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МРНТИ 06.78.51
УДК 330.34

DOI 10.58319/26170493_2026_2_132

INSTITUTIONAL ECONOMICS OF DOCTORAL EDUCATION AND HUMAN CAPITAL

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ABSTRACT. Doctoral education is a vital mechanism for strengthening research potential and developing highly qualified human capital. Although the doctoral experience has attracted considerable scholarly attention, the ways in which the institutional environment interacts with individual characteristics to shape researcher development remain understudied, particularly in hybrid academic settings that combine international and local educational traditions.

This research examines the institutional and individual determinants of researcher development during doctoral studies. Using a qualitative, multivariate research design, the study examines two disciplinary contexts at Nazarbayev University. Empirical data were collected through semi-structured interviews with doctoral students and supplemented by an analysis of institutional documents to provide contextual depth and support data triangulation.

The results demonstrate that researcher development is influenced by organizational and individual factors. Institutional factors including program structure, academic supervision practices, institutional support, support systems, and peer engagement shape the developmental conditions in which research competencies are acquired. At the individual level, motivation, prior academic experience, research activity, and student autonomy determine the extent to which PhD candidates can utilize these opportunities and benefit from them.

While contextual differences exist across disciplinary environments, the underlying mechanisms driving researcher development demonstrate a high degree of consistency across contexts.

This study contributes to literature by offering an integrated framework that views researcher development as the result of the interaction between institutional structures and individual activity. Furthermore, it enriches existing understandings of doctoral education in hybrid academic environments by providing empirical evidence from a context where internationally oriented academic standards coexist with locally rooted institutional characteristics.

KEYWORDS: doctoral education, researcher development, human capital development, individual factors, academic socialization, qualitative case study.

Институциональная экономика докторского образования и человеческий капитал

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АННОТАЦИЯ. Докторантура представляет собой важнейший механизм укрепления исследовательского потенциала и развития высококвалифицированного человеческого капитала. Несмотря на то, что докторантура привлекает значительное внимание ученых, взаимодействие институциональной среды с индивидуальными характеристиками, влияющее на развитие исследователей, остается недостаточно изученным, особенно в гибридных академических условиях, сочетающих международные и местные образовательные традиции.

В данном исследовании изучаются институциональные и индивидуальные детерминанты развития исследователей в докторантуре. Используя качественный метод исследования на основе множественных кейсов, исследование рассматривает два дисциплинарных контекста в Назарбаевском университете. Эмпирические данные собраны посредством полуструктурированных интервью с докторантами и дополнены анализом институциональных документов для обеспечения контекстной глубины и поддержки триангуляции данных.

Результаты показывают, что развитие исследователей происходит под совокупным влиянием организационных и индивидуальных факторов. Институциональные элементы, включая структуру программы, практику научного руководства, системы институциональной поддержки и взаимодействие с коллегами. Создают условия, в которых приобретаются исследовательские компетенции. На индивидуальном уровне мотивация, предыдущий академический и исследовательский опыт, а также самостоятельность студента определяют, насколько докторанты способны использовать эти возможности и извлекать из них пользу. Хотя в различных дисциплинарных средах наблюдаются определенные контекстуальные различия, основные механизмы, определяющие развитие исследователей, демонстрируют высокую степень согласованности в разных случаях.

Данное исследование вносит вклад в литературу, предлагая интегрированную концепцию развития исследователей как результат взаимодействия институциональных структур и индивидуальной самостоятельности. Кроме того, исследование обогащает существующее понимание докторского образования в гибридных академических средах, предоставляя эмпирические данные из контекста, где международно-ориентированные академические стандарты сосуществуют с местными институциональными характеристиками.

КЛЮЧЕВЫЕ СЛОВА: докторантура, развитие исследователей, развитие человеческого капитала, индивидуальные факторы, академическая социализация, качественное исследование кейс-стади.

Докторантура білімінің институционалдық экономикасы және адам капиталы

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АНДАТПА. Докторлық білім беру зерттеу әлеуетін нығайту және озық адами капиталды дамытудың маңызды тетігі болып табылады. Докторлық тәжірибе ғалымдардың назарын аударғанымен, институционалдық ортаның зерттеушілердің дамуын қалыптастыру үшін жеке сипаттамалармен өзара әрекеттесу жолдары, әсіресе халықаралық және жергілікті білім беру дәстүрлерін біріктіретін аралас академиялық ортада, жеткілікті зерттелмеген.

Бұл зерттеу докторлық білім берудегі зерттеушілердің дамуының институционалдық және жеке детерминанттарын зерттейді. Зерттеу Назарбаев Университетіндегі екі пәндік контекстті зерттейді. Эмпирикалық дәлелдер докторанттармен жартылай құрылымдалған сұхбаттар арқылы жиналды және контекстік тереңдікті және деректерді триангуляциялауды қолдау үшін институционалдық құжаттарды талдаумен толықтырылды.

Нәтижелері зерттеушінің дамуы ұйымдастырушылық және жеке факторлардың бірлескен әсері арқылы жүзеге асырылатынын көрсетеді. Бағдарлама құрылымын, жетекшілік тәжірибелерін, институционалдық қолдау жүйелерін және әріптестермен өзара әрекеттесуді қоса алғанда, институционалдық элементтер зерттеу құзыреттіліктерінің қалыптасу жағдайларын белгілейді. Жеке деңгейде мотивация, алдыңғы академиялық және зерттеу тәжірибесі және студенттік агенттік докторанттардың осы мүмкіндіктерге қаншалықты қатыса алатынын және олардан қаншалықты пайда көре алатынын анықтайды. Тәртіптік орта белгілі бір контекстік айырмашылықтарды көрсеткенімен, зерттеушінің дамуын қозғайтын негізгі механизмдер істер бойынша жоғары дәрежедегі сәйкестікті көрсетеді.

Зерттеу зерттеушінің дамуын институционалдық құрылымдар мен жеке агенттіктер арасындағы өзара әрекеттесудің нәтижесі ретінде тұжырымдайтын интеграцияланған құрылымды дамыту арқылы әдебиетке үлес қосады. Сонымен қатар, ол халықаралық бағытталған академиялық стандарттар жергілікті институционалдық сипаттамалармен қатар өмір сүретін контекстен эмпирикалық дәлелдер келтіру арқылы гибриді академиялық ортадағы докторлық білім берудің қазіргі түсінігін байытады.

КІЛТ СӨЗДЕР: докторантурада білім беру, зерттеушілерді дамыту, адами капиталды дамыту, жеке факторлар, академиялық әлеуметтену, сапалы кейс-стади

INTRODUCTION. Doctoral education plays an important role in the development of the knowledge economy, as it contributes to the training of highly qualified specialists and the strengthening of the country's research potential. In doctoral programs, students not only master modern scientific achievements, but also contribute to the creation of new knowledge through independent research. As universities increasingly focus on research and innovation, doctoral education is becoming a key factor determining their academic reputation and competitiveness.

In recent years, interest in research on doctoral educa-

tion has grown significantly. Some studies have focused on issues of academic socialization and the development of a research personality among young scientists, while others have examined the institutional conditions that influence success and scientific productivity in doctoral studies. Researchers have examined a variety of factors, such as university support, interaction with the scientific community, doctoral students' motivation, and their previous research experience.

Despite the significant volume of research, most analyze individual factors in isolation, which hinders a full understanding of how doctoral education contributes to

the development of research competencies and human capital [1]. This issue is particularly relevant for higher education systems that are evolving under the influence of international academic standards and national characteristics.

The effectiveness of doctoral programs depends not only on formal educational requirements, but also on a wide range of factors. These include government support for research, the availability of research opportunities, the quality of academic supervision, and the willingness of doctoral students to actively participate in research. Therefore, the development of a researcher can be viewed not as the result of any single factor, but as the result of the interaction between the institutional environment and the individual characteristics of the student [2].

Based on this, this study aims to investigate how institutional and personal factors influence the development of doctoral students' research potential. Doctoral studies are considered not only as another level of higher education, but also as an environment in which professional research competencies, scientific thinking and the ability to create new knowledge are formed. It is during this period that the transition from mastering existing scientific methods to conducting independent research and entering the academic community takes place.

The research question is aimed at the following issues: what institutional and personal factors have the greatest impact on the development of researchers during doctoral studies? To answer this question, doctoral studies are considered as a unique educational and research environment in which the development of future researchers is influenced by both the characteristics of the academic environment and the personal resources of the student.

The study suggests that the development of research competencies cannot be explained solely by the quality of the educational program or the individual characteristics of the doctoral student. Their interaction plays an important role. On the one hand, the university creates conditions for scientific work through research infrastructure, academic supervision, academic networks and support mechanisms. On the other hand, the effectiveness of these opportunities depends on the motivation, research experience, level of independence, and willingness of the doctoral student to actively participate in research. Even in a supportive academic environment, outcomes can vary significantly, as some students adapt more quickly to the research culture and use the available resources, while others encounter difficulties along the way.

This approach allows us to view research readiness as a dynamic process that develops at the intersection of institutional context and individual engagement. This is especially important for understanding that identical educational conditions do not always lead to identical outcomes in the development of research competencies.

The empirical basis of the study is data obtained in a hybrid academic environment, where international requirements for research readiness are combined with local educational practices and institutional characteristics. Analyzing this context allows us to expand existing understandings of research development, which to date have been based mainly on data from Western universities. The results obtained may be useful both for the further development of doctoral research and for the improvement of doctoral training programs aimed at strengthening the research capacity of universities and developing human capital.

MATERIAL AND METHODS OF RESEARCH. The research used a qualitative approach because researcher development is a complex and multifaceted process that cannot be fully described by quantitative indicators alone.

The development of research competencies is not only related to academic results or publication activity, but also to the daily experiences of doctoral students, their supervisors, colleagues, and the academic community. Therefore, it is important to explore the personal stories, perceptions, and explanations of those involved in the educational process to understand how researchers develop.

The study used a comparative case study format and included two academic schools at Nazarbayev University: the Graduate School of Education and the School of Engineering and Digital Sciences. The choice of department was due to the intention to study the development of researchers in different disciplinary contexts. Doctoral studies in education and engineering are based on different research traditions, forms of scientific collaboration, and ways of organizing research. This allowed us not only to identify the specifics of each context, but also to identify important factors regardless of the discipline.

Nazarbayev University is of particular interest for this study. On the one hand, the university adheres to international standards of research training and is actively integrated into the global academic space. On the other hand, it operates within the national higher education system and interacts with its institutional characteristics. This combination makes the university a unique platform where international academic practices and local educational realities intersect. It is in these cases that the influence of both the institutional environment and the individual strategies of doctoral students is clearly visible.

The main method of data collection was semi-structured interviews, which allowed us to assess the participants' experiences, their perceptions of doctoral education, and the factors that influence their research development. Particular attention was paid to how doctoral students perceive the available opportunities, what resources they consider most important, and what challenges they face in their studies and research.

Internal university documents, including doctoral program guidelines, regulatory documents, and policy materials, were also analyzed to better understand the context under study. This analysis allowed us to compare the formally stated goals and mechanisms of research teaching with how they were implemented and perceived by participants in practice.

Data processing was carried out according to the qualitative case study methodology of R. In [4]. In the first stage, open coding of interviews was carried out to identify recurring themes and patterns. During the analysis, special attention was paid to the issues of institutional support, the role of academic leadership, interaction with the academic community, motivation for research, previous experience and the level of autonomy of doctoral students. Subsequently, analysis was carried out both within and between cases, which allowed us to identify common mechanisms of research development, while simultaneously identifying differences due to the specificity of the discipline.

Particular attention was paid to ensuring the quality of the research. To increase the reliability of the results, data triangulation was used, involving multiple sources of information. All stages of data collection and analysis were documented, which ensured the transparency of the research process and the possibility of monitoring the logic of the conclusions reached. Participation in the study was voluntary. All respondents provided informed consent prior to the interview, and the data obtained were anonymized to ensure confidentiality and protect personal data.

The research design of this article allowed us to identify factors that influence the development of doctoral stu-

dents and to understand the mechanisms by which these factors influence their impact.

RESULTS AND THEIR DISCUSSION. The findings indicate that researcher development during doctoral training is shaped by the combined influence of institutional arrangements and individual characteristics. Although these dimensions can be discussed separately for analytical purposes, interview participants consistently described them as inseparable in their day-to-day doctoral experience. Their accounts suggest that the development of research competence, the formation of an academic identity, and integration into scholarly communities evolve through the interaction of both dimensions rather than through the effect of either one alone.

To facilitate interpretation, the findings are presented under two broad categories: institutional determinants and individual determinants. This distinction is analytical rather than absolute. Doctoral education operates as a system in which organizational structures create learning opportunities, while students' motivation, previous experience, and personal engagement determine how these opportunities are translated into research capability and professional growth.

Across both cases, respondents repeatedly emphasized that institutional support alone does not guarantee successful researcher development. Likewise, personal motivation cannot fully compensate for weak organizational conditions. Instead, doctoral progress emerged from the continuous interaction between institutional opportunities and students' ability to recognize, use, and expand them throughout their studies.

Among the institutional factors identified, the overall structure of the doctoral program was mentioned most frequently. Participants viewed the gradual transition from coursework to proposal preparation and dissertation research as a logical sequence that enabled them to build confidence and progressively assume responsibility for independent scholarly work. Many described proposal development as a decisive stage in their doctoral journey because it required them to formulate original research questions, defend methodological choices, and begin making independent academic decisions rather than relying primarily on supervisory guidance.

Academic supervision emerged as another central component of researcher development in both academic units. Participants rarely viewed supervisors solely as methodological advisors. Instead, they described them as intellectual mentors who challenged ideas, provided constructive feedback, encouraged independent thinking, and supported professional growth throughout the doctoral journey. Students who reported regular and productive interaction with their supervisors also described greater confidence in conducting research, clearer academic goals, and a stronger sense of belonging within the research community. These accounts suggest that effective supervision contributes not only to scientific competence but also to the development of professional identity and long-term academic engagement.

Institutional support extended well beyond formal supervision. Respondents emphasized the importance of access to research laboratories, digital resources, financial support, administrative assistance, and well-defined academic procedures. According to participants, these institutional resources reduced uncertainty, simplified navigation through program requirements, and allowed them to devote more attention to research activities. By contrast, limited access to institutional support often delayed research progress, increased administrative burden, and narrowed opportunities for academic development.

From the authors' perspective, these findings demon-

strate that universities foster researcher development not only through curriculum design or formal training requirements but also by creating an institutional environment that promotes confidence, sustained engagement, and increasing scholarly independence. The quality of the surrounding academic ecosystem appears to shape how effectively doctoral students transform available resources into research competence.

The social dimension of doctoral education also emerged as an important element of researcher development. Participants consistently highlighted the value of interactions with peers, describing them as a source of intellectual exchange, collaborative learning, constructive feedback, and emotional support. Informal discussions with fellow doctoral students frequently complemented formal supervision by creating opportunities to test ideas, share experiences, and address common research challenges. These interactions contributed to a stronger sense of academic belonging and reduced the isolation often associated with doctoral study.

Interactions with fellow doctoral students emerged as another important source of researcher development. Interview participants described peer communication as extending well beyond informal social contact. Discussions with colleagues provided opportunities to exchange practical advice, compare research experiences, solve methodological problems, and receive feedback that was often unavailable through coursework or formal supervision. For many participants, these interactions became an important mechanism of informal learning, strengthening both research competence and confidence in conducting independent scholarly work.

Researcher development was not confined to the formal structures of the university. Participants frequently referred to conferences, disciplinary associations, research seminars, and professional academic networks as environments that broadened their understanding of contemporary research practice. Exposure to wider academic communities familiarized doctoral students with disciplinary standards, current scientific debates, and diverse approaches to conducting research. Equally important, these experiences contributed to the formation of their professional identity and helped them see themselves as members of an international scholarly community rather than solely as doctoral students within a single institution.

In the authors' view, these findings highlight that researcher development is cumulative in nature. Formal supervision, institutional resources, peer learning, and participation in the broader academic community reinforce one another. None of these elements appeared sufficient in isolation; together they created conditions that encouraged intellectual independence, continuous learning, and sustained academic growth.

Alongside institutional influences, the interviews revealed several individual characteristics that shaped doctoral trajectories. Three dimensions were particularly prominent across participants' accounts: intrinsic motivation, previous academic and research experience, and personal agency in managing the doctoral journey.

Intrinsic motivation consistently distinguished students who engaged more actively with research. Participants who expressed strong internal interest in their research topics were more likely to devote additional time to independent reading, seek regular feedback, participate in academic events, and pursue opportunities for professional development beyond mandatory program requirements. Their narratives suggest that motivation influenced not only the intensity of engagement with doctoral study but also the pace at which research competencies developed.

Previous academic preparation also affected the transi-

tion into doctoral education. Respondents with earlier research experience generally described a smoother adaptation to doctoral-level expectations. They reported greater confidence in designing studies, selecting appropriate methodologies, and managing research tasks during the initial stages of the program. By contrast, participants entering doctoral study with limited research experience often required additional time to develop methodological competence and become comfortable with the expectations of an intensive research environment.

Another theme that emerged consistently from the interviews was student agency. Participants who actively sought research opportunities, established professional networks, initiated collaboration with faculty and peers, and assumed responsibility for their own academic progress appeared to benefit more fully from the resources available within the university. Simply having access to institutional support was not sufficient; what distinguished more successful doctoral trajectories was the ability to recognize available opportunities and translate them into meaningful academic experience.

From the authors' perspective, this finding represents one of the central contributions of the study. Institutional support creates the conditions for researcher development, but these conditions become effective only when students actively engage with them. Researcher development therefore should be understood as a dynamic process shaped jointly by institutional context and individual initiative rather than by either dimension independently.

The interview findings indicate that institutional support, although essential, does not by itself ensure successful researcher development. Its contribution depends largely on whether doctoral students are willing and able to engage with the opportunities available to them. Access to resources, academic guidance, and organizational support creates favourable conditions for learning, but these conditions produce different outcomes depending on how students respond to them.

A consistent pattern across both cases was the close interdependence of institutional and individual influences. Rather than operating as separate determinants, they shaped researcher development through continuous interaction throughout the doctoral journey. The university provided the academic infrastructure, research opportunities, and support mechanisms, whereas individual characteristics determined how effectively these resources were recognized, interpreted, and transformed into research competence.

Participants' experiences demonstrated that similar institutional conditions could lead to markedly different developmental trajectories. Students with stronger intrinsic motivation, greater confidence, previous research experience, and a proactive approach generally described richer learning experiences and greater progress in developing as independent researchers. Many participants explained that they were able to overcome certain institutional constraints by actively seeking feedback, expanding professional networks, and making purposeful use of the resources available to them.

By contrast, respondents who engaged less actively with the academic environment did not always benefit fully from the support provided by the university. Access to institutional resources alone was therefore insufficient to promote researcher development. What appeared to matter most was the combination of supportive institutional conditions and students' own initiative.

From the authors' perspective, this interaction represents one of the principal findings of the study. Researcher development should not be viewed as the direct outcome of institutional arrangements or individual char-

acteristics considered independently. Instead, it emerges through the dynamic relationship between the educational environment and students' active participation in it. This interpretation reinforces the human capital perspective adopted in the study, according to which universities create the conditions for developing research capacity, while individual agency determines how effectively those conditions are converted into professional knowledge, skills, and academic identity.

The institutional and individual determinants identified through the analysis, together with their respective roles in researcher development, are summarized in Table 1.

Table 1 - Institutional and individual factors influencing researcher development

Nº	Category	Factor	Role in Development
1	Institutional	Program structure	Defines progression logic
2	Institutional	Supervision	Shapes research direction
3	Institutional	Institutional support	Reduces uncertainty
4	Institutional	Peer environment	Facilitates integration
5	Institutional	Professional engagement	Expands academic exposure
6	Individual	Motivation	Drives engagement
7	Individual	Prior experience	Influences adaptation
8	Individual	Agency	Determines use of opportunities

Note: compiled by the author

The findings demonstrate that researcher development during doctoral education is shaped by the continuous interaction between institutional support and individual initiative. Universities provide the academic infrastructure, organizational arrangements, and social environment necessary for doctoral training, yet participants' experiences indicate that these conditions alone do not determine developmental outcomes. Equally important is the extent to which doctoral students actively engage with the opportunities available to them, seek feedback, establish professional relationships, and take responsibility for their own scholarly progress.

Across both cases, participants consistently described researcher development as a process built through the combination of institutional support and personal effort. Access to resources, supervision, and academic networks created favourable conditions for learning, but the benefits varied considerably depending on students' motivation, previous experience, confidence, and willingness to engage with the academic community. In the authors' view, this finding reinforces the idea that doctoral education should be understood as a dynamic partnership between universities and doctoral candidates rather than as a process driven exclusively by institutional provision or individual ability.

The evidence also aligns with previous research portraying doctoral development as a complex and context-dependent process. Participants described diverse developmental trajectories shaped by disciplinary traditions, academic environments, and personal circumstances, indicating that there is no single pathway through doctoral education. These observations closely correspond with Xu [5], who conceptualizes research identity as an evolving construct that develops through continuous adaptation to changing academic contexts.

A similar perspective is offered by Choi et al. [6], whose work illustrates how doctoral students negotiate multi-

ple academic, professional, and personal responsibilities throughout their studies. The interview data collected in the present study support this interpretation. Participants frequently referred to the need to balance research activities with teaching responsibilities, employment, family commitments, and other professional obligations, all of which influenced the pace and character of their academic development.

The importance of institutional context identified in this study is also consistent with the findings of Wofford and Blainey [7], who emphasize the role of local academic culture in doctoral socialization. Our results extend this argument by showing that institutional culture alone does not explain differences in researcher development. Similar organizational conditions produced different outcomes depending on how students interpreted available opportunities and the extent to which they engaged with them. From the authors' perspective, this interaction between institutional context and individual agency represents one of the principal mechanisms through which research competencies and academic identity are formed during doctoral education.

Taken together, the findings suggest that researcher development cannot be explained through institutional or individual factors considered in isolation. Rather, it emerges through their ongoing interaction, with universities providing the necessary conditions for learning while doctoral students actively shape their own developmental trajectories. This interpretation is consistent with the human capital perspective adopted in the study and highlights the importance of creating doctoral environments that combine strong institutional support with opportunities for independent scholarly engagement.

The present study underscores the central role of institutional conditions in shaping researcher development during doctoral education. Interview evidence suggests that program organization, supervisory relationships, peer interactions, and access to institutional resources should not be viewed as isolated components of doctoral training. Participants consistently described these elements as mutually reinforcing, creating an academic environment that supported the gradual development of research competence, strengthened academic identity, and encouraged increasing independence in scholarly work.

From the authors' perspective, one of the key insights emerging from the study is that doctoral education is not solely an individual learning process. Rather, it represents an organizational system in which the quality of institutional support substantially influences how doctoral students develop as researchers. Institutional arrangements may either facilitate or constrain this process depending on how effectively different forms of academic support are integrated within the doctoral program.

These findings are consistent with those reported by Wang et al. [8], who identified institutional support, program organization, and supervisory relationships as important contributors to doctoral success. The interview data collected in the present study further suggest that these elements generate the greatest benefit when they operate as an integrated system rather than as separate institutional initiatives. Participants frequently noted that high-quality supervision was considerably more effective when accompanied by access to research infrastructure, funding opportunities, administrative support, and a collaborative academic culture. Conversely, institutional resources alone were perceived as less valuable when students lacked regular guidance, constructive feedback, or meaningful interaction with supervisors.

In the authors' opinion, these findings have important implications for the design of doctoral programs. Im-

proving individual components in isolation is unlikely to produce substantial changes in doctoral outcomes. More sustainable improvements are likely to emerge when universities coordinate supervision, research training, institutional services, and opportunities for scholarly collaboration within a coherent support system.

The interviews also reinforced the importance of supervisory relationships. Participants consistently portrayed supervisors as playing a much broader role than providing methodological or technical advice. Effective supervisors acted as intellectual mentors who challenged assumptions, encouraged critical thinking, offered constructive feedback, and supported students' professional development throughout different stages of the doctoral journey [9]. These accounts indicate that supervision contributes simultaneously to the development of research competence, academic confidence, and professional identity.

The findings further suggest that institutional factors should be understood as components of a broader academic ecosystem rather than as independent determinants of doctoral success. Their influence depends not only on the quality of individual support mechanisms but also on how effectively these mechanisms complement one another. From this perspective, the effectiveness of doctoral education reflects the degree of alignment between curriculum design, supervision, institutional infrastructure, administrative processes, and opportunities for academic engagement. This interpretation is consistent with the argument that doctoral education functions as a coordinated institutional process requiring continuous adaptation and integration across multiple areas of support [10].

The practical implications of the research are directly relevant for universities seeking to strengthen research capacity and develop highly qualified human capital. The findings indicate that investments in high-quality supervision, structured research training, accessible institutional services, and collaborative academic environments can substantially improve doctoral learning experiences. At the same time, the interview evidence suggests that institutional initiatives are most effective when they also encourage student autonomy, initiative, and active participation in research activities. Simply providing resources is insufficient if doctoral candidates do not possess the confidence, motivation, or opportunities required to make effective use of them.

In the authors' view, researcher development should therefore be regarded as a shared responsibility between universities and doctoral students. Universities create the institutional conditions that enable learning and scholarly growth, while doctoral candidates determine how those opportunities are transformed into research competence, professional identity, and long-term academic capacity. This conclusion also reinforces the human capital perspective underpinning the study, according to which investments in institutional quality generate sustainable outcomes only when accompanied by active student engagement and individual agency [11].

CONCLUSION. This research examined how institutional and individual factors shape the development of researchers in doctoral education from a human capital perspective. The results demonstrate that doctoral development depends on the interaction of organizational conditions and management. Rather than on any single factor or isolation. Institutional mechanisms create opportunities for academic growth, while individual characteristics determine how effectively these opportunities are utilized.

The analysis identified two closely connected groups of factors that shape researcher development during doc-

toral education. The first encompasses institutional conditions, including program structure, academic supervision, institutional support, peer interaction, and participation in scholarly communities. Together, these elements create the environment in which research competencies are acquired and academic identity gradually develops. The second group relates to individual characteristics, particularly intrinsic motivation, previous academic and research experience, and student autonomy. These personal attributes influence how effectively doctoral candidates recognize, access, and use the opportunities available within the university.

Taken together, the findings indicate that successful doctoral education depends not only on the quality of institutional provision but also on the active engagement of doctoral students themselves. Throughout the interviews, participants repeatedly emphasized that meaningful researcher development occurred when supportive institutional conditions were combined with individual initiative, responsibility, and sustained commitment to academic work.

From the authors' perspective, the principal contribution of this study lies in demonstrating that institutional and individual dimensions should not be examined independently. Instead, they operate as complementary components of a single developmental process. By integrating these dimensions within one analytical framework, the study extends existing scholarship on doctoral education and offers additional evidence from a hybrid, non-Western academic environment where international academic standards coexist with local institutional traditions. In doing so, it contributes to a broader understanding of researcher development from a human capital perspective.

The findings also have practical implications for universities seeking to strengthen doctoral education and expand research capacity. The interview evidence suggests that investments in high-quality supervision, research-oriented training, accessible institutional services, opportu-

nities for peer collaboration, and participation in academic communities can enhance the doctoral experience and support the development of independent researchers. At the same time, institutional initiatives appear to be most effective when they encourage autonomy, initiative, and active participation rather than positioning students as passive recipients of support.

In the authors' opinion, one of the central lessons emerging from this study is that institutional resources alone cannot guarantee successful researcher development. Their value depends on students' willingness and capacity to engage with the academic environment, seek feedback, build professional networks, and take responsibility for their own learning. Research competence therefore develops through the interaction between institutional opportunities and individual agency rather than through either dimension considered separately.

Several limitations should be acknowledged. The study was conducted within a single university and focused on two disciplinary contexts, which may limit the transferability of the findings to other institutional settings. In addition, the analysis is based on participants' experiences and perceptions, making a degree of interpretive subjectivity inherent to qualitative inquiry. Nevertheless, the use of multiple sources of evidence and cross-case analysis strengthened the credibility of the findings.

Future research could extend this work by examining similar relationships across a broader range of universities, disciplinary fields, and national higher education systems. Comparative studies would provide a deeper understanding of how different organizational environments influence researcher development and doctoral training. Additional attention to digital learning environments, internationalization processes, interdisciplinary collaboration, and emerging forms of academic supervision would further enrich current knowledge of doctoral education as a mechanism for strengthening research capacity and developing advanced human capital.

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