20, I21, I23, I28

Keywords: PhD survey, agricultural economics, postgraduate education system, student experience, Uzbekistan.

ZUSAMMENFASSUNG

Der Stand Von Promotionsvorhaben In Usbekistan: Ergebnisse Einer Befragung Von Doktoranden Der Agrarökonomie

Die vorliegende Studie bewertet die aktuelle Lage von Promotionsvorhaben und Doktorandenausbildung im Fach Agrarökonomie an Hochschulen in Usbekistan und unterbreitet Vorschläge für Veränderungen. Um einen Überblick über den Inhalt, den Ablauf und die Ergebnisse der Doktorandenausbildung und von Promotionsvorhaben zu gewinnen, wurden 72 Doktoranden an Hochschulen befragt. Die Ergebnisse der Befragung weisen auf eine fehlende Zusammenarbeit mit Kollegen außerhalb Usbekistans, einen Mangel an Veröffentlichungen in internationalen Zeitschriften mit Gutachtersystem sowie an Fort- und Ausbildungsmöglichkeiten zu den entsprechenden Theorien und Methoden, des Weiteren auf die Unterrepräsentanz der Doktoranden bei internationalen wissenschaftlichen Veranstaltungen und Organisationen hin. Zudem zählen auch mangelnde Forschungsmittel und individuelle Räumlichkeiten sowie eine überhöhte Anzahl an Unterrichtsstunden zu den genannten Hauptgründen, die sich auf die Qualität der Promotionsforschung auswirken. Fast alle Befragten waren mit ihrer aktuellen Betreuung zufrieden, sie drückten allerdings Interesse an einer Co-Betreuung durch einen Professor oder eine Professorin im Ausland aus. Die meisten Doktoranden streben eine wissenschaftliche Karriere an. Zukünftige Reformen sollten auf eine Verbesserung der Qualität und Relevanz der strukturierten Doktorandenausbildung, eine Erhöhung der Anreize zur Durchführung von hochwertigen

international veröffentlichten Forschungsarbeiten und die Unterstützung von nationaler und internationaler Zusammenarbeit zwischen Forschenden zielen.

JEL: I20, I21, I23, I28

Schlüsselwörter: Doktorandenbefragung, Agrarökonomie, Doktorandenausbildung, Studentenerfahrungen, Usbekistan.

РЕЗЮМЕ

Состояние Докторских Исследований В Узбекистане: Результаты Опроса Докторантов По Экономике Сельского Хозяйства

В настоящей работе проводится исследование системы докторантуры и послевузовского образования в области экономики сельского хозяйства в высших учебных заведениях (ВУЗ) Узбекистана и излагаются инициативы для возможных изменений. Для лучшего понятия содержания, процесса и результатов послевузовского образования и докторских исследований были опрошены 72 докторанта-исследователя. Данные опроса показывают, что респонденты мало взаимодействуют с другими докторантами за пределами Узбекистана и недостаточно участвуют в международных научных мероприятиях и ассоциациях. Анализ показал, что уровень публикуемости в международных рецензируемых журналах и доступность теоретических и методологических курсов остаются низкими. Кроме того, нехватка исследовательских фондов и офисного пространства, а также чрезмерная преподавательская нагрузка указывались в качестве ключевых факторов, влияющих на качество докторских исследований. Большинство респондентов указали, что они довольны своими научными руководителями, и отметили свою заинтересованность в работе под научным руководством зарубежного профессора. Большинство докторантов выразили свою заинтересованность продолжить свою профессиональную карьеру в сфере академии. Будущие реформы должны повысить качество и актуальность структурированных образовательных программ для исследователей, повысить стимулы для проведения высококачественных исследований, результаты которых публиковались бы на международном уровне, а также оказать поддержку развитию исследовательского сотрудничества на национальном и международном уровнях.

JEL: I20, I21, I23, I28

Ключевые слова: опрос докторантов, экономика сельского хозяйства, система послевузовского образования, квалификация исследователей, Узбекистан.

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1 Introduction[1]

Agricultural development requires a systematic approach that takes into account the various implications of agriculture resource use for economic, social, and environmental sustainability (Byerlee et al. 2009). The capacity to generate knowledge is closely linked to the capacity to innovate, and to long-term productivity, employment and wealth (cf Schubert and Kroll 2016, Pastor et al. 2015). Research conducted in higher education institutions (HEI) has a multiplier effect as it is disseminated via training of graduates and postgraduates, informing the public opinion viapublications and the transfer of findings to non-academic sectors. For instance, researchers in economics can be considered the engineers and architects of reforms in transition economies of the former Soviet Union. The development of a postgraduate education system can have various positive effects including the production of new useful knowledge, the advancement of applied methodologies, the expansion of national and regional networks, and the creation of spillover effects into non-academic sectors, such as a knowledge flow to the private sector. Yet, currently, there is no place in Central Asia where such an approach has been instituted in an academic environment that links cutting edge research in agricultural development to graduate education based on international standards.

The research quality and postgraduate productivity in the HEIs in Central Asia remain widely underresearched, despite various recent reform initiatives. Little is known about the individual characteristics of doctoral researchers and their perceptions of the research environment, or their own capacities. To understand the general situation in the doctoral system one needs to take into consideration various dimensions affecting individual research such as research space and supervision, doctoral training, and additional workload. Therefore, the objective of this paper is to provide an initial overview of the current situation of postgraduate education and the research environment in agricultural economics in the HEIs of Uzbekistan. Agricultural economics provides an interesting example as it addresses the traditional role of agriculture in the economic development of Uzbekistan as well as its linkages to the newly adapted discipline of economics and other subdisciplines in the social sciences. The following study is based on survey data collected in spring 2017 using structured interviews of 72 doctoral students active in the area of agricultural economics. Face-to-face and telephone interviews were conducted in nine agricultural HEIs in Uzbekistan. The aim of the study is to give an overview of current issues in doctorate research and to provide recommendations for further reforms in the area of higher education.

In the following chapters, we give an introduction into the higher education system in Uzbeksitan and describe the survey methodology. In the results section, we first present the respondents' general background including age, family status, number of children, and employment. This is followed by information about the research topics that includes research subject, assignment of research topic, expected defense date, methods applied, data sources and confidence in defending within a certain period of time. A separate section describes the respondents' experience with publications, research cooperation, conference participation and membership in scientific associations. The section on additional workload and received supervision covers topics on a variety of activities in which the respondents are engaged obligatorily or voluntarily, as well as the weekly time allocated for these activities. It also gives an assessment of the quality of

[1] This study was conducted within the project "Preparation of a structured doctoral programme on sustainable agricultural development in Central Asia" coordinated by IAMO and Samarkand Agricultural Institute (SamAI). Financial support by the Volkswagen Foundation is gratefully acknowledged. The authors would like to thank Husniddin Pardaev and Alisher Botirov (both SamAI, Uzbekistan) for their research assistance, and Hayley Moore (IAMO, Germany) for language editing and proofreading of the report.

supervision. The section on dissertation success factors covers issues of individual office and desk availability, and regular access to internet and scientific literature. Finally, the section on training courses and career plans covers the availability of training modules and future career plans. The report ends with discussions and recommendations derived from the study. Appendix A presents a chronicle of higher education reforms in Uzbekistan. Appendix B contains the questionnaire used during the interviews.

2 The post-independence system of postgraduate education in Uzbekistan

The former Soviet research system in economics was designed to be practical and develop solutions towards the improved productivity of industries (Alexeev et al. 1992). The break-up of the Soviet Union in 1991 placed an increasing demand on a differently qualified labor force, such as economists to assist in policy and decision making, including in agriculture. Changes in curriculum and subjects were introduced in order to move away from Marxist-Leninist concepts towards mainstream Western economic thought. More importantly, for economists, compared to natural scientists, the transition of the postgraduate education and research system implied a shift to theoretical and methodological concepts of market economy, access to international publications, and better possibilities of exchange within the international academic community of economists. All these required new data, new approaches to data collection, and importantly, knowledge of academic English.

This transition was implemented along with changes in the structure of specialisation in higher education, training of senior staff, as well as reforms in offered degrees, programs, and stipends. Graduate and postgraduate education started with the Soviet programmes of a five-year diploma degree, and postgraduate *aspirantura* (equivalent to PhD programmes) and *doktorantura* (equivalent, e.g., to *Habilitation* in Germany). Substantial changes were implemented in Uzbekistan in three areas (Wegmarshaus 2017). The first was the institutional structure which involved complementing local HEIs with foreign university branches. The second was the curriculum through a reform which implemented a two-tiered graduation scheme. Finally, scientific cooperation with international partners was promoted that also included participation in various foreign support and financing programs such as EU Tempus, ERASMUS Mundus, DAAD and others (Wegmarshaus 2017). The introduced two-tiered higher education system comprised of a first level undergraduate education (*bakalavriyat*) in which fundamental knowledge on a specific subject area is taught (EACEA 2017), and a second level graduate education (*magistratura*) with a focus on a particular specialisation[2]. After *magistratura*, the postgraduate education aims at serving societal needs by creating scientific and scientific-pedagogical personnel.

Until 2013, the postgraduate education system in Uzbekistan resembled the Soviet two-stage model of Candidate of Science (*fan nomzodi*, roughtly equal to German "Dr") and Doctor of Sciences (*fan doktori*, comparable to German Dr. habil.) (Wegmarshaus 2017). To modernise the Uzbek doctoral education and make it more comparable with the Western systems, it was replaced by a single-stage degree of Doctor of Sciences with elements borrowed from Europe and North America, while keeping some elements from the previous system unchanged (UZDOC 2016). The main aim of this change was to grant promising researchers the possibility of being appointed as assistant professor and chair-holder in HEIs immediately after their doctoral defence at a relatively young age (Wegmarshaus 2017). To ensure quality and attract young researchers into science, the research quality requirements were strengthened (UZDOC 2016).

[2] The description of policies implemented within the post-graduate system in Uzbekistan is presented in Appendix A.

Within the one-stage system, the postgraduate researchers are grouped into two main categories. The first category includes senior research fellows (academic staff) at HEIs and scientific research institutes enrolled in postgraduate studies and for which they also receive state stipends. The second category is made up of independent research fellows who can be employed outside of HEIs and work on their dissertation without a stipend (EACEA 2017). Yet, the one-stage system hardly affected the established division of tasks between HEIs and the reseach institutes of the Academy of Sciences. The latter traditionally engage in applied and basic research. While the majority of doctoral researchers in agricultural economics are based in agrarian universities, the main task of the university sector is to transfer disciplinary knowledge to students. In HEIs, research continues to play a secondary role in comparison to student instruction. The ultimate right to accept PhD dissertations does not rest with the universities, but with the national Supreme Attestation Commission (VAK as pronounced in Russian *Высшая аттестационная комиссия (ВАК)*). This Commission registers, monitors and approves dissertations undertaken at universities and research institutes to ensure their academic quality (Wegmarshaus 2017).

Based on the analysis of demand for a highly-skilled and qualified workforce, the Cabinet of Ministers announced a quota of new positions for the doctoral system (UZDOC 2016). Currently, the specialisation of Agricultural Economics (08.00.04) is included into the core discipline of Economics (08.00.00). Thus, doctoral research in agricultural economics can be conducted in all universities, institutes and scientific-research institutes which have a faculty or specialise in economics.

In spite of good intentions, the combination of elements from new and old models produced a new set of challenges. Previously, the completion of the six-year full doctoral programme was required after the three-year programme of Candidate of Science. After 2013, the degree of Doctor of Sciences could be obtained after three years of doctoral education immediately after the master's degree or equivalent (two years of practical experience), or after the bachelor's degree followed by five years of practical experience (EACEA 2017). As a result, two different cohorts of postgraduates were brought under the same heading of Doctor of Science. The first group comprised of candidates and doctors of science who had started their research thesis before 2013 under the previous two-stage system. In the second group were those who had enrolled according to the new regulation after completion of their master's degree.

As we show below, there can be delays between the registration of dissertation topics and research plans at HEIs and registration at the VAK. One reason for not registering at the VAK is due to strengthened quality assurance requirements introduced in 2013, namely a maximum number of students per supervisor. Given the number of professors in HEIs, a number of ongoing students were left without supervisors. Another group of unregistered doctoral students consists of those who started before 2013, applying for the degree of Candidate of Sciences. Given the changes that were implemented in 2013 which promoted their research to the level of Doctor of Sciences, they did not register their doctoral dissertation title at the VAK as they were waiting for these strict requirements to be lifted. According to Table 1, the number of research fellows with degrees of Doctors and Candidates of Sciences has been declining, while the number of all research fellows including those without degrees has been increasing. Thus the number of research fellwows per senior researcher with the degree of Doctor of Sciences increased from seven persons in 2008 up to 10 persons in 2014. A similar pattern is observed in the social sciences, which experienced a decline in number of Candidates of Sciences and an even more severe drop in the research fellows with Doctors of Sciences. For instance, in 2014 in agricultural sciences the ratio between researcher and Doctor of Sciences was about 10, for the social sciences it was about 15 persons.

Table 1. Number of research fellows, including doctors and candidates of sciences in HEI of Uzbekistan, persons

		2008	2009	2010	2011	2012	2013	2014
Research fellows	Total	26,377	30,273	30,043	30,890	29,450	30,035	30,785
	agri sciences	1,477	1,822	1,882	1,872	2,051	2,261	2,124
	social sciences	n.a.	n.a.	6,440	6,817	5,928	5,432	5,365
Incl., Doctors of Sciences	Total	2,282	2,490	2,526	2,456	2,224	2,114	2,055
	agri sciences	102	156	171	168	170	168	129
	social sciences	n.a.	n.a.	467	434	385	286	250
Candidates of Sciences	Total	8,045	8,964	9,218	9,401	9,169	8,978	8,737
	agri sciences	366	569	644	672	714	682	657
	social sciences	n.a.	n.a.	1,896	1,927	1,790	1,610	1,425

Note: Research fellows are specialists in the field of science, including scientific and pedagogical personnel in HEIs engaged in research and development along with teaching activities.

Source: UzStat (2013, 2015).

The one-stage system dramatically increased the requirements for doctoral students. Within three years the student must pass several exams, publish over a dozen local and international publications, produce a monograph and have teaching experience, as well as confirm that the research findings are implemented in practice (UZDOC 2016). To address these challenges, from July 2017, a reformed two-stage system will be introduced with the philosophy doctor (PhD, *falsafa doktori*) and Doctor of Sciences (DSc, *fan doktori*).

3 Survey description

There is no official statistical record of the total number of doctoral students registered in agricultural economics, only on the undifferentiated category of research fellows in HEIs. To obtain the numbers of doctoral students, we interviewed the faculty heads and professors at the nine agricultural universities and institutes in Uzbekistan (Table 2). Agricultural Economics (08.00.04) is included as sub-specialty in Economics (08.00.00)[3]. As the specialisation of these HEIs is agriculture, over 60% of doctoral students registered in Economics are writing their dissertations in Agricultural Economics. As described earlier, unregistered students are not only those who started prior to the changes in 2013, but also those who recently started their research, and thus could confirm their dissertation topics and research plans at the departments of their HEIs, but not yet at VAK.

[3] Nomenclature of specialties of scientific and scientific-pedagogical personnel of the highest qualification (Approved by the resolution of the Presidium of VAK, 30.09.2014, #208/4).

Table 2. Number of doctoral students in Uzbekistan as of May 2017

University / Institute		in Economics (08.00.00)			From this, in Agricultural Economics (08.00.04)		
		Registered with VAK	Unregistered with VAK	Total	Registered with VAK	Unregistered with VAK	Total
Andijan Agricultural Institute	AAI	10	7	17	7	4	11
Bukhara State University	BSU	11	4	15	6	2	8
Karshi Engineering-Economics Institute	KEEI	14	5	19	7	1	8
Nukus branch of TSAU	NAU	3	2	5	2	1	3
Research Institute of Agricultural Economics	RIAE	15	1	16	15	0	15
Samarkand Agricultural institute	SAI	22	3	25	13	3	16
Tashkent Institute of Irrigation & Melioration	TIIM	11	6	17	9	5	14
Tashkent State Agrarian University	TSAU	21	5	26	14	1	15
Termez State University	TSU	4	7	11	2	1	3
Total		**111**	**40**	**151**	**75**	**18**	**93**

Note: VAK = Supreme Attestation Commission.

Source: Authors based on PhD survey.

The survey was conducted from March 9–26, 2017. In total, 72 doctoral students were randomly selected as respondents from a list of doctoral students conducting research on topics related to agricultural economics and affiliated with agricultural economics departments in four universities and five institutes in Uzbekistan (Table 3). The survey covered almost 50% of doctoral students currently conducting research in economics in these HEIs. Among those, 60 respondents were registered in "Agricultural Economics" (code 08.00.04), four were registered in "Finance: Money circulation and credit" (08.00.07), three in "Service Sectors of Economy" (08.00.05), two respondents in "Econometrics and Statistics" (08.00.06) and "Accounting, Economic Analysis and Audit" (08.00.08), and one respondent in "Economic Theory" (08.00.01).

A special questionnaire was developed, tested and adapted in the Uzbek language (see Appendix B). Face-to-face interviews were conducted with 58 respondents, while ten respondents were interviewed via phone and four respondents were contacted via email. Phone call and email interviews were used for respondents at distant location, such as the Nukus branch of the Tashkent State Agrarian University (NAU) or to interview those who were abroad on a training stay. The 5-point Likert Scale was used for the questions on satisfaction, importance, and agreement with certain statements. These answers were then used to calculate the average scale scores from 1 to 5, on a scale where the highest score indicated, for instance, the highest degree of satisfaction.

One-third of respondents were registered as individual researchers at a university (*mustaqil tadqiqotchi*) without a stipend. Thirty-one respondents were conducting doctoral research as

staff of a university or research institute. Fifteen respondents were conducting their research in the framework of a national doctoral programme that also provided them with a special stipend. This is a separate cohort of doctoral students currently enrolled in the three-year national doctoral programme as senior research staff at their institutes. Finally, the remaining two respondents were conducting research as independent researchers outside of universities and research institutes. While all respondents had registered their dissertations at a university or research institute, only about one-half of the respondents had registered their dissertation title at the VAK.

Table 3. Affiliation of the respondents and interview

	Interview	Email	Phone	Total	Respondents in total doctoral students in Economics, %
AAI	4	3	-	7	41
BSU	3	3	-	6	40
RIAE	8	1	-	9	56
KEEI	3	1	-	4	21
NAU	-	-	2	2	40
SAI	18	2	-	20	80
TIIM	9	-	-	9	53
TSAU	13	-	-	13	50
TSU	-	-	2	2	18
Total	58	10	4	72	48

Source: Authors based on PhD survey.

4 Results

4.1 Socio-economic and educational background of students

Of the 72 respondents 55 were male which confirms that in Uzbekistan, female participation in doctoral education in agricultural economics is to some extent lower than male participation. According to Mukhitdinova (2014), women account only for a quarter of researchers in agricultural sciences in Uzbekistan.The respondents' average age was 36 with the youngest being 26 years old and the oldest 58. Grouped by age, ten respondents were not older than 30, half of the respondents were between 30 and 35 years old, while 11 were older than 40. On average the respondents had obtained their earlier degree (master's degree or diploma) 11 years prior to the start of their doctoral research. Only nine respondents obtained their master's degree after 2013, and 17 respondents between 2009 and 2012. Eight respondents obtained their diploma more than 20 years ago. Most respondents were married and had children. Only six of the respondents were single, while only nine did not have children. One-third of respondents had three children or more.

About 80% (57 respondents) received their master's degree prior to the start of their doctoral research, while the other 15 received a diploma degree prior to 2000. All respondents completed graduate programs in Uzbekistan, and none have a bachelor's or master's degree from a foreign university. For half of the interviewed doctoral students it took no more than five years after obtention of their diploma or master's degrees to start their doctoral research. For

16 respondents, it took over ten years after receiving a master's degree or diploma to enroll as a doctoral student. Half of the respondents were conducting their doctoral research in the organisations where they had received their last degree.

All respondents indicated that their doctoral research is part of an income-earning job in their organisation. Sixty respondents answered that their current job associated with their doctoral research is their only place of employment. Most respondents work in the education and research sector. As a primary job, 59 respondents indicated a university, and ten respondents work at a research institute where they conduct their doctoral research. Only three respondents work either in the public administration sector or for a private consultancy company. Twelve respondents have one additional job which is also based in the education and research sector.

According to the data, doctoral research in agricultural economics has low implementation in international research projects and lacks support via national research stipends. Only two researchers responded that they received stipends within international research projects. Only ten respondents were part of a national project grant, and six respondents conducted their research with a national research stipend. The majority of the respondents conduct their research within their departments without a stipend or project (31 respondents). The second largest group (20 respondents) comprises those who conduct research outside of their departments without a stipend or project. Three respondents answered that their dissertation belongs to an applied research project with co-funding coming from an industry**.**

4.2 Research topics

The survey results show that research on topics of agricultural economics in Uzbekistan is mainly applied and solution-oriented. This is also confirmed by the study of UZDOC (2016). The respondents indicated that their dissertation topics were related to applied research of different scales. The majority was writing their dissertations on agricultural issues of sectoral, provincial (*viloyat*), and national scales (each 20-23 respondents), while only seven respondents had topics at the micro-level of a firm. None of the respondents indicated theoretical research. Libman and Zweynert (2014) explain that the requirement of practical applicability of doctoral research findings in economics in Russia does not mean that the research actually has a high practical relevance. The same may be the case here.

The titles of the respondents' doctoral dissertations are related to applied solution-oriented investigations (Table 4). A word count analysis revealed clearly identifiable directions towards advancement (*takomillarshtirish*), efficiency (*samaradorlik*), methodological, organisational and scientific foundations (*metodologik, tashkiliy, ilmiy assoslari*), as well as modernization and economy (*iqtisodiyot, modernizatsiya*) in crop and livestock production, resource use, service provision, entrepreneurship and others. This is related to the fact that the dissertation topic should be guided by the main priorities for developing science and technology (UZDOC 2016).

The topics for doctoral dissertations can be selected either from the national database of dissertations issued yearly by the VAK or proposed individually by a researcher (UZDOC 2016). In the topic selection, 58 respondents answered that they selected their dissertation topics on their own and then agreed upon it with their supervisor. One respondent indicated that the topic was already preselected by the university, while other respondents received their topics from supervisors.

Table 4. Frequency and top 10 words in the respondents' dissertation titles

Rank	Word (English)	Word (Uzbek)	Occurrences	Frequency
1	agriculture,al	qishloq xo'jalik,-	31	7.0%
2	economic	iqtisodiy,-	28	6.3%
3	efficiency	samaradorlik,-	22	4.9%
4	development	rivojlantirish,-	18	4.0%
5	advancement	takomillashtirish,-	13	2.9%
5	sector	soha,-	13	2.9%
6	production	yetishtirish,- ; ishlab chiqarish,-	11	2.5%
7	modernization	modernizatsiya,-	10	2.2%
8	methodological	metodologik	9	2.0%
9	issues	masalalar,-	8	1.8%
10	improving	oshirish,-	7	1.6%
	Total words (minimum 6 characters per word)	**445**		

Note: For the analysis, dissertation titles were translated into English. Only those words that contain at least 6 characters were taken into account. In total 445 words of at least 6 characters were identified. The frequencies show shares of certain words used in the dissertation titles.

Source: Authors' analysis via the online text analysis tool Textalyser (http://textalyser.net).

4.3 Time required to complete the dissertation

According to the regulation, a doctoral researcher in Uzbekistan is expected to complete a dissertation within 3 years (UZDOC 2016). However, delays in dissertation defense are common, especially since the change to the one-stage degree of Doctor of Sciences in 2013. Eight respondents started their doctoral research in 2017, while 21 respondents began in 2016. Thirty-three respondents are in the second to sixth year of their doctoral research, while 13 respondents have been conducting their research longer than six years. Despite these delays, all respondents indicated that they would finalise their dissertation and defend within five years. From this, the majority (32 respondents) believed that three years are enough to defend their research, while 15 opted for four years, and 22 respondents considered that five years are needed to finalise their dissertation and defend. Only one respondent answered that on average ten years are required to defend a thesis.

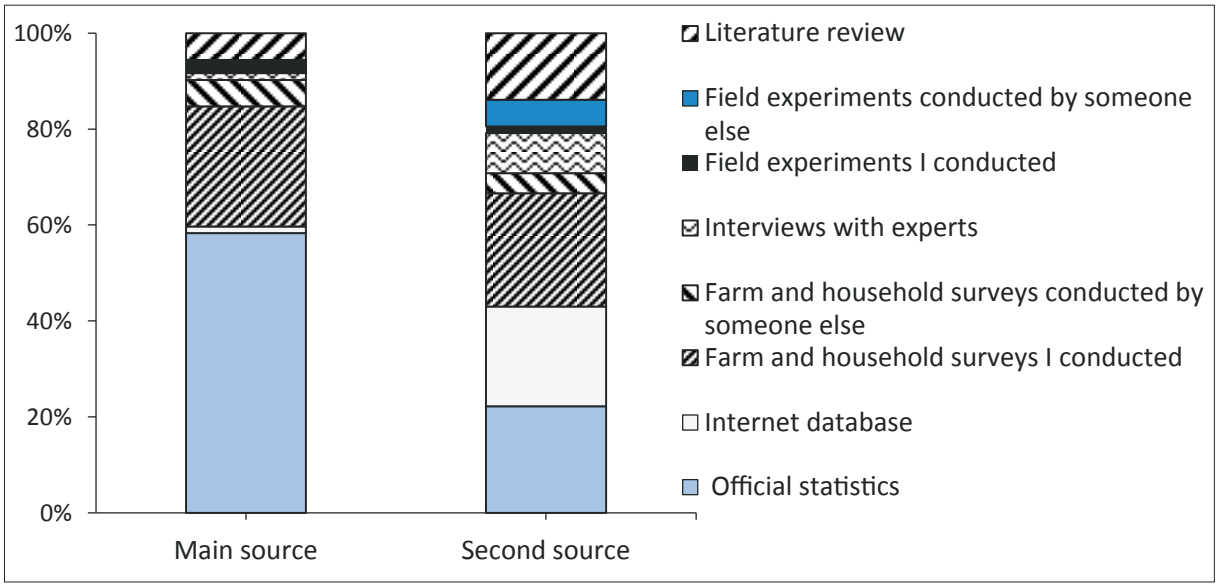
The respondents were asked how many years it will take for them to defend their dissertation and whether they are confident they will finish within the indicated period. Given the progress of their research, 11 respondents believe that they will be defending within a one year period, 21 respondents expect their defense to take place in two years. The majority (29 out of 32 respondents) are confident that they will defend within these two years. Thirty-eight respondents answered that they would need another three to five years to finalise their dissertation. In general, only 11 respondents were unsure whether they will defend within the timeframe indicated due to insufficient time for research, difficulty in data collection, or unforeseen family circumstances.

4.4 Methodology and data use

Concerning the methodology used in their dissertations, all respondents answered that they use quantitative methods. From these answers, 43 people use statistics, 14 use cost-benefit analysis and 11 use econometrics. Only four respondents use optimization models. Despite these responses it is difficult to find publications based on quantitative methods in local journals that publish material on agricultural economics[4]. In this regard, a study on doctoral dissertations in economics in Russia showed that publications in leading Russian economic journals lack clearly defined research questions, theoretical framework, and either provide no list of references at all, or only citations from general textbooks (Lokshin 2009). Another study by Libman and Zweynert (2014) of the extended summaries of dissertations of Russian economists shows that the researchers rarely used internationally accepted methods, but rather simple quantitative criteria.

One can link this to the fact that publications in these journals are based on aggregated official statistics. This is confirmed by the respondents' answers on sources of data used in dissertations. For almost 60% of respondents, official statistics were the main source of data for their dissertation (Figure 1). The wide use of official statistical data in doctoral dissertations is stipulated by the methodological standards for economists in academia in Uzbekistan. Collection of primary data via surveys is recognised as relevant in addressing methodological and thematic advancements, but its use is not common due to the scarce individual research budgets as presented in Section 4.4. A quarter of respondents conducted farm or household surveys. Internet databases were mentioned as the second most important source of data for their doctoral research, along with official statistics, farm and household surveys, and literature reviews.

Figure 1. Data sources used in PhD research



Source: Authors' calculation based on the PhD survey.

[4] When available we looked through publications from 2013–2016 in the following national journals: Uzbekistan Agriculture (*O'zbekiston qishloq xo'jaligi*), Agri Education (*Agro ILM*), Journal of Irrigation and Land Reclamation (*Irrigatsiya va melioratsiya jurnali*) Economic Bulletin of Uzbekistan (*O`zbekiston iqtisodiy axborotnomasi*), Economic Review (*Ekonomicheskoe obozrenie*), Business-Expert (*Biznes-ekspert*), Market, Money and Credit (*Bozor, pul va kredit*), Economy and Innovation Technologies (*Iqtisodiyot va innovatsion texnologiyalar*), International Finance and Accounting (*Xalqaro moliya va hisob*).

4.5 Publications and conference attendance

UZDOC (2016) reports a limited awareness of doctoral candidates in Uzbekistan on thematic peer-reviewed journals and on article submission guidelines. The listed reasons are lack of access to relevant journals, insufficient institutional support and training in academic writing, and poor command of English. Despite this, the majority of respondents answered that they read journal articles published outside of Uzbekistan (57 responses). Among these, half of the respondents read on average more than two articles monthly. While acknowledging these numbers, one should take into account the fact that the respondents mainly read open-access publications which are outside the domain of agricultural economics, and that institutional subscription to international peer-reviewed journals in Uzbekistan remains rather low (UZDOC 2016). For instance, when asked to name the most-visited scientific journal, 38 respondents indicated a national journal, Uzbekistan Agriculture (*O'zbekiston qishloq xo'jaligi*). Only four respondents could indicate highly-ranked international journals. In this regard, Libman and Zweynert (2014) observe for Russia that economists rarely cite works of top 100 REPEC scholars which they interprete as evidence of a lack of influence of international research products on studies by Russian economists.

One of the requirements of doctoral dissertations in Uzbekistan is that prior to the defense the doctoral students should present their findings at national and international conferences, and publish at least ten publications in national scientific journals, two articles in international journals, and have at least two conference proceedings (EACEA 2017). Such emphasis on publication in international academic journals is operationalised by the predetermined list of journals[5] where doctoral researchers can publish in order to fulfill the publication requirements issued by the VAK (Wegmarshaus 2017). Such a predetermined list of journals limits the range of available peer-reviewed outlets. As expected, within last two years the majority (54 respondents) published in national journals. This minimum publication requirement of doctoral candidates has had an impact on the publication record of respondents. Fifteen respondents published more than five articles in national journals within the last two years (Table 5). Another major issue for agricultural economics as well as economics is that this list does not contain well-acknowledged agricultural economics journals as, for instance, presented by Herrmann et al. (2011).

Table 5. Publication outlets and number of publications during the last two years

		Number of respondents with publications				
	Total	Number of publications in last 2 years				
		1	2	3	4	>5
National journals	54	13	12	11	3	15
Journals in another Central Asian country	6	3	2	0	0	1
Journals in a CIS country, beyond Central Asia	21	11	6	3	0	1
International peer-reviewed journals	10	8	1	1	0	0
International non-peer reviewed journals	7	3	3	0	0	1

Source: Authors' calculation based on the PhD survey.

[5] The list of recommended scientific outlets for the publication of basic scientific results of doctoral dissertations issued by the Supreme Attestation Commission of Uzbekistan, updated in 2016, is available at http://oak.uz/engine/download.php?id=143

Despite the Central Asian countries sharing many geo-climatic characteristics, as well as agriculture and common challenges in agricultural development, the respondents' publication experience (Table 5) shows that the journals of other Central Asian countries are not well represented as academic outlets. Since the journals of other Central Asian countries might be not recognised by the VAK, only six respondents published in such journals.

The respondents' two year publication record in Russian language outlets of CIS countries beyond Central Asia is higher (21 respondents). Only 17 respondents published an article in international outlets within the last two years. Ten of them published in international peer-reviewed journals, while the remaining seven in international non-peer-reviewed journals. The frequency of publishing in journals outside of Uzbekistan is low with the majority publishing only one article within the last two years. As a bibliographic study on the publication on Central Asian agricultural development shows, publications are mainly produced either solely by foreign professors or in a tandem of foreign professor and supervised student from Central Asia, or within international research projects (Djanibekov 2014). In most cases, compared to researchers from the natural sciences, researchers from social science disciplines based in Central Asian HEIs are underrepresented in these coauthorship networks. Furthermore, a biblimetric analysis done by Karatayev (2016) showed that publications made by researchers in Kazakhstan in economics have zero citations and mainly appeared in zero-impact factor journals, if not in predatory and fake journals. The reason for this is that the national PhD regulation emphasises quantity but not quality of scientific publications (Karatayev 2016).

A similar pattern can be observed in conference participation within the last two years (Table 6). Only one-sixth of researchers interviewed attended a topical conference organised in another Central Asian country. As expected, within the last two years almost all respondents (71 respondents) participated in conferences organised in Uzbekistan. The procedure of admission to Uzbekistan's doctoral system requires that in addition to passing entry exams, and proving adequate qualification in software and foreign languages, applicants also have experience in conference participation (EACEA 2017).

Table 6. Conference participations during the last two years

	Number of participating respondents							
	Total	Number of conferences attended in the last two years						
		1	2	3	4	5	6–9	>10
Conferences in Uzbekistan	71	5	17	14	7	4	10	14
Conferences in other C.Asian country	12	9	3	0	0	0	0	0
Conferences in CIS country beyond C.Asia	16	7	2	2		2	3	0
International Conferences	23	13	6	1	2	1	0	0

Source: Authors' calculation based on the PhD survey.

This explains the fact that even recently-enrolled respondents have experience with conference participation. One-third of these respondents attended at least six conferences within the last two years. One-third of respondents participated in international conferences outside of CIS countries, while 16 participated in conferences organised in non-Central Asian CIS countries. Similar to journal publications, the frequency of participating in conferences outside of Uzbeki-

stan is low. The majority of respondents attended only one to two regional and international conferences during the last two years. Among factors limiting international conference participation are those related to the research focus on domestic solutions, poor spoken and written English skills, and the absence of budgets for conference participation (World Bank 2002, Schuch et al. 2012).

4.6 International cooperation and networks

Academic networks can be important in the process of knowledge production. The survey showed that there was no active association for agricultural economists in Uzbekistan. Only five respondents indicated that they were members of national associations such as the Union of Young Researchers (*Yosh olimlar uyushmasi*), and National Association of Accountants and Auditors (*O'zbekiston buxgalterlar va auditorlar milliy assotsiatsiyasi*). None of the respondents was a member of Central Asian, CIS or international associations.

Finally, in terms of cooperation, the majority of respondents cooperated with their peers in Uzbekistan, and only small number of respondents was engaged in international scientific cooperation (Table 7). This demonstrates that the scientific ties in agricultural economics among neighbouring Central Asian and other post-Soviet research communities, once members of a single large political-economic system, have degraded (Mukhitdinova 2014). At the same time, the exposure of doctoral researchers to the international community such as to Asian, European or International Associations of agricultural economists is still small.

Table 7. Cooperation with other doctoral researchers

Universities and institutes in	N
Uzbekistan	58
Other Central Asian country	5
CIS country beyond Central Asia	5
Outside of CIS	10

Source: Authors' calculation based on the PhD survey.

4.7 Workload

Doctoral students in Uzbekistan are commonly expected to engage in activities beyond their PhD research (UZDOC 2016). According to state regulation, the 36-hour weekly workload of a senior researcher in a HEI includes 12 hours of attending classes. For researchers without a stipend or HEI salary, the weekly workload in a HEI is 12 hours with four hours of classes (UZDOC 2016). The one-stage system requirement is that senior researchers should have at least 300 hours of teaching experience in HEI during their doctoral study. This is confirmed by the survey where 66 respondents indicated that that they are responsible for other activities in addition to their research. Almost all respondents teach (Table 8). Half of the respondents teach subjects not related to their dissertation, while 53 respondents teach subjects in connection with their thesis. About 50 respondents are engaged in the supervision of students. About an equal number of respondents are involved in other research activities which are not related to their dissertation, or in jobs outside the academic sector to earn additional income. As few respondents are part of a research project, only eleven of them are engaged in various activities related to project

management. On average, the respondents answered that for dissertation-related activities they allocate about ten hours weekly (Table 8). Over 60% of the respondents expressed their interest in allocating more time for such activities. For the teaching activities on thesis-related subjects, the respondents allocate about the same amount of hours as for their dissertations. Exactly half of the respondents are engaged in teaching topics not related to their research. About half of these respondents expressed their interest to reduce the amount of time spent on such teaching activities in favour of increasing time spent on their dissertation. Supervision of undergraduate students is also common among the respondents. Fifty-two respondents supervise undergraduate students and allocate for this about four hours weekly.

Table 8. Workload and weekly time allocation

Activity	Number of students engaged in this activity	From this, voluntarily (%)	Average number of hours spent weekly on this activity				Satisfaction with the amount of time spent on it, (% of respondents)		
			Mean	SD	Min	Max	right amount of time for it	wish less time for it	wish more time for it
Dissertation related activities	72	100	10.2	8.6	1	48	39	0	61
Teaching activities on subjects related to dissertation	53	83	9.3	9.0	1	40	66	13	21
Teaching activities on subjects not related to dissertation	36	75	10.5	11.0	1	64	56	44	0
Project management activities	12	83	8.5	7.6	1	24	100	0	0
Students supervision	52	81	4.3	2.9	1	14	83	8	10
Other research not related to own thesis	15	67	6.9	5.4	2	20	73	27	0
Non-academic income-related job	14	100	14.3	11.5	1	35	50	43	7

Source: Authors' calculation based on the PhD survey.

Table 9 shows that the largest amount of time allocated by the respondents for doctoral research was spent on dissertation writing and data management/analysis (almost 50% of time). The least amount of time was allocated for attending thesis-related courses and discussions with their supervisor and colleagues on thesis-related topics.

Table 9. Allocation of time available for doctoral research

	Obs	Mean	SD	Min	Max
Reading literature	71	17	7	5	40
Writing own publications & dissertation	72	28	12	5	60
Data collection	72	17	8	5	45
Data management & analysis	72	20	8	10	40
Discussions related to dissertation	64	11	5	5	30
Attending thesis-related courses	55	10	5	1	20

Source: Authors' calculation based on the PhD survey.

4.8 Supervision

Only three respondents answered that they have two scientific supervisors, while all others have only one. Indeed, the doctoral education in Uzbekistan is focused on writing a doctoral thesis under a single supervision. The double supervision as practiced in European universities can be considered and approved by the VAK when the doctoral candidate conducts interdisciplinary research (UZDOC 2016). Two of the three students with a double supervision, who answered that their second supervisor is a foreign professor, were conducting their doctoral research within an international project.

The maximum number of doctoral students that one person is officially allowed to supervise in Uzbekistan is regulated at a maximum of three doctoral students at any one time[6]. In terms of the number of supervised doctoral students per scientific supervisor, only ten respondents answered that they are the only student for their supervisors. Another six respondents mentioned that their supervisor supervises one more doctoral student. For half of the respondents their supervisors have three doctoral students. As there are a number of doctoral students who have yet to register their dissertations with the VAK, these unregistered students add to the total number of supervised students. This is exemplified by the survey results where supervisors of ten respondents have four doctoral students, while nine respondents answered that their supervisors supervise at least five students.

Almost 60% of respondents mentioned that they and their scientific supervisor work at the same organisation. For about one-third of the respondents, their supervisors work in another university or research institute. Six respondents answered that their supervisor works in a governmental organisation such as a ministry. Since most of respondents work at the same organisations as their supervisors, the respondents reported meetings with their supervisors as frequent. Almost half of the respondents answered that they meet their scientific supervisors at least once a week to discuss their doctoral research. Thirty percent of respondents meet their supervisors up to three times a week. For fifteen, the meetings with their supervisors are rarer – at most once a month.

[6] Decree of Cabinet of Ministries #365 on Measures for enhancing the attestation of scientific and scientific -pedagogical staff (28.12.2012).

Figure 2. Respondents' satisfaction with their supervision

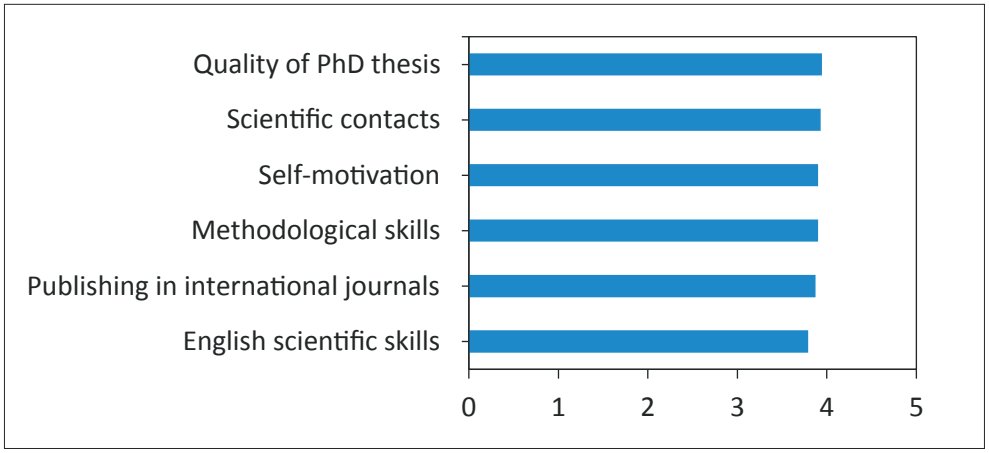
Note: 1 = Very dissatisfied, 2 = Dissatisfied, 3 = Neither satisfied nor dissatisfied, 4 = Satisfied, 5 = Very satisfied.

Source: Authors' calculation based on the PhD survey.

A student-supervisor tandem is crucial in the postgraduate education system in Uzbekistan and thoroughly monitored (UZDOC 2016). Supervisor and student jointly develop an individual work plan for the doctoral dissertation, as well as its theoretical and methodological parts. The quality of supervision is monitored by the ministry, Academy of Sciences and the HEI. The supervisor takes responsibility for the doctoral student's defense which in case of failure may imply a ban from supervision activities of up to three years (UZDOC 2016). The respondents reported being between satisfied and very satistified with the quality of received supervision (Figure 2). Mosly, the respondents were satisfied with their supervisors' interest in successful research, and the level of motivation and feedback they received. The traditional, one-to-one relationship between the researcher and supervisor, as well as academic hierarchy where a candidate's defense depends on this relationship, may explain the high scores of respondents' satisfaction with the quality of supervision.

The cases of supervision and mentoring provided by foreign professors are rare. Only three respondents mentioned that their research is supervised by a professor at a foreign university, and all of these three mentioned that their research benefits from it. From those 69 respondents who currently do not have a foreign supervisor, 55 answered that they would be interested in this. As Figure 3 shows, the majority of respondents consider that research supervision by a foreign professor would improve the quality of their dissertation, expand academic networks, and positively influence their self-motivation in research.

Figure 3. Reasons for having a foreign supervisor



Note: 1 = Not important, 2 = Somewhat not important, 3 = Neither important nor unimportant, 4 = Important, 5 = Very important.

Source: Authors' calculation based on the PhD survey.

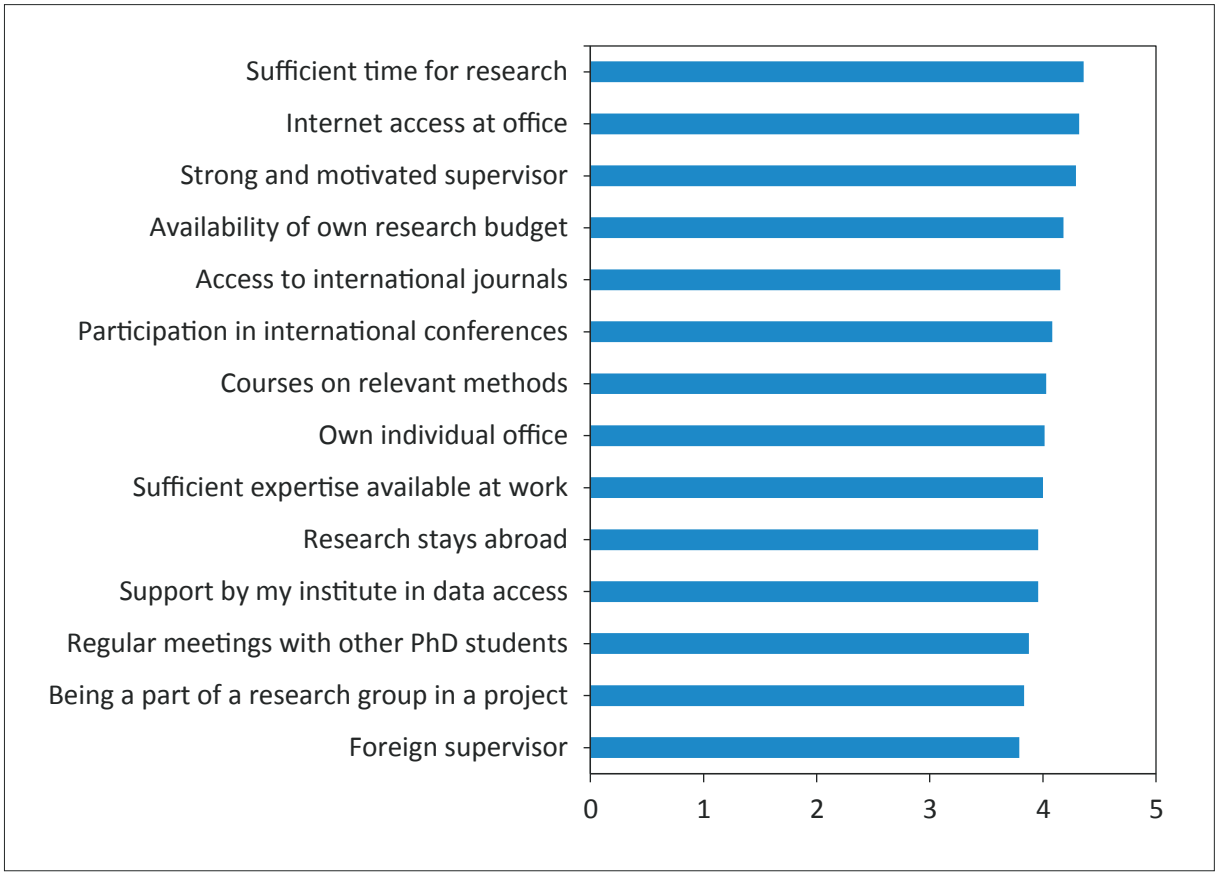
4.9 Factors contributing to research quality

The departmental workplace and access to on- and off-campus libraries and literature are important for generating research output. Most respondents in our survey answered that they had an office for writing a thesis, while only two respondents answered that they have no office in their affiliated organisations. Fifteen respondents share an office with a colleague, while 12 respondents share with two other colleagues. Seventeen respondents share their offices with three other colleagues, while the remaining 26 respondents share it with at least four other colleagues. Furthermore, three of those with an office, do not have an individual desk. Fifty-nine respondents share their desk with a colleague, and eight share their desk with at least two colleagues. Due to the lack of office space, almost 40% of respondents had to write their thesis at home, while 21% of respondents work on their dissertation in a library.

Almost three-quarters of respondents answered that they do not find sufficient literature for their dissertation in the libraries of their universities and research institutes, and rely mostly on literature available in public libraries outside of their organisations. Seventy percent of respondents have daily internet access, but mainly from home, while the internet provision at their HEIs is still low-speed.

For the majority of the respondents, the availability of sufficient time for their research, good internet access at the office, as well as quality of supervision were indicated among the three most important factors for successful doctoral research (Figure 4). It shows that the respondents value the time they are able to allocate for their research due to the teaching load, and the ability of university professors to provide mentorship for their research.

Figure 4. Importance of factors contributing to the success of the respondents' doctoral research



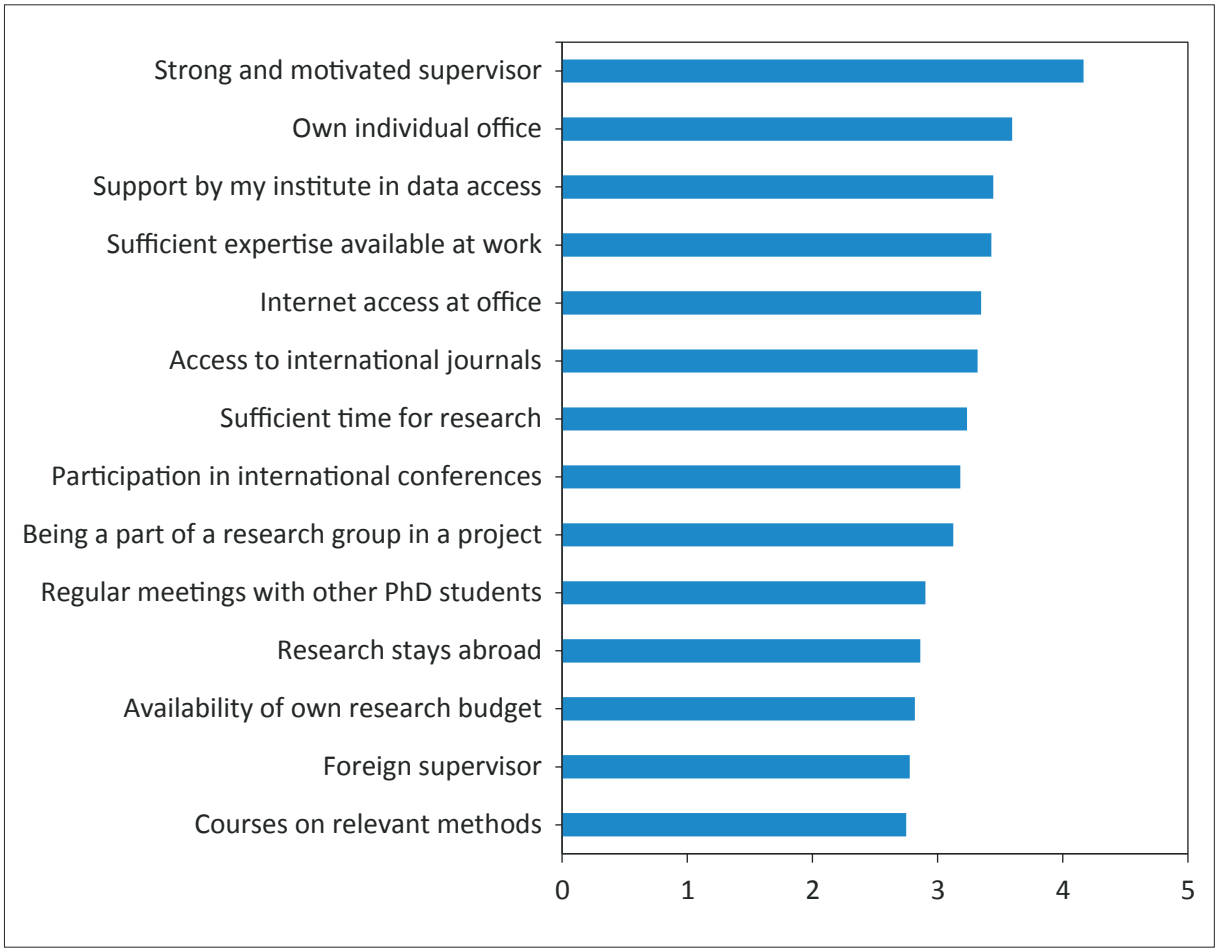
Note: 1 = Not important, 2 = Somewhat not important, 3 = Neither important nor unimportant, 4 = Important, 5 = Very important.

Source: Authors' calculation based on the PhD survey.

Although fruitful research activities might require effective collaboration within a research project, and regular knowledge exchange with other doctoral students, these factors were indicated among the least important ones along with the availability of a foreign supervisor. These responses could be a result of the respondents' lack of experience with these factors since the majority of them do not have a foreign supervisor, and work individually without a research group or a research project.

Among these factors, the respondents were most satisfied with the quality of supervision they currently receive (Figure 5). This is followed by the availability of individual office space, although as presented earlier almost 60% share it with at least three other colleagues, over 80% share a desktop in their offices with other colleagues, and as result over two-thirds of respondents work on their thesis at home or in a library. The respondents were the most dissatisfied with the availability of courses on methods relevant for their dissertation, access to supervision by a foreign professor, availability of own research budget, access to mobility programmes and research stays abroad, as well as the availability of platforms for organising regular meetings with other doctoral students.

Figure 5. Respondents' satisfaction with factors contributing to their research



Note: 1 = Very dissatisfied, 2 = Dissatisfied, 3 = Neither satisfied nor dissatisfied, 4 = Satisfied, 5 = Very satisfied.

Source: Authors' calculation based on the PhD survey.

4.10 Access to and perception of training courses

To ensure the effective coordination of the activities related to re-training HEI personnel, doctoral students employed as HEI teachers attend compulsory training courses at least every three years (EACEA 2017). Among the five courses listed, the largest share of respondents attended the courses on teaching skills (Table 10). This is indeed important training since, as shown in Table 8, many respondents indicated that they were teaching. This focus on the development of teaching skills is linked to the objective of the doctoral education system to produce qualified teaching and academic personnel (UZDOC 2016). Since almost all respondents are required to teach, it is not surprising that participation in such courses was the most reported. Most of the Teacher training take place in the General Scientific and Methodological Center (*Bosh ilmiy-metodik markazi*, BIMM). Besides the training courses provided within the national programme of retraining HEI teachers, the interviews showed a lack of access to training courses on relevant methods and theories. Only one-third of respondents answered that it is relatively easy to find courses on theories and methods related to their research (Table 10). Only ten respondents could find training courses on research design and field work organisation, and only seven attended such courses within last two years.

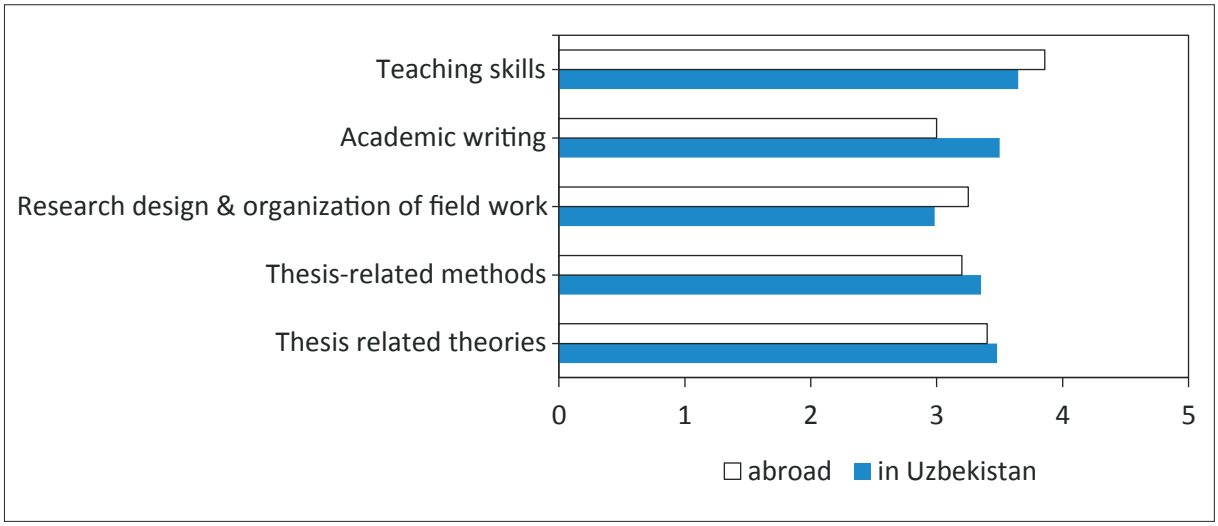
Table 10. Respondents' access to and participation in training courses during the last two years

	Easy access to training courses	Participated in training courses	Participated in courses abroad
Thesis-related theoretical courses	25	24	15
Thesis-related methods	29	22	10
Research design & organisation of field work	10	7	4
Academic writing	24	15	7
Teaching skills	56	45	7

Source: Authors' calculation based on the PhD survey.

When comparing the respondent's confidence in their own skills, those who attended training courses abroad provided lower scores (Figure 6). One may conclude that the experience of international standards of training courses may reduce confidence in their own qualification. The lowest confidence was given for training received on research design and organisation of field and thesis related methods, while the highest was for teaching skills.

Figure 6. Respondents' confidence in received training and own qualification

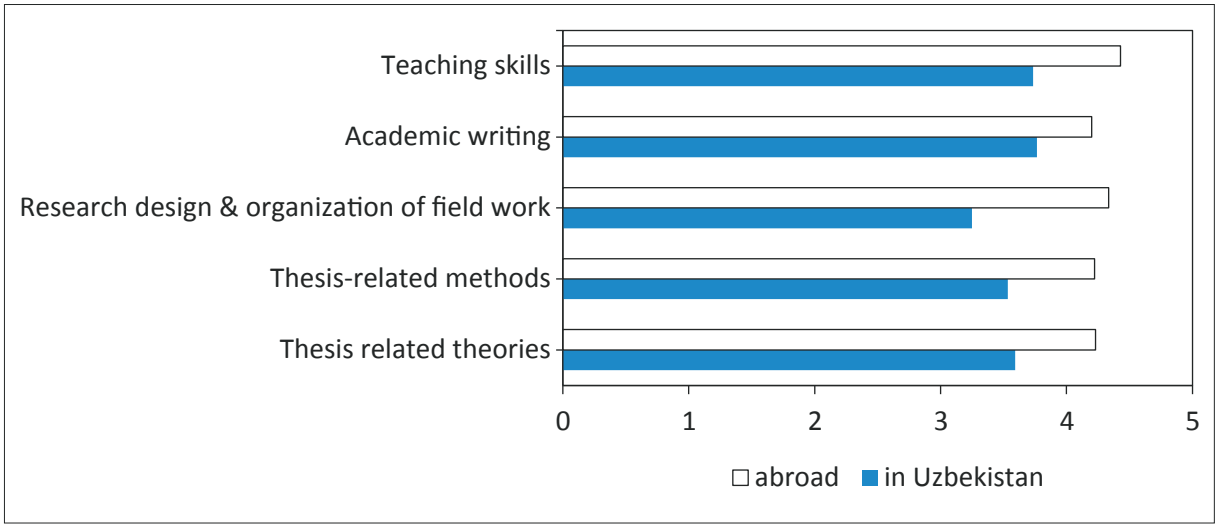


Note: 1 = Very low, 2 = Low, 3 = Neither low nor high, 4 = High, 5 = Very High.

Source: Authors' calculation based on the PhD survey.

In general, as expected, the respondents who attended training courses abroad provided higher satisfaction scores than those who attended courses only in Uzbekistan (Figure 7). On average, the students were neither satisfied nor dissatisfied with the courses taken in Uzbekistan, while they were more than satisfied with those attended abroad. The respondents who attended courses only in Uzbekistan were the least satisfied with the training on research design and field work organization.

Figure 7. Respondents' satisfaction with the level of training they received during doctoral studies

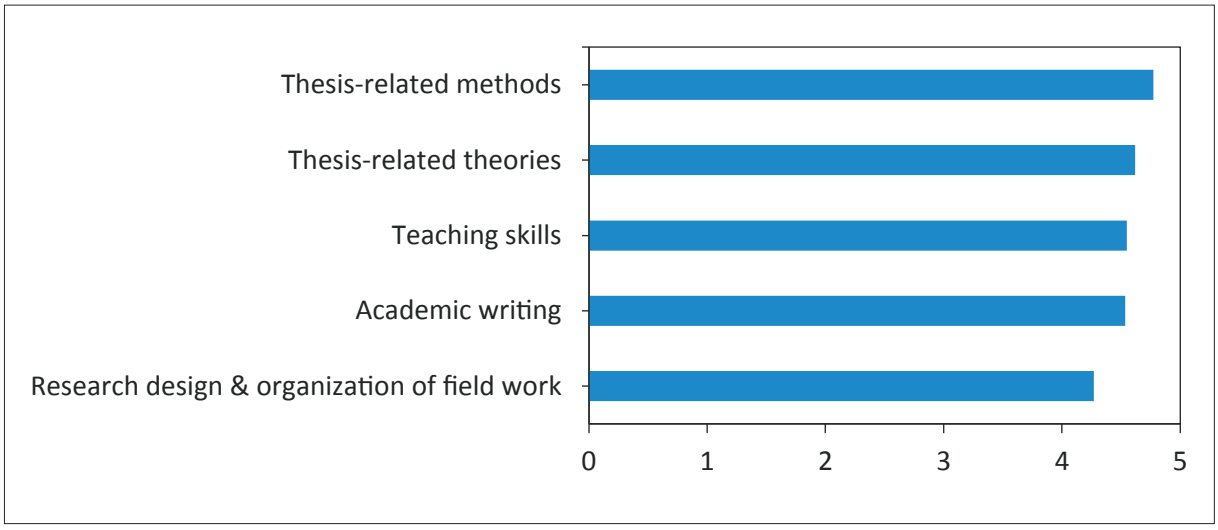


Note: 1 = Very dissatisfied, 2 = Dissatisfied, 3 = Neither satisfied nor dissatisfied, 4 = Satisfied, 5 = Very satisfied.

Source: Authors' calculation based on the PhD survey.

Despite the lack of access to and the least satisfaction with training courses on research design, the respondents had the least interest in attending such courses (Figure 8). The highest interest was in thesis-related methods and theories.

Figure 8. Respondents' interest in attending training courses



Note: 1 = Not interested at all, 2 = Not interested, 3 = No opinion, 4 = Slightly interested; 5 = Very interested.

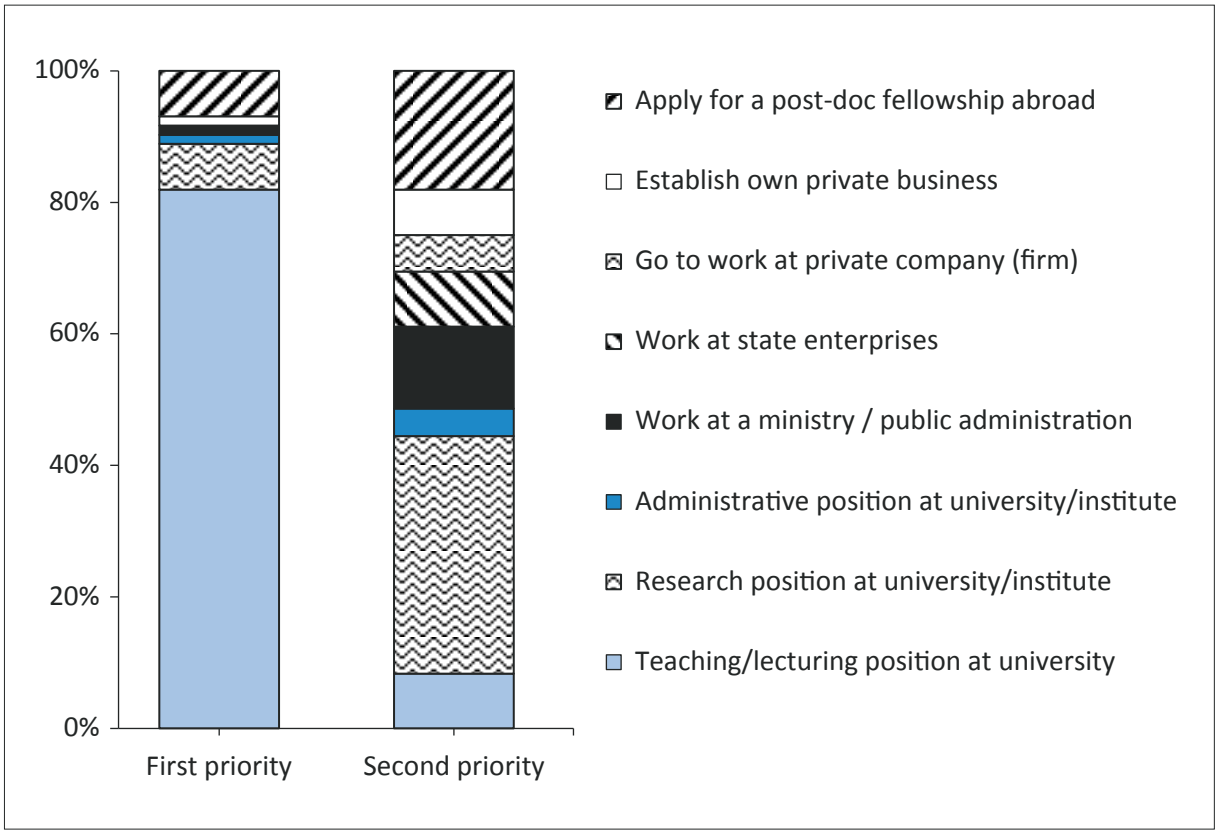
Source: Authors' calculation based on the PhD survey.

4.11 Future career plans

A Doctor of Sciences degree can be seen as an advantage during the selection of candidates for high positions in public, private and international organisations (EACEA 2017). Despite this, over 80% of respondents consider the position of a university lecturer in Uzbekistan as the prior-

ity option for career development after dissertation defense (Figure 9). Only five respondents considered the option of continuing to work as a researcher at a research institute or university in Uzbekistan, or applying for a post-doc fellowship outside of Uzbekistan. As a second option, over one-third of respondents mentioned that they would continue as a researcher at a national research institute or university. About 13 respondents mentioned applying for a post-doc position abroad as a second career option. These astonishing figures of the respondents' intentions to stay in academia can be a sign of the lack of transferable skills of doctoral candidates for continuing a career outside of the education sector. The basic concept in Uzbekistan is rather focused on producing qualified teaching and academic personnel (UZDOC 2016).

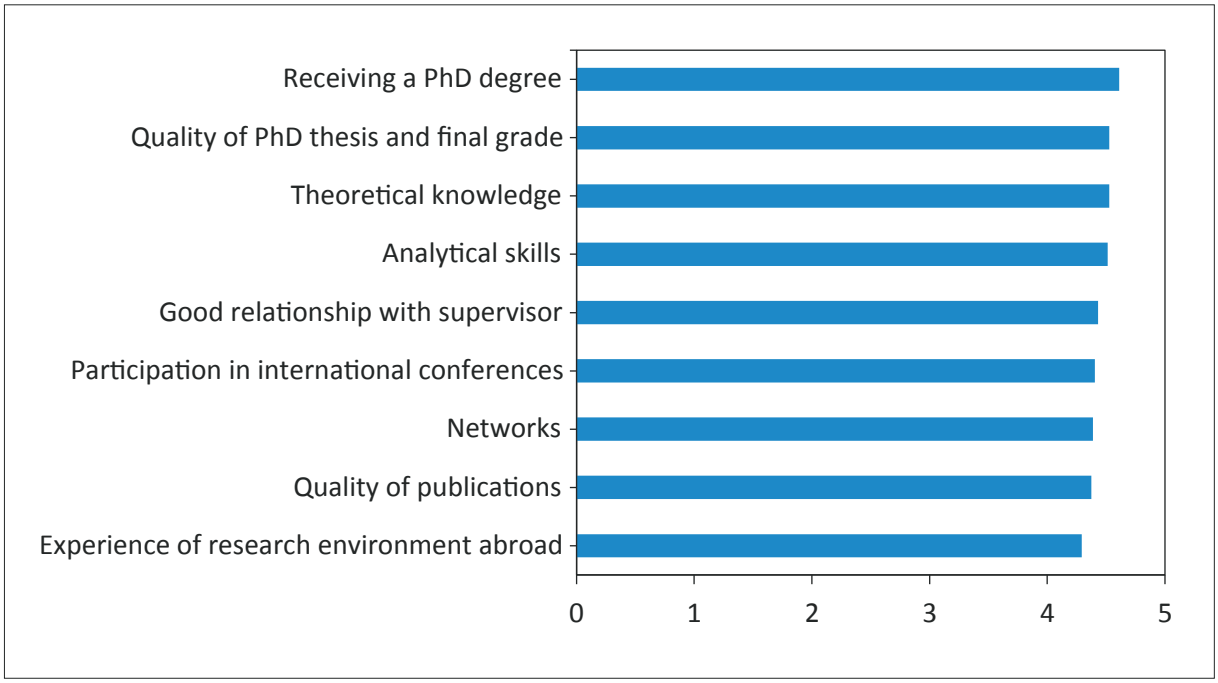
Figure 9. Preferred jobs after completion of doctoral studies



Source: Authors' calculation based on the PhD survey.

The respondents consider the doctoral degree itself to be the most important factor for their envisaged career perspective (Figure 10) as a university lecturer (the first option) or as a researcher (the second option). The quality of the doctoral dissertation and final examination grade, as well as theoretical knowledge and analytical skills are the second most important factors. The least important factor named was the respondents' experience in a research environment in a foreign university.

Figure 10. Importance of listed factors for career after dissertation defense



Note: 1 = Not important, 2 = Somewhat not important, 3 = Neither important nor unimportant, 4 = Important, 5 = Very important.

Source: Authors' calculation based on the PhD survey.

5 Conclusions and implications

The aim of this study was to provide an overview of the current situation of the postgraduate education and research environment in agricultural economics in HEIs in Uzbekistan. The survey results show that the current doctoral education system in agricultural economics in Uzbekistan is based on one-to-one supervision, practical and solution oriented research, and places minimum requirements on measurable research outputs such as journal articles, monographs, and conference presentations and proceedings.

The majority of respondents conduct problem-solving applied research at province, sector or national level. None of the respondents was engaged in theoretical research or research on a regional or global scale. The respondents reported a lack of individual research funds and low integration into international research projects. The respondents stated that they mainly worked in the organisations where they were also writing their dissertations. They experience overwhelming teaching loads leading to time constraints, reduced research performance and unreasonably long delays in the submission of their final dissertation. Notwithstanding these issues, most respondents expressed interest in continuing a career in public research and education institutions. Thus, despite its solution-oriented approach, the postgraduate education system does not catalyse further career development outside of academia.

According to the survey data, excessive publication requirements place additional workloads on the doctoral candidates and are distractive to doctoral research. Although the doctoral candidates manage to fulfil this requirement, very few publications appear in international peer-reviewed journals. This fact may indicate a lacking standard of language proficiency. In addition, the level of participation in international events and integration in research networks

outside of Uzbekistan remains low. Co-supervision or mentoring by a professor from a foreign university rarely takes place.

Finally, the results reveal that within the last two years only few respondents had access to training programmes on theoretical and methodological aspects. Low confidence in their own skills and low satisfaction in thesis-related methods and research design skills are a result of the lack of an effective and well-tailored curriculum for doctorate studies. The lack of internal research and discussion groups, crowded office spaces, and constrained access to literature hamper the emergence of a stimulating research environment. However, the responses collected on factors contributing to research suggest that the attitude and enthusiasm of the interviewed doctoral researchers have an influence on lifting their research quality and productivity if a proper research environment is provided.

These observations also reveal possible ways for tackling these challenges:

- To compensate the lack of postgraduate courses in agricultural economics, structured doctoral programmes should be organised that would comprise tailored training courses. This form of postgraduate training should be made sustainable by establishing a network of training modules offered among HEIs and research institutes. It would be essential to offer these courses not only with regard to theoretical and methodological content, but also with regard to skill development in academic writing and publishing, preferably in English.
- The quality of research and publications should not be ensured by imposing a list of centrally-selected journals, but rather through the provision of incentives for doing high-quality research. This includes internal competition for research funds, academic positions and evaluation based on the quality of research and publications. In this regard, a reduced teaching load and individualised research funds is essential.
- The promotion of cooperation among researchers within thematic groups in Uzbekistan and outside would contribute to the creation of a critical mass of doctoral students who would engage in the joint learning of relevant research topics, the exchange of findings, the organisation of joint research, the preparation of project proposals, and publications.
- The interest in being supervised by a foreign professor is a positive signal for promoting a supervision tandem comprised of local and international professors. The inclusion of a foreign professor as a supervisor will compensate for the lack of theoretical and methodological knowledge, provide independent evaluation of the quality of doctoral research and grant access to scientific networks.
- This form of supervision will also contribute to the mobility of doctoral students for research stays abroad and ensure that students are mentored during these research stays. However, additional changes in terms of teaching load requirements and provision of national stipends would be required to encourage such doctoral mobility.

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Appendix A: Policy chronicle of higher education reforms in Uzbekistan

Date	Regulation	Description
July 2, 1992	Law on Education (amended in 1997)	Determines that preparation of scientific and scientific-pedagogical personnel is the highest priority of the continued education system. Defines scientific activities in higher education system, government procurement contracts, programs and projects, as well as research interests of scientific community.
September 9, 1992	Decree of Cabinet of Ministers (CM) on Organization of activities of VAK	Determines the rights of VAK, as well as Scientific councils and the procedure and necessary documents for setting up a defense.
June 19, 1993	Decree of CM on Implementation of contract system of hiring scientific-research, design and engineering personnel	Determines that scientific organizations are converted into self-financing and sets up foundations for contracts.
January 25, 1996	Regulation about Order of issuing scientific degrees as approved by the Presidium of VAK #34/2	Determines that VAK decides on the issue of Candidate of Science degree after a defense. Candidates have to pass required exams such as philosophy, national independence idea, scientific methods, foreign language, information technology, and a special exam on a discipline of dissertation.
January 25, 1996	Regulation about Specialized councils as approved by the VAK #34/2	Defines that the specialized council can be formed by VAK on request from coordinating ministries of HIEs, organizations and the Academy of Sciences. Specialized council is the main element in attestation of highly qualified scientific and scientific-pedagogical personnel.
August 29, 1997	Law on Education	Determines the role of postgraduate education in higher education system. Postgraduate education aims at ensuring societal needs in scientific and scientific-pedagogical personnel. Postgraduate education can be received in higher education institutions and scientific research institutes through postgraduate, doctoral and independent research.
August 29, 1997	National Training Programme	Corresponds to provisions of the Law on Education as the basis of evaluating national experience, using global achievements in education system. The programme aims at forming new generation of scientific personnel with high general and professional background, creative and socially active, independent in social and political life. The program provides a national model of training and determines socioeconomic, legal, pedagogical and other conditions for forming comprehensively developed scientific personnel, postgraduate educational and professional programs.

Date	Regulation	Description
July 6, 2001	Decision of the CM on Awarding scientific degree and scientific title to winners of competition on Author of the Annual best textbook and educational literature	Defines that winners of the competition on Author of best textbook and educational literature can be given a scientific degree. The content of the textbooks must correspond to the state educational standards, and be written using national and foreign scientific findings.
July 17, 2003	Decision of the Presidium of VAK on Amendments and additions to the regulations on procedure for scientific degrees	Defines that an applicant for dissertation defense should have at least five scientific publications, as well as provide a summary in Russian, Uzbek and English languages for international expertise and prove dissemination of scientific findings.
March 25, 2004	Decision of the Presidium of VAK on Approval of regulation on Examination procedures for Candidates	Defines that applicant for a scientific degree/title in social sciences should pass a special exam on the idea of independence and principles of building a democratic society. Applicants for scientific degree/title in economics have to pass also an exam on economic theory.
June 24, 2004	Decision of the Presidium of VAK on Approval of regulations for the designing of dissertations and summaries	Defines that dissertations of Candidate of Sciences should be on subjects of great importance with investigation of new solutions. Authors should provide practical solutions based on technical, economic, scientific or technological recommendations.
August 9, 2007	Decision of the Ministry of Higher and Secondary Special Education, Ministry of Health, Ministry of Agriculture and Water Resources, Ministry of National Education about Regulation on Postgraduate (Aspirantura/Doctorantura) education	Defines types of postgraduate education of scientific and scientific-pedagogical personnel and enrolment criteria. A person with ability to conduct a scientific research, enough knowledge in the field of science and technology, with diploma or master's degree, as well as at least one year of experience in chosen specialty can be enrolled to postgraduate studies for three-year period.
June 24, 2012	Presidential decree on Further Improvement of the system of preparation and attestation of scientific and pedagogical personnel of higher qualification	Set requirements for establishing one-stage system of postgraduate education with awarding a degree of Doctor of Sciences in accordance with generally accepted international requirements and standards. Abolished institutes of researchers-applicants and transferred enrolled researchers to institutes of senior scientific fellows. Sets new requirements of one-stage postgraduate education for evaluation and critical examination of dissertation topics.

Date	Regulation	Description
December 28, 2012	Decision of CM #365 on Measures of further improvement in the system of postgraduate education and approval of scientific and scientific-pedagogical personnel of high qualification	Defined that the postgraduate education is a kind of continuous education aimed at ensuring the needs of society in scientific and scientific-pedagogical personnel of highest qualification. New definitions introduced to the Institute of Senior scientific fellows and the Institute of Independent research fellows. The first was to ensure doctoral research with interruption at work, while the latter was aiming at research with uninterrupted activities at work.
	Appendices 1 & 2 to the Decree of CM #365 (Requirements & Provision to Postgraduate education)	Defined Senior scientific personnel of HEI, and Independent researcher with their obligations and requirements to be fulfilled prior to doctoral defense. Defines that institutes of postgraduate education are established at the leading HEI and research institutes to train scientific and scientific-pedagogical personnel in most important disciplines, as well as development of fundamental research, implementation of state programmes in priority areas of science and technology. Postgraduate education is funded from the state budget; for foreign citizens - via contract. Scientific adviser cannot supervise simultaneously more than three senior research fellows and independent researchers. Sets minimum requirements for defense such as examination, teaching experience, and so on.
April 28, 2016	Resolution of the Presidium of VAK #224/6 on Provisions on conferment of the scientific degree of Doctor of Sciences	Regulates the orocedure of giving Doctor of Sciences degree, and sets the requirements to dissertations, including number of publications, and defense procedure. Graduates with bachelor's degree with at less five years of practical work experience, with certain scientific achievements, involved in research and teaching activities can be also enrolled in doctoral programmes. Dissertation results should appear in at least 15 publications, from which two should appear in peer-reviewed journals approved by VAK.
April 28, 2016	Resolution of the Presidium of VAK #224/7 on Provisions on the Scientific council giving a scientific degree of Doctor of Sciences	Regulatesactivities of Scientific Councils in evaluating of defense-related documents and giving a Doctor of Sciences degree.
January 28, 2016	Resolution of the Presidium of VAK #220/2 on Provisions on taking qualification examinations	Regulates activities related to qualification exams for obtaining Doctor of Sciences degree such as mandatory exams and general teaching experience and publication record.

Date	Regulation	Description
May 22, 2017	Decree of CM #304 on Further improvement of postgraduate education system	Defines the main concept of two-stage system with Doctor of Philosophy (PhD) and Doctor of Sciences (DSc), and related requirements such as simplified defense exams (only foreign language and specialty), publication requirements (one article in foreign journal), requirements to research results (instead of actual implementation, offering results for practical implementation). Teaching requirements are not indicated.

Appendix B: Reprint of the questionnaire

Questionnaire for the survey of doctoral researchers
in "Agricultural Economics" in Uzbekistan

O'zbekistonda "Qishloq xo`jaligi iqtisodiyoti" mutaxassisligi bo`yicha doktorantura tadqiqotchilari uchun so'rovnoma

A. General background of the respondent – Respondent haqida umumiy ma`lumotlar

Date of interview – **So`rovnoma o`tkazilgan sana**	
Respondent's name, surname – **Respondentning ismi-sharifi**	

A.1. What year were you born – **Tug`ilgan yilingiz?**

A.2. Respondent's gender – **Respondentning jinsi**

Male – **Erkak**	1
Female – **Ayol**	2

A.3. Family status – **Oilaviy ahvoli**

Married – **Oilali**	1
Single – **Yolg`iz**	2

A.4. Respondent's number of children – **Respondentning bolalari soni**

A.5. Are you currently conducting a PhD research – **Siz hozirgi vaqtda PhD tadqiqotlarini olib borayapsizmi?**

Yes – **Ha**	1	
No – **Yo`q**	0	If No, stop the interview – **Agar "yo`q" bo`lsa, intervyuni to`xtating**

A.6. If yes, what type of PhD affiliation do you have – Agar „ha" bo`lsa, qaysi turdagi PhD tadqiqotini olib borayapsiz?

	Only one answer – **Faqat bitta javob**
Independent researcher in university/institute without stipend – **Universitet/institutning stipendiyasiz mustaqil tadqiqotchisi**	1
Staff of university/institute – **Universitet/institut xodimi**	2
Independent researcher outside of university/institute system - **Universitet/institute tizimidan tashqarida bo`lgan mustaqil tadqiqotchi**	3
Researcher in Doktorantura in university/institute with stipend – **Universitet/institutning doktoranturasidagi stipendiyali tadqiqotchisi**	4

A.7. Is your PhD dissertation topic registered in VAK? - **Sizning PhD dissertatsiyasini mavzusi VAKda ro'yxatga olinganmi?**

Yes – **Ha**	1
No – **Yo`q**	0

B. Education and employment – Ta`lim va bandlik

B.1. Please provide information about your education background – **Iltimos, ma`lumotingiz haqida axborot bersangiz.**

	A	B	C	D
	Degree level – M**a`lumot darajasi** [Bachelor-**Bakalavr**=1; Master - **Magister**=2; Diploma - **Diplom**=3]	Year of graduation – **Bitirgan yilingiz**	University/institute (provide the name of HEI where the degree was obtained) – **Universitet/institut (daraja egallangan oliy o`quv yurti nomini keltiring)**	Write down the discipline (Indicate the full discipline of that degree) – **Mutaxassislikning nomini yozing (Darajaning to`liq nomini yozing)**
1				
2				
3				

B.2. In how many jobs are you currently employed – **Hozirgi kunda nechta ishda faoliyat yuritayapsiz? (indicate number – raqamda keltiring)**

B.3. What is currently your main and second place of employment – **Hozirgi kunda sizning asosiy va ikkinchi ish o`rinlaringiz qaysilar** (select one answer – **bitta javobni tanlang**) [where you spend most of your time – **qaerda eng ko`p vaqtingizni sarflaysiz**]?:

	Only one answer for each column – **Har bir ustundan bitta javobni tanlang**	
	A	B
	Main job – **Asosiy ish**	Second job – **Ikkinchi ish**
Research institute – **Ilmiy-tadqiqot institute**	1	1
University / higher education sector – **Universitet/ oliy ta`lim sohasi**	2	2
College – **Kollej**	3	3
Ministry / public administration – **Vazirlik/ davlat xizmati**	4	4
State enterprise – **Davlat korxonasi**	5	5
Private business company – **Xususiy biznes kompaniyasi**	6	6
Private consultancy company – **Xususiy maslahat kompaniyasi**	7	7
Individual consultant / freelancer – **Individual maslahatchi / shtatsiz xodim**	8	8
International organization – **Xalqaro tashkilot**	9	9
Other (Specify) – **Boshqa (keltiring)**	10	10

B.4. What is the name of the organization (e.g., university, institute) where you currently conduct your PhD research – Siz PhD tadqiqotingizni amalga oshirayotgan tashkilot (universitet, institut va boshqalar) nomi?

C. General information about research topic – Ilmiy ish mavzuingiz bo`yicha umumiy ma`lumotlar

C.1. What is the discipline code (e.g. 08.00.04) of your PhD research thesis – **Sizning PhD tadqiqotlar dissertatsiyangizning mutaxassislik kodi (masalan, 08.00.04) qanaqa?**

C.2. What is the title of your current PhD dissertation – **PhD dissertatsiyangizning mavzusi qanaqa?**

C.3a. When did you start to work on your current PhD reseach – **Hozirgi PhD tadqiqotlaringizni qachon boshlagansiz?** (year - **yil**)

C.3b. When did you officially start to work on your current PhD dissertation? (year) (approval of University Scientific Council) – **PhD dissertatsiyangiz ustida ishlashni qachon rasmiylashtirgansiz? (yil) (Oliy o`quv yurti ilmiy kengashida tasdiqlangan)**

C.4. If female, did you have a break in your work in your thesis due to the maternity leave – **Ayollar uchun, sizda homiladorlik yoki farzand tarbiyasi bilan bog`liq ta`til orqali dissertatsiya tayyorlashda uzilishlar bo`lganmi?**

Yes – **Ha**	1
No – **Yo`q**	0

C.5. Is your PhD research topic part of – **Sizning dissertatsiya ishingiz quyidagilarning tarkibiy qismi hisoblanadimi?**

	Only one answer – **Faqat bitta javob**
National research project grant – **Milliy ilmiy loyiha granti**	1
National individual research stipend – **Milliy individual tadqiqot stipendiyasi**	2
International research project – **Xalqaro ilmiy loyiha**	3
International individual research stipend - **Xalqaro individual tadqiqot stipendiyasi**	4
No stipend/no project in a research system as a part of department's research – **Stipendiyasiz/loyihasiz tadqiqotlar tizimida kafedra tadqiqotlar rejasi bo`limi**	5
No stipend/no project outside of a research system – **Tadqiqotlar tizimidan tashqari stipendiyasiz/loyihasiz**	6
Other (Specify) – **Boshqa (keltiring)**	7

C.6. How would you describe your PhD research – **Siz PhD tadqiqotingizni qanday tasvirlaysiz?**

	Only one answer – **Faqat bitta javob**
Applied research at a level of a firm – **Firma (korxona, xo`jalik) darajasidagi amaliy tadqiqot**	1
Applied research at a level of a sector – **Tarmoq darajasidagi amaliy tadqiqot**	2
Applied research at a level of an economy of a province – **Viloyat (mintaqa) iqtisodiyoti darajasidagi amaliy tadqiqot**	3
Applied research at a level of a national economy – **Milliy iqtisodiyot darajasidagi amaliy tadqiqot**	4

Applied research at an Global concerns – D**unyo miqyosidagi \ amaliy tadqiqot**	5
Theoretical – **Nazariy**	6

C.7. How did you select the topic of your dissertation – **Dissertatsiyangiz mavzusini qanday tanlagansiz?**

	Only one answer – **Faqat bitta javob**
I was looking for a research topic, and my supervisor suggested it to me – **Men mavzu izlab yurgandim, ilmiy rahbarim mavzu taklif qildi**	1
The topic was already selected by my university/institute and I applied to it – **Mavzu universitet/institute tomonidan oldindan tanlangan edi, men uni o`zimga rasmiylashtirdim**	2
I selected the research topic on my own – **Tadqiqot mavzusini o`zim tanladim**	3
Other (Specify) – **Boshqa (keltiring)**	4

C.8. In your opinion, how many years on average does a PhD student need to write and defend a thesis in your discipline – **Sizning sohangiz bo`yicha PhD dissertatsiyasini yozish va himoya qilish o`rtacha necha yil kerak bo`ladi deb o`ylaysiz?**

C.9. After how many years from now will you defend your thesis – **Hozirdan hisoblaganda yana necha yildan keyin himoya qilasiz?**

C.10. Please rank your confidence that you will defend within this time – **Iltimos, yuqorida ta`kidlagan himoya qilish vaqtini ishonchlilik darajangizni baholasangiz**

	Not confident at all – **Umuman ishonchsiz**	Somewhat not confident – **Biroz ishochsiz**	Neither confident nor non confident – **Ishonmayman ham ishonaman ham**	Confident – **Ishonchli**	Very confident – **Juda ishonchli**
Confidence level –**Ishonchlilik darajasi**	1	2	3	4	5

C.11. If not confident (C.10 answers 1-3), please list two most important reasons of not defending within this time – **(C.10 savolga 1-3 javoblar bo`yicha) ishonchsiz bo`lsa, iltimos, o`z vaqtida himoya qilmasligingizga sabab bo`luvchi ikkita eng muhim sababni keltirib o`tsangiz?**

	Only one asnwer – **Faqat bitta javob**	
	A	B
	1st most important – **1 darajali muhim**	2nd most important – **2 darajali muhim**
I do not have sufficient time to concentrate on my research / too much work-related activities – **Men tadqiqotga ko`proq vaqt ajrata olmayapman/ Ish bilan bog`liq faoliyat haddan tashqari ko`p**	1	1
I do not receive enough supervision – **Men yetarli darajada nazorat qilinmayapman**	2	2
I have difficulties in collecting required data – **Kerakli ma`lumotlarni to`plashga qiynalayapman**	3	3

I have difficulties in data analysis – **Men ma`lumotlarni tahlil qilishga qiynalayapman**	4	4
Unforseen personal /family circumstances – **Kutilmagan shaxsiy/ oilaviy muammolarning chiqib qolishi**	5	5

D. Publications and visibility – Maqola chop qilish va aprobatsiya

D.1. Do you regularly read international publication relevant on your thesis – **Mavzungizga tegishli xalqaro nashrlarni/maqolalarni doimiy ravishda o`qib borasizmi?** (Yes - **Ha**=1; No - **Yo`q**=0)

Yes – **Ha**	1
No – **Yo`q**	0

D.2. If yes, how many international publications do you read on average per month – **Agar o`qib borsangiz, o`rtacha oyiga nechta xalqaro nashr/maqola o`qiysiz?**

D.3. Could you tell the name of a scientific journal which you visit most often to update yourself on your research – **Ilmiy ishingiz bo`yicha o`z bilimlaringizni yangilab turadigan va eng ko`p tashrif buyuradigan ilmiy jurnal nomini ayta olasizmi?**

Yes – **Ha**	1
No – **Yo`q**	0

D.4. If yes, please give the name of this scientific journal – **Iltimos, o`sha jurnalning to'liq nomini bering**

D.5. Journal publication experience (Did you publish in the following journals within last two years) – **Ilmiy jurnallarda maqola chop qilish tajribasi (Keyingi ikki yilda quyidagi jurnallarda maqola chop qildirdingizmi)?**

		A	B
		Yes - **Ha**=1; No – **Yo`q**=0	How many – N**echta**?
1	National Journals – **Milliy jurnallarda**		
2	Journals in another Central Asian country – **Boshqa Markaziy Osiyo mamlakatlari jurnallarida**		
3	Journals in a CIS country, beyond Central Asia – **Markaziy Osiyodan boshqa MDH mamlakatlari jurnallarida**		
4	International peer-reviewed journal – **Xalqaro iqtibosligi yuqori (Peer Reviewed) jurnallarda**		
5	International no-peer reviewed publication – **Xalqaro iqtibosligi past (taqriz qilinmaydigan) nashrlarda**		

D.6. Did you attend the following conference within last 2 years and if yes, how many times within last two years **– So`nggi ikki yil ichida quyidagi konferensiyalarda necha marta ishtirok etdingiz?**

	A	B
	Yes - **Ha**=1 No – **Yo`q**=0	How many – N**echa marta**?
Conferences in Uzbekistan – **O`zbekistondagi konferensiyalarda**		
Conferences in other Central Asian country – **Markaziy Osiyo mamlakatlaridagi konferensiyalarda (O'zbekistondan tashqari)**		
Conferences in a CIS country beyond Central Asia **– Markaziy Osiyodan boshqa MDH mamlakatlarida**		
International Conferences **– Xalqaro konferensiyalarda (MDHdan tashqari)**		

D.7. Are you a member of any national, regional and international scientific associations **– Siz qaysidir milliy, hududiy va xalqaro ilmiy uyushmalarning a`zosi sanalasizmi?**

		A	B
		Yes - **Ha**=1, No – **Yo`q**=0, I do not know any **– Bunaqa tashkilotlar borligini bilmayman** = 98	If yes, please indicate its name **– Agar bo`lsa nomini keltiring**
1	National scientific associations – **Milliy ilmiy uyushmalar/jamiyatlar/**		
2	Regional scientific associations – **Hududiy ilmiy uyushmalar/jamiyatlar**		
3	International scientific associations – **Xalqaro ilmiy uyushmalar/jamiyatlar**		

D.8. Do you cooperate in your research with other PhD researchers in other universities in.. **– Siz ilmiy ishingiz doirasida boshqa oliy o`quv yurtlari PhD tadqiqotchilari bilan hamkorlik qilasizmi?**

	Yes - **Ha**=1, No – **Yo`q**=0
Uzbekistan – **O`zbekiston**	
Other Central Asian country – **Boshqa Markaziy Osiyo mamlakatlari**	
CIS country beyond Central Asia – **MDH** (**Markaziy Osiyodan tashqari)**	
Foreign universities outside of CIS – **Xorijiy universitetlar (MDHdan tashqari)**	

E. Methodology - Metodologiya

E.1. Do you use quantitative methods of analysis in your dissertation – **Dissertatsiyangizda miqdoriy tahlil usullaridan foydalanasizmi?**

Yes – **Ha**	1
No – **Yo`q**	0

E.2. If yes, please indicate which one – **Agar foydalansangiz, qaysi biridanligini keltiring?**

	Only one answer – **Faqat bitta javob**
Cost-Benefit Analysis – **Foyda-xarajatlar tahlili**	1
Regression analysis/econometrics – **Regression tahlil/ekonometrika**	2
Statistics – **Statistika**	3
Optimization models/linear programming – **Optimallashtirish modellari/ chiziqli dasturlash**	4
Other (Specify) – **Boshqa (Keltiring)**	5

E.3. What are two main sources of data for your research thesis – **Dissertatsiyangizda foydalaniladigan ma`lumotlarning asosiy ikkita manbasi qaysilar?**

	Only one answer per column – **Har bir ustun bo`yicha bitta javob**	
	A	B
	1st most important – **1 darajali muhim**	2nd most important – **2 darajali muhim**
Official statistics – **Rasmiy statistika**	1	1
Internet database – **Internet ma`lumotlari**	2	2
Farm and household surveys I conducted myself – **Fermerlar va uy xo`jaliklarida o`zim o`tkazgan so`rovnoma**	3	3
Farm and household surveys from someone else - **Fermerlar va uy xo`jaliklarida boshqalar tomonidan o`tkazgan so`rovnoma**	4	4
Interview with experts – **Mutaxassislar bilan suhbat**	5	5
Field experiments I conducted myself – **O`zim o`tkazgan dala tajribalari**	6	6
Field experiments from someone else – **Boshqalar tomonidan o`tkazilgan dala tajribalari**	7	7
Literature review – **Adabiyotlar sharhi**	8	8
Other (Specify) – **Boshqa (keltiring)**	9	9

F. Additional workload – Qo`shimcha yuklama

F.1. Are you engaged in additional work activities in parallel to your research – **Siz ilmiy-tadqiqot ishi bilan birgalikda qo`shimcha ishlarga ham jalb qilinganmisiz?**

Yes – **Ha**	1
No – **Yo`q**	0

F.2. Please indicate which activities and how many hours per week in average do you allocate to this activities – **Iltimos, qaysi faoliyatlarga jalb qilinganingiz va bu ishlar uchun uchun o`rtacha haftasiga necha soat sarflashingizni keltiring?**

		A	B	C	D
		Do you have these activities – **Siz ushbu faoliyat bilan g`ullanasizmi**? Yes - **Ha**=1 No –**Yo`q**=0	Is this voluntary or obligatory activity for you – **Siz uchun bu faoliyat qanday xarakterga ega**? Voluntary-**Ixtiyoriy**=1 Obligatory-**Majburiy**=2	Average number of hours per week you allocate on this activities – **Bu faoliyatga haftasiga o`rtacha necha soat sarflaysiz**	Are you satisfied with this amount of time on this activity – **Ushbu faoliatga sarflanadigan vaqt sizni qanoatlantiradimi**? 1=I have the right amount of time on this activity – **Ushbu faoliyatga ajratilgan vaqtim miqdori to`g`ri** 2=I wish I had less time to spend on this activity – **Ushbu faoliyatga kamroq vaqt sarflashni hohlayman** 3=I wish I had more time to spend on this activity – **Ushbu faoliyatga ko`proq vaqt sarflashni hohlayman**
1	Own thesis related activities – **Dissertatsiyamga bog`liq faoliyatlar**	1	1		
2	Teaching activities on the subject related to the PhD thesis – **Dissertatsiyamga bog`liq fandan o`qituvchilik (dars berish) faoliyatlari**				
3	Teaching activities on the subject NOT related to the PhD thesis – **Dissertatsiyamga bog`liq bo`lmagan fandan o`qituvchilik (dars berish) faoliyatlari**				
4	Project management activities –**Loyihalarni boshqarish faoliyatlari**				
5	Supervision of students – **Talabalar ilmiy ishiga rahbarlik**				
6	Another research not related to own thesis – **Dissertatsiyaga bog`liq bo`lmagan boshqa tadqiqot**				
7	Non-academic income-related job (private sector, public administration, consultancy, etc) – **Ta`lim berish bilan bog`liq bo`lmagan daromadli ish (xususiy sektor, davlat xizmati, maslahat berish, boshqalar)**		1		

F.3. How do you allocate these hours that you spend on your research thesis – **Dissertatsiayangizga ajratilgan vaqtingizni qanday taqsimlaysiz?**

		Share of time you spend on this activities **– Ushbu faoliyatlarga vaqt sarfini keltiring , %**
1	Reading literature – **Adabiyotlarni o`qish**	
2	Writing own publications and thesis – **Maqolalar va dissertatsiya yo`zish**	
3	Data collection – **Ma`lumot to`plash**	
4	Data management and analysis – **Ma`lumotlarni qayta ishlash va tahlil qilish**	
5	Discussions related to the thesis – **Dissertatsiyaga bog`liq bo`lgan muhokamalar**	
6	Attending thesis-related courses – **Dissertatsiyaga taalluqli darslarga qatnashish**	

*Note - **Izoh**: In total it should sum up to 100%. If some lines are not relevant, please place 0. **– Umumiy summa 100ga teng bo`lishi kerak. Agar ayrim satrlar tegishli bo`lmasa 0 qo`ying.**

G. Supervisor – Ilmiy rahbar

G.1. How many scientific supervisors do you have – **Nechta ilmiy rahbaringiz mavjud?**

G.2. Where does your primary supervisor work – **Birinchi ilmiy rahbaringiz qaerda ishlaydi?**

	Only one answer – **Faqat bitta javob**
At the same organization as me – **Men ishlaydigan tashkilotda**	1
In another university – **Boshqa oliy o`quv yurtida**	2
In another research institute – **Boshqa ilmiy-tadqiqot institutida**	3
In a ministry or another government organization – **Vazirlik va boshqa davlat tashkilotlarida**	4
He is retired (on pension) – **U nafaqaga chiqqan**	5
Other (Specify) – **Boshqa (keltiring)**	6

G.3. How many PhD students does your primary supervisor supervise – **Asosiy ilmiy rahbaringiz nechta PhD tadqiqotchiga rahbarlik qiladi?**

G.4. How often do you meet your supervisor to discuss your thesis related research – **Siz ilmiy rahbaringiz bilan dissertatsiyangizga bog`liq tadqiqotlar muhaokamasi bo`yicha qancha vaqt oralig`ida uchrashib turasiz?**

	Only one answer – **Faqat bitta javob**
Every day – **Har kuni**	1
Several times a week – **Haftasiga bir necha marta**	2
Once a week – **Haftasiga bir marta**	3
More than one a month, but less than 4 times a month – **Oyiga 1 martadan ko`p, ammo 4 martadan kam**	4
Once a month – **Oyiga bir marta**	5
Less than once a month – **Oyiga bir martadan kam**	6
Other (Specify) – **Boshqa (keltiring)**	7

G.5. Please indicate the level of your satisfaction with the the level of supervision you receive – **Iltimos, sizga qilinayotgan rahbarlikdan qoniqishingiz darajasini tasvirlab bersangiz?**

		Applicable-**Taalluqli**=1 Not applicable – **Taalluqli emas**=0	Very dissatisfied – **Juda norozi**	Dissatisfied - **Norozi**	Neither satisfied nor dissatisfied – **Rozi ham emas, norozi ham emas**	Satisfied – **Qoniqarli**	Very satisfied – **Juda yaxshi**
1	Number of meetings with your supervisor – **Rahbaringiz bilan uchrashuvlar soni**		1	2	3	4	5
2	Methodological advice by your supervisor – **Rahbaringizning uslubiy maslahatlari**		1	2	3	4	5

3	Level of supervisor's feedback to my questions – **Savollarimga ilmiy rahbarning javob berish darajasi**		1	2	3	4	5
4	Motivation provided by your supervisor – **Rahbaringiz ilmiy ishinzga sizni qiziqtirish darajasi**		1	2	3	4	5
5	Supervisor's interest in your successful research – **Tadqiqotingizning muvaffaqiyatliligiga rahbaringizning qiziqishi**		1	2	3	4	5

G.6. Do you have foreign supervisor – **Xorijlik ilmiy rahbarga egamisiz?**

Yes - **Ha**	1
No – **Yo`q**	0

G.7. If yes, does your PhD research benefit from having a foreign supervisor – **Agar bo`lsa, xorijlik ilmiy rahbarning PhD tadqiqotlarida foydasi tegayaptimi?**

Yes - **Ha**	1
No – **Yo`q**	0

G.8. If no, would you be interested in having a foreign supervisor – **Agar bo`lmasa, xorijlik ilmiy rahbarga ega bo`lish siz uchun qiziqarlimi?**

Yes - **Ha**	1
No – **Yo`q**	0

G.9. If yes, please rate the reasons of your interest of having a foreign supervisor – **Xorijlik ilmiy rahbarga ega bo'lish sabablarini keltirsangiz?**

		Not important at all – **Umuman muhim emas**	Somehow not important – **Biroz muhim emas**	Neither important nor unimportant – **Ahamiyatsiz ham, muhim ham**	Important – **Muhim**	Very important – **Juda muhim**
1	It will increase my methodological skills – **Bu mening metodologik ko`nikmalarimni rivojlantiradi**	1	2	3	4	5
2	It will improve my English writing and reading skills – **Bu mening ilmiy yozish vao`qish ko`nikmalarimni rivojlantiradi**	1	2	3	4	5
3	It will improve the quality of my PhD dissertation – **Bu dissertatsiyam sifatini oshiradi**	1	2	3	4	5
4	It will improve my chances in publishing in international journals – **Xalqaro jurnallarga maqola chop qilish imkoniyatlarimni oshiradi**	1	2	3	4	5
5	It will bring me better scientific contacts – **Bu menga yaxshiroq ilmiy hamkorlik imkoniyatini yaratadi**	1	2	3	4	5
6	It will raise my motivation and interest in my research – **Bu mening ilmiy ishga bo`lgan qiziqish va motivatsiyamni oshiradi**	1	2	3	4	5

H. Work and research place – Ish va tadqiqot joyi

H.1. Do you have an office where you write your thesis – **Siz dissertatsiayngizni yozish uchun o`z ish xonangizga/ofisga egamisiz?**

Yes - **Ha**	1
No – **Yo`q**	0

H.2. If yes, with how many people do share this office – **Agar mavjud bo`lsa, bu xonada/ofisda necha kishi o`tirasizlar?**

H.3. Do you have an office desk in this office – **Siz ishxonagizda ish stoliga egamisiz?**

Yes - **Ha**	1
No – **Yo`q**	0

H.4. If yes, with how many people do you share this office desk – **Agar mavjud bo`lsa bu ish stolidan necha kishi foydalanasizlar?**

H.5. Where do you mostly write your PhD dissertation – **Siz ko`pincha PhD dissertatsiyangizni qaerda yozasiz?**

	Only one answer – **Faqat bitta javob**
In the office of my organization – **Ishlaydigan tashkilotimdagi xonamda/ofisda**	1
In a library of my organization – **Ishxonamning kutubxonasida**	2
In a library outside of my organization – **Ishxonamdan tashqaridagi kutubxonada**	3
At home – **Uyda**	4
Others (specify) – **Boshqa (keltiring)**	5

H.6. Can you find sufficient literature for your PhD dissertation in a library of your organization – **Ishxonangiz kutubxonasida PhD dissertatsiyangiz uchun kerakli barcha adabiyotlarni topish imkoniyatingiz mavjudmi?**

Yes – **Ha**	1
No – **Yo`q**	0
Not applicable – **Javob imkoniyati yo`q**	99

H.7. Can you find sufficient literature for your thesis in the libraries in Uzbekistan – **Dissertatsiyangiz uchun kerakli adabiyotlarni O`zbekistondagi kutubxonalardan topa olasizmi?**

Yes – **Ha**	1
No – **Yo`q**	0

H.8. Do you have daily access to internet – **Siz uzluksiz internetdan foydalanish imkoniyatiga egamisiz?**

Yes – **Ha**	1
No – **Yo`q**	0

H.9. In your opinion, what other factors contribute to the success of your thesis – **Sizning fikringizcha, dissertatsiyangizning muvaffaqiyatli amalga oshirishga ta`sir ko`rsatuvchi omillar qaysilar?**

		A	B				
		Have you experience this **– Sizda shu imkoniyat mavjudmi**? Yes-**Ha**=1; No-**Yo`q**=0	Evaluate even if the previous question was No –0 **Agar A ustundagi savolga "Yo`q" deb javob bersangiz ham, baholang**				
			Not important at all **– Umuman muhim emas**	Somehow not important **– Unchalik muhim emas**	Neither important nor unimportant **– Muhim ham, ahamiyatsiz ham emas**	Important **– Muhim**	Very important **– Juda muhim**
1	Sufficient time to conduct research – **Tadqiqotni amalga oshirish uchun yetarlicha vaqt**		1	2	3	4	5
2	Strong and motivated supervisor – **Kuchli va qiziqtiruvchi ilmiy rahbar**		1	2	3	4	5
3	Sufficient expert available at your work to help you with your research problem – **Ishxonangizda tadqiqot muammosi bo`yicha yordam berish imkoniyatiga ega ekpertlarning yetarliligi**		1	2	3	4	5
4	Regular meetings with other PhD students about my research **– Tadqiqot mavzusiga doir boshqa PhD tadqiqotchilar bilan doimiy uchrashuvlarning bo`lib turishi**		1	2	3	4	5
5	Being a part of a research group in a project – **Bir loyihada ilmiy guruh a`zosi bo`lish**		1	2	3	4	5
6	Good access to international journals that are relevant to my research – **Tadqiqot mavzuga doir xalqaro jurnallardan foydalanish imkoniyatining mavjudligi**		1	2	3	4	5
7	Good support by my institute during the data collection and field experiments – **Tashkilotim tomonidan ma`lumot yig`ish va dala tajribalarini o`tkazishda yaxshi qo`llab-quvvatlanish**		1	2	3	4	5
8	Availability of own research budget – **Ilmiy tadqiqot byudjetining yetarliligi**		1	2	3	4	5
9	Mobility and research stays abroad – **Xorijga chiqish va tadqiqot olib borish imkoniyati**		1	2	3	4	5

10	One of the supervisors is foreign professor – **Bitta ilmiy rahbarning xorijiy professor bo`lishi**		1	2	3	4	5
11	Participation in international conferences – **Xalqaro konferensiyalarda ishtirok etish**		1	2	3	4	5
12	Availability of training courses on relevant methods for PhD students – **PhD studentlar kerakli metodlar bo`yicha o`quv kurslarining mavjudligi**		1	2	3	4	5
13	Own individual office – **Alohida ish xonasiga/ofisga ega bo`lish**		1	2	3	4	5
14	Good internet access at office – **Ish xonasida/ofisda yaxshi internetga ega bo`lish**		1	2	3	4	5

H.10. In general how satisfied are you with the following? - **Umuman, quyidagi bilan sizning qoniqarligizni baholang.**

		Very dissatisfied – **O`ta qoniqarsiz**	Dissatisfied – **Qoniqarsiz**	Neither satisfied nor dissatisfied – **Qoniqarli ham qoniqarsiz ham deb bo`lmaydi**	Satisfied – **Qoniqarli**	Very satisfied – **Juda qoniqarli**
1	Sufficient time to conduct research – **Tadqiqotni amalga oshirish uchun yetarlicha vaqt**	1	2	3	4	5
2	Strong and motivated supervisor – **Kuchli va qiziqtiruvchi ilmiy rahbar**	1	2	3	4	5
3	Sufficient expert available at your work to help you with your research problem – **Tadqiqot muammosi bo`yicha yordam berish imkoniyatiga ega ekpertlarning yetarliligi**	1	2	3	4	5
4	Regular meetings with other PhD students about my research – **Tadqiqot mavzusiga doir boshqa PhD tadqiqotchilar bilan doimiy uchrashuvlarning bo`lib turishi**	1	2	3	4	5
5	Being a part of a research group in a project – **Bir loyihada ilmiy guruh a`zosi bo`lish**	1	2	3	4	5
6	Good access to international journals that are relevant to my research – **Tadqiqot mavzuga doir xalqaro jurnallardan foydalanish imkoniyatining mavjudligi**	1	2	3	4	5
7	Good support by my institute during the data collection and field experiments – **Tashkilotim tomonidan ma`lumot yig`ish va dala tajribalarini o`tkazishda yaxshi qo`llab-quvvatlanish**	1	2	3	4	5
8	Availability of own research budget – **Ilmiy tadqiqot byudjetining yetarliligi**	1	2	3	4	5

9	Mobility and research stays abroad – **Xorijga chiqish va tadqiqot olib boorish imkoniyati**	1	2	3	4	5
10	One of the supervisors is foreign professor – **Bitta ilmiy rahbarning xorijiy professor bo`lishi**	1	2	3	4	5
11	Participation in international conferences – **Xalqaro konferensiyalarda ishtirok etish**	1	2	3	4	5
12	Availability of training courses on relevant methods for PhD students – **PhD studentlar kerakli metodlar bo`yicha o`quv kurslarining mavjudligi**	1	2	3	4	5
13	Own individual office – **Alohida ish xonasiga/ofisga ega bo`lish**	1	2	3	4	5
14	Good internet access at office – **Ish xonasida/ofisda yaxshi internetga ega bo`lish**	1	2	3	4	5

I. Training courses – O`quv kurslari

I.1. Is it easy to find training courses on methods relevant for your research – **Tadqiqotingiz metodlariga taalluqli bo`lgan o`quv kurslarini topish osonmi?** And did you attend the following training courses during last two years – **So`nggi ikki yilda quyidagi o`quv kurslarida ishtirok etdingizmi?**

		A	B
		Is it easy to find the following training courses **– Quyidagi o`qish kurslarini topish osonmi** - ? Yes-**Ha**=1; No-**Yo`q**=0; Not relevant **Taalluqli emas** = 99	Did you attend the following training courses during last two years **– So`nggi ikki yilda Quyidagi o`quv kurslarida qatnashganmisiz**? Yes-**Ha**=1 ; No-**Yo`q**=0; Not relevant **– Taalluqli emas** = 99
1	Thesis related theoretical courses **– Mavzuga doir nazariy kurslar**		
2	Thesis related methods (econometrics, statistics, cost-benefit analysis, math programming etc) **– Mavzuga doir metodlar (ekonometrika, statistika, foyda-xarajatlar tahlili, matematik dasturlash va boshqalar)**		
3	Research design and Organization of field work – **Tadqiqot dizayni va dala tajribalari tashkil qilish metodlari**		
4	Academic writing – **Ilmiy yozish**		
5	Teaching skills **– O`qituvchilik/dars berish malakasi**		

I.2. Please rate your competencies in the following areas related to your thesis – **Iltimos, mavzungiz doirasida quyidagilar bo`yicha o`zingizning malakangiz darajasini baholang:**

		Very low **– Juda past**	Low - **Past**	Neither low nor high **– Past ham yuqori ham emas**	High - **Yuqori**	Very high **– Juda yuqori**
1	Thesis related theory **– Dissertatsiyaga doir nazariya**	1	2	3	4	5
2	Thesis related methods **– Dissertatsiyaga doir metodlar**	1	2	3	4	5
3	Research design and Organization of field work **–Tadqiqot dizayni va dala tadqiqotlarini tashkil qilish metodlari**	1	2	3	4	5
4	Academic writing **– Ilmiy yozish**	1	2	3	4	5
5	Teaching skills **– O`qituvchilik/dars berish malakasi**	1	2	3	4	5

I.3. Please rate your satisfaction with level of training you receiving during your PhD research time – **Iltimos, PhD tadqiqotlaringiz vaqtida siz qatnashgan o`quv kurslaridan qoniqishingiz darajasini baholang:**

		A	B				
		Applicable - **Qatnashgan**=1 Not applicable- **Qatnashmagan**=0	Very dissatisfied – **Umuman qoniqarsiz**	Dissatisfied - **Qoniqarsiz**	Neither satisfied nor dissatisfied – **Qoniqarli ham qoniqarsiz ham emas**	Satisfied - **Qoniqarli**	Very satisfied – **Juda qoniqali**
1	Thesis related theory **– Mavzuga doir nazariya**		1	2	3	4	5
2	Thesis related methods **– Mavzuga doir metodlar**		1	2	3	4	5
3	Research design and Organization of field work **–Tadqiqot dizayni va dala tajribalarini tashkil qilish metodlari**		1	2	3	4	5
4	Academic writing **– Ilmiy yozish**		1	2	3	4	5
5	Teaching skills **– O`qituvchilik/dars berish malakasi**		1	2	3	4	5

I.4. Please rate your interest in attending the listed courses for your PhD research – **PhD tadqiqotlaringiz davomida qatnashishmoqchi bo`lgan kurslaringizga qiziqish darajangizni baholang**

		Not interested at all – **Umuman qiziqarsiz**	Not interested - **Qiziqarsiz**	No opinion – **Fikr yo`q**	Slightly interested – **Past qiziqarli**	Very interested – **Juda qiziqarli**
1	Courses on Thesis related theoretical courses **– Mavzuga doir nazariya bo`yicha kurslar**	1	2	3	4	5
2	Courses on Thesis related methods (econometrics, statistics, cost-benefit analysis, math programming etc) **– Mavzuga doir metodlar bo`yicha kurslar (ekonometrika, statistika, foyda-xarajatlar tahlili, matematik dasturlash va boshqalar)**	1	2	3	4	5
3	Courses on Research design and Organization of field work **– Tadqiqot dizayni va dala tajribalarini tashkil qilish bo`yicha kurslar**	1	2	3	4	5
4	Courses on Academic writing in English **– Ilmiy yozish bo`yicha ingliz tilidagi kurslar**	1	2	3	4	5
5	Courses on Teaching skills **– O`qituvchilik/dars berish malakasi bo`yicha kurslar**	1	2	3	4	5

J. Future career – Kelgusidagi karera

J.1. What are two most preferred work places for you after receiving PhD degree – **PhD darajani olganingizdan keyin Siz afzal ko`radigan ikkita ish joylari qaysilar?**

	Select one answer – **Har ustun uchun bitta javob tanlang**	
	A	B
	1st Most preferred **– 1 Darajali**	2nd most preferred **– 2 Darajali**
Teaching/lecturing position at university **– Oliy o`quv yurtida dars berish**	1	1
Research position at university/institute – **Oliy o`quv yurti/ilmiy tadqiqot institutida ilmiy tadqiqotchi bo'lib ishlash**	2	2
Administrative position at university/institute - **Oliy o`quv yurti/ilmiy tadqiqot institutida ma'muriy lavozimida ishlash**	3	3
Work at a ministry / public administration **– Vazirlik/davlat boshqaruv tashkilotlarida ishlash**	4	4
Work at state enterprises – **Davlat korxonalarida ishlash**	5	5
Consultancy / Freelancer – **Maslahatchi/ shtatsiz xodim**	6	6
Work in a farm in agriculture – **Fermer xo`jaligida ishlash**	7	7
Go to work at private company (firm) **– Xususiy kompaniya (firma)da ishlashga ketish**	8	8
Establish own private business **– Xususiy biznesimni tashkil qilaman**	9	9
Apply for a post-doc fellowship abroad **– Xorijiy mamlakatga post-doc tadqiqotiga topshiraman**	10	10
Other (Specify) – **Boshqa (keltiring)**	11	11

J.2. Please rate the importance of the listed factors for your career after receiving PhD – **Iltimos, PhD darajasini olgandan keyingi karerangizda quyidagi omillarning muhimlik darajasini baholang?**

		Not important at all **– Umuman muhim emas**	Somehow not important **– Biroz muhim emas**	Neither important or unimportant – **Ham muhim, ham ahamaiyatsiz**	Important **– Muhim**	Very important **– Juda muhim**
1	Receiving a PhD degree itself **– Egallangan PhD darjasining o`zi**	1	2	3	4	5
2	Quality of PhD thesis and final grade – **PhD dissertatsiyasining sifati va yakuniy baho**	1	2	3	4	5
3	Theoretical knowledge I learned during my PhD – **PhD tadqiqotlari davomida egallangan nazariy bilimlar**	1	2	3	4	5
4	Analytical skills that I advanced during my PhD – **PhD tadqiqotlari davomida rivojlantirilgan tahliliy ko`nikmalar**	1	2	3	4	5
5	Quality of publications originating from my PhD research – **PhD tadqiqotlari natijalari bo`yicha chop qilingan maqolalar/ nashrlar sifati**	1	2	3	4	5

6	New networks I obtained during my PhD – **PhD tadqiqotlari davomida egallangan yangi aloqalar**	1	2	3	4	5
7	Participation in international conferences – **Xalqari konferensiyalarda qatnashish**	1	2	3	4	5
8	Good relationship with my supervisor – **Ilmiy rahbarim bilan yaxshi aloqalar**	1	2	3	4	5
9	Experience of research environment abroad via mobility – **Mobillik asosida egallangan xorijiy ilmiy muhit tajribalari**	1	2	3	4	5

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