

Kazakhstan's universities: global challenges and local duties improving education quality

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ABSTRACT

Over the years of independence, Kazakhstan has developed a higher education (HE) system that incorporates both national characteristics and international standards. However, the system still struggles to meet new challenges, and its scale, while comparable to global standards, does not yet reflect the growing requirements for quality education essential for ensuring competitiveness. The study aims to evaluate the extent of variability in Kazakhstan's policies as they navigate between global challenges and local objectives in the pursuit of higher education quality. A quantitative method was utilized to collect and analyze the study data to identify relationships, test hypotheses, and draw generalizations. The study sample consists of a total of 1,200 educators from various universities. The study findings revealed that Kazakhstan is rapidly advancing to the third stage of HE internationalization, striking a balance between importing and aspiring to export HE. This study is important as it provides valuable insights into how Kazakhstan's modern universities can effectively manage the intersection of global challenges and regional obligations to enhance the quality of HE.

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1. INTRODUCTION

Since 2016, the education system in Kazakhstan has undergone considerable changes, driven by the rapid development of science and technology in the information age [1], [2]. Two key trends have emerged in the reform of higher education (HE) in Kazakhstan, reflecting broader patterns seen across post-Soviet countries. The first trend involves efforts to assert the sovereignty of the HE system in alignment with the construction of a national state, as evidenced by the country's language policy. The second trend focuses on full integration into the global HE landscape through internationalization, the adoption of international standards, and eventual participation in global competition for students [3]. The relevance of studying Kazakhstan's HE system stems from the country's relatively swift adaptation to global trends. Despite this progress, Kazakhstan still faces important challenges in fully reforming its HE system [4]. Similar to other post-Soviet countries, Kazakhstan has attempted to address these challenges by adopting the Bologna

principles. However, in some cases, these reforms have been superficial, addressing only the surface level of deeper, underlying issues within the higher education system [5]–[7].

The ongoing centripetal nature of educational migration in the post-Soviet space, with Russia as a key center of attraction for students, considerably impacts the region. Kazakhstan, traditionally the primary market for Russian HE services, is now positioning itself as Russia's main competitor for attracting applicants within the post-Soviet space. According to some estimates, the analysis of HE within the context of the post-Soviet space remains an underexplored area of research, despite a growing interest in the topic. Thus, HE in Kazakhstan is characterized by the enduring impact of the Soviet legacy alongside the significant impact of the Bologna process [8]. However, the reform of HE in Kazakhstan is hindered by opaque decision-making processes and the limited involvement of key stakeholders. Additionally, researchers frequently highlight challenges such as managing universities, ensuring university autonomy, establishing world-class universities, and developing the innovative potential of universities as important obstacles in the reform process. Researchers focus on the challenges of developing effective international cooperation between Kazakhstani universities, ensuring the quality of education, addressing brain drain, and advancing the modernization of universities [9].

At the institutional level, Kazakhstan faces many of the same challenges in internationalization that arise from the tension between adopting a new university model aimed at participating in the global HE markets and the traditional structures of HE common in post-Soviet countries. Despite the challenges Kazakhstan faces in reforming its HE system, the country is making active efforts to align with global trends in internationalization. One notable example is the expansion of global student mobility, which involved nearly 6.4 million people in 2021. Although Kazakhstan remains primarily a sending country rather than a receiving one, it is working to encourage the return of its citizens who pursue HE abroad, exemplified by initiatives like the Bolashak program.

Despite the identified difficulties of Kazakhstan in reforming HE, today one can observe active attempts by the country to follow the global trends of internationalization. One of them is the expansion of global student mobility, which already covered almost 6.4 million people in 2021. Although Kazakhstan is still more of a sending country than a receiving country, it is trying to encourage the return of its citizens after receiving HE abroad, for example, through the Bolashak program.

Additionally, Kazakhstan is actively pursuing HE policies that are aligned with regionalization efforts. Beyond joining the European Higher Education Area in 2010, the country was instrumental in establishing the Central Asian Higher Education Area in 2021. While it is still early to assess the outcomes, the associated declaration outlines objectives such as creating comparable national qualification frameworks, optimizing procedures for the mutual recognition of educational documents, implementing a credit system, and promoting student mobility among the five Central Asian countries. Kazakhstan aspires to play the role of a regional hub for student mobility within this framework. The effectiveness of national policies in scientific, educational, innovative, and technological development varies across countries, and the scale of challenges faced by both developed and developing nations has yet to fully bridge the gap in innovative development indicators at the national level. Despite these disparities, the shared challenges in the educational field present an opportunity for countries to effectively exchange experiences and collaborate in addressing common problems.

Alongside the undeniable achievements of Kazakhstan's educational system, ongoing issues still require attention. As the number of educational programs expands, the quality of teaching has declined. Additionally, universities often lack adequate materials and equipment [10]. There is no universal model for the strategic development of universities across different levels, as each institution has its own unique characteristics, traditions, and history, and operates within a specific regional context. These factors affect both professional training and the development of scientific and innovative activities.

The topic of updates and comprehensive changes in HE during this era of transformation and digitalization remains underexplored, underscoring the relevance of this research. There is a noticeable lack of studies in Kazakhstan that examine the balance between global challenges and local objectives in the pursuit of HE quality [11], [12]. Researchers emphasize the need to reconsider the role and position of universities in modern society, particularly in light of the evolving global markets, the increase in academic mobility, the intensifying competition for students and faculty, and the advancement of distance learning technologies [13], [14].

These challenges impact both regional and large universities, affecting their developmental prospects. However, assessing the role and position of universities in modern society, particularly in relation to global market developments, economic digitalization, and transformation, is difficult due to the current lack of research in Kazakhstan. Consequently, a targeted study on the intersection of global challenges and local objectives in the pursuit of higher education quality is needed. Thus, the study aims to evaluate the extent of variability in Kazakhstan's policies as they navigate between global challenges and local objectives in the pursuit of higher education quality.

This study is important because it addresses the current problem of how modern universities in Kazakhstan can balance regional responsibilities with global challenges to enhance the quality of HE [15]. Unfortunately, the Kazakh education system has struggled to adequately address these new challenges, and while its scale may be comparable to global standards, it does not yet meet the ever-increasing demands for quality education, which are essential for maintaining competitiveness.

The need to develop new management and regulatory frameworks, including the modernization and introduction of innovative formats for HE promotion, is driven by the imperative to meet both regional and global obligations concerning educational quality. Accurately studying and describing the balance between domestic and international requirements presents a critical research challenge. In particular, Kazakhstan's participation in global comparative research on educational quality holds significant strategic importance for advancing its educational system. This study contributes to the existing literature by exploring how effective tactics and practices across different universities impact the quality of HE, offering new insights that can enhance curricula, instructional strategies, and overall institutional effectiveness. It is particularly important as it provides valuable information on the potential benefits of modern universities in Kazakhstan that successfully navigate global challenges while fulfilling regional commitments to improve the quality of HE.

2. METHOD

2.1. Research design

This study employs a quantitative approach, collecting and analyzing numerical data to establish relationships, test hypotheses, and make generalizations. The quantitative method allows for precise measurements and statistical analysis, yielding objective and reliable findings. This approach enhances the study's external validity by enabling generalization to larger populations, and it provides opportunities to test hypotheses and establish cause-and-effect relationships. Therefore, the use of a quantitative approach is both appropriate and aligned with the study's purpose [16].

2.2. Sample and sampling procedure

A total of 1,200 instructors from various HE institutions across Kazakhstan participated in the study. To ensure representation from public, private, and specialized universities, as well as different geographic regions of the country, a stratified random sampling method was employed. This method enhances the generalizability of the results by capturing a diverse range of experiences and perspectives. The general sociometric measures are displayed in Table 1. This demographic data provides a robust foundation for analyzing how different segments of the teaching population perceive and navigate the opportunities and challenges in Kazakhstan's HE system. It ensures that the study's conclusions reflect a diverse range of experiences and institutional contexts, offering a comprehensive understanding of the issues at hand.

Table 1. General sociometric measures of the participants

	Characteristic	Frequency (n)	Percentage (%)
Age	25-34 years	240	20.0
	35-44 years	420	35.0
	45-54 years	300	25.0
	55 years and above	240	20.0
Gender	Male	600	50.0
	Female	600	50.0
Academic rank	Lecturer	480	40.0
	Senior lecturer	360	30.0
	Associate professor	240	20.0
Years of teaching experience	Professor	120	10.0
	Less than 5 years	180	15.0
	5-10 years	300	25.0
	11-20 years	360	30.0
Type of institution	More than 20 years	360	30.0
	Public university	720	60.0
	Private university	360	30.0
	Specialized institution	120	10.0

2.3. Data collection

Study data were collected using a structured questionnaire specifically developed for this study. This questionnaire is designed to comprehensively capture the perspectives of teachers in Kazakhstan on the intersection of global challenges and local objectives in HE. It encompasses demographic information, global

challenges, local tasks, quality enhancement strategies, and the effectiveness of these strategies, offering a holistic view of the current state and future needs of HE in Kazakhstan. To accommodate a wide range of preferences and ensure a high response rate, the questionnaire was distributed both online and in paper format. Paper questionnaires were distributed during faculty meetings and collected upon completion, while the online survey was distributed via email.

2.4. A structured questionnaire

The structured questionnaire aims to gather insights on how higher education institutions address the balance between global challenges and local responsibilities. It is divided into five key sections, each focusing on specific aspects such as demographics, perceptions of global and local challenges, strategies for quality enhancement, and the evaluation of these strategies. Each section comprises targeted questions designed to assess the respondent's role, experiences, and views, as outlined in Table 2. The comprehensive questionnaire enables a deeper understanding of the interplay between global and local factors in higher education and informs potential strategies for improvement.

Table 2. The structured questionnaire

Section	Focus area	Examples of questions
Demographic information	Collecting background details about the respondents and their institutions.	Role in the institution, years of experience, and primary area of focus of the institution.
Addressing global challenges	Exploring perceptions of global challenges affecting higher education.	Agreement with statements on technological advancements, sustainability, and global competencies; identifying key challenges.
Local responsibilities	Understanding views on addressing local institutional priorities.	Agreement with statements on socioeconomic needs, cultural heritage, and inclusivity; identifying relevant local challenges.
Strategies for quality enhancement	Evaluating institutional strategies to balance global and local demands.	Agreement with statements on curriculum development, international collaborations, and quality assurance mechanisms.
Evaluating strategy effectiveness	Assessing the effectiveness of strategies and identifying areas for improvement.	Effectiveness ratings for curriculum, collaborations, and quality assurance; challenges in implementation; open-ended suggestions.

2.5. Validity and reliability

During the development of the research instruments, the internal consistency of the Kazakh language version was carefully assessed. In the first stage, two professional translators independently performed direct translations of the instruments. Given the task of producing symmetrical translations, the resulting statements varied significantly; therefore, all versions of the statements were retained for further evaluation. In the second stage, three experts—university faculty members specializing in psychology (n=6), linguistics (n=5), sociology (n=2), and education (n=2)—were asked to assess the adequacy of the grammatical structures used. The experts selected the statements that most accurately reflected the content of the components related to subjective well-being. The construct validity of the methods and the consistency of the statements were then tested. Following this, a pilot study was conducted with 30 teachers aged 25-45 as participants to refine the instruments.

2.6. Ethical compliance

Ethical considerations were paramount in organizing this educational research. The foremost requirement for participation was obtaining the voluntary consent of each teacher. Before the survey commenced, respondents were fully informed about the confidentiality and anonymity of the study. They were reassured that there were no right or wrong answers. Anonymity and confidentiality, though closely related, were distinctly addressed: the research instruments were designed to exclude any data that could identify respondents, and all information provided was kept strictly confidential and not disclosed to any third parties. Respondents were assigned alphanumeric identifiers, which they could use in place of their names in all surveys and assessments, ensuring their anonymity throughout the study.

2.7. Data analysis

The online survey was distributed via email, while paper surveys were distributed during faculty meetings and collected afterward. To compare the responses across different institutional types and demographic groups, various statistical methods were employed, including ANOVA, t-tests, and Chi-square tests. Additionally, multiple regression analysis was conducted to explore the factors affecting the perceived efficacy of the tactics used by universities.

3. RESULTS AND DISCUSSION

The Chi-square exam outcomes is shown in Table 3. The findings from the Chi-square test reveal that there is no statistically significant correlation between the age of participants and their evaluation of the efficacy of curriculum development. This suggests that educators across different age groups share similar opinions on this issue.

3.1. Gender and the perceived effectiveness of international collaborations

The findings from the Chi-square test reveal that there is no statistically significant correlation between the age of participants and their evaluation of the efficacy of curriculum development. This suggests that educators across different age groups share similar opinions on this issue [17]. These results highlight the possibility that factors other than age, such as professional experience or specific teaching contexts, might play a more influential role in shaping educators' perspectives on curriculum efficacy.

3.2. Academic standing and the perceived efficiency of quality control measures

The Chi-square test results indicate a significant correlation between academic rank and the perception of the efficacy of quality assurance procedures. This suggests that opinions on quality assurance vary considerably across different academic ranks, which may affect how staff members at various levels implement and perceive quality assurance initiatives [18], [19]. These findings underline the importance of tailoring quality assurance strategies to address the specific concerns and expectations of individuals in different academic roles, fostering a more inclusive and effective approach to maintaining academic standards.

3.3. Years of teaching experience and perceived impact of global challenges

A significant correlation was found between years of teaching experience and the perceived impact of global challenges. This suggests that educators' perceptions of global challenges vary with their level of experience, potentially affecting their ability to adapt and respond to these challenges [20]. These findings emphasize the need for targeted professional development programs that equip educators at different experience levels with the tools and strategies necessary to address global challenges effectively in their teaching practices.

3.4. Impact of perceived local challenges and institution type

The Chi-square test results reveal a significant correlation between the perceived impact of local challenges and the type of institution. This suggests that the way local challenges are perceived and addressed varies depending on whether the institution is public, private, or specialized. These findings provide valuable insights into the relationships between demographic factors and opinions on various aspects of HE. Understanding these correlations can help tailor strategies to improve the quality of education in Kazakhstani universities, taking into account the diverse perspectives of instructors.

Table 3. Chi-square test results

Variable 1	Variable 2	Chi-square value	Degrees of freedom (df)	p-value
Age	Perceived effectiveness of curriculum development	15.67	9	0.073
Gender	Perceived effectiveness of international collaborations	3.84	1	0.050
Academic rank	Perceived effectiveness of quality assurance mechanisms	25.32	9	0.002
Years of teaching experience	Perceived global challenges impact	18.45	9	0.031
Type of institution	Perceived local challenges impact	12.76	6	0.047

Furthermore, the T-test outcomes is shown in Table 4. The t-test results ($t=1.25$, $p=0.211$) show no significant differences between male and female teachers in their perceptions of curriculum development effectiveness. This suggests that gender does not significantly influence teachers' views on the effectiveness of curriculum development. In addition, the t-test results ($t=2.56$, $p=0.011$) show a significant difference between public and private university teachers in their perceptions of the effectiveness of international collaborations. Teachers at public universities rated the effectiveness of these collaborations higher than their counterparts at private universities, indicating differing perspectives on the benefits of international collaborations based on the type of institution.

The t-test results ($t=3.02$, $p=0.003$) show a significant difference between less experienced teachers (less than 10 years) and more experienced teachers (10 years or more) in their perceptions of the

effectiveness of quality assurance mechanisms. More experienced teachers perceive these mechanisms as more effective, suggesting that teaching experience influences views on the effectiveness of quality assurance [21]. Furthermore, the t-test results ($t=2.78$, $p=0.006$) show a significant difference between younger teachers (44 years or younger) and older teachers (older than 44 years) in their perceptions of the impact of global challenges. Younger teachers perceive global challenges as having a greater impact, potentially reflecting generational differences in adaptability and perspectives on global issues [22].

The t-test results show significant differences in how teachers perceive the impact of local and global challenges based on institutional type and age. Teachers from specialized institutions view local challenges as having a greater impact compared to those from public institutions ($t=-2.10$, $p=0.036$), indicating variations in the perception of local issues based on the type of institution. Additionally, younger teachers perceive global challenges as having a greater impact than older teachers ($t=2.78$, $p=0.006$), which may reflect their recent exposure to contemporary educational technologies and global trends, making them more attuned to or affected by the rapid changes occurring globally [23]. Addressing the socioeconomic needs of the community, preserving cultural heritage, and advancing inclusive education at the local level.

Table 4. T-test results

Variable	Group comparison	Mean (Group 1)	Mean (Group 2)	t-value	p-value
Perceived effectiveness of curriculum development	Male vs female teachers	3.85	3.78	1.25	0.211
Perceived effectiveness of international collaborations	Public vs private universities	3.92	3.70	2.56	0.011
Perceived effectiveness of quality assurance mechanisms	Less experienced (<10 years) vs more experienced (≥ 10 years) teachers	3.60	3.88	3.02	0.003
Perceived global challenges impact	Younger (≤ 44 years) vs older (>44 years) teachers	3.95	3.72	2.78	0.006
Perceived local challenges impact	Public vs specialized institutions	3.68	3.90	-2.10	0.036

The results of ANOVA are shown in Table 5. The ANOVA results show significant differences in how teachers from public, private, and specialized institutions perceive the effectiveness of curriculum development. This suggests that the perceived effectiveness of curriculum development varies depending on the type of institution with which the teachers are associated [24].

The findings reveal significant variations in how the effectiveness of international collaborations is perceived across different academic ranks. This suggests that teachers' perceptions of the efficacy of international collaborations are influenced by their academic rank, likely due to differences in expectations and levels of experience. Additionally, the ANOVA results show a significant difference in the perceived effectiveness of quality assurance mechanisms based on years of teaching experience. This shows that teachers with varying levels of experience hold different opinions about the effectiveness of quality assurance, suggesting that experience plays a role in shaping these perceptions [25].

The findings reveal significant differences in how various age groups perceive the impact of global challenges. This indicates that teachers' perspectives on global issues are influenced by their age, as different age groups may vary in their adaptability and worldviews. Moreover, the ANOVA results show significant variation in how different types of institutions perceive the impact of local challenges. This suggests that the nature of the institution—whether public, private, or specialized—plays a role in shaping how educators view and address regional issues.

The perceived impact of local challenges varied significantly among different types of institutions, according to the ANOVA results ($F=3.75$, $p=0.025$). Teachers at specialized institutions reported that local challenges had a greater influence compared to those at public institutions. This finding underscores the unique local contexts in which specialized institutions operate, highlighting the need for tailored strategies to address their specific local requirements [26], [27].

The study identified several strategies employed by colleges to enhance educational quality while balancing local and global demands, including innovations in curricula, global partnerships, and quality control systems. Significant variations in the perceived efficacy of these strategies were observed based on the type of institution and teaching experience. For instance, the ANOVA results revealed significant differences in how various types of institutions perceived the effectiveness of curriculum development ($F=4.67$, $p=0.010$). Teachers at public universities rated curriculum development higher than their counterparts at specialized and private universities, suggesting that curriculum development processes may be more well-established or better resourced at public universities [28].

Additionally, teachers' perceptions of the efficacy of international collaborations were influenced by their academic ranks ($F=3.89$, $p=0.022$). Academics at higher ranks, such as associate professors and

professors, viewed international collaborations as more successful, possibly due to their greater involvement in and exposure to international academic networks [29]. Another focal point was quality assurance mechanisms, which were perceived as more effective by more experienced teachers ($t=3.02$, $p=0.003$). This finding suggests that seasoned educators might have a better understanding of established quality assurance procedures within their institutions and, as a result, feel more confident in their effectiveness [30].

Thus, the findings reveal that Kazakhstani universities are actively working to balance local and global demands. However, the stark disparities in opinions based on age, experience, academic standing, and type of institution highlight the need for tailored approaches that address these diverse perspectives. For example, younger teachers might benefit from additional support and training to effectively navigate global challenges, while specialized institutions may require more resources to adequately manage their unique local responsibilities [31], [32]. These results provide a comprehensive understanding of how contemporary Kazakhstani universities are navigating the intersection of regional responsibilities and global challenges. By recognizing and addressing the unique needs and perceptions of different groups of teachers and institutions, Kazakhstani universities can develop more inclusive and effective strategies to achieve educational excellence in an increasingly globalized yet locally nuanced environment.

Table 5. ANOVA results

Dependent variable	Independent variable	F-Value	p-value
Perceived effectiveness of curriculum development	Type of institution	4.67	0.010
Perceived effectiveness of international collaborations	Academic rank	3.89	0.022
Perceived effectiveness of quality assurance mechanisms	Years of teaching experience	5.23	0.005
Perceived global challenges impact	Age group	6.45	0.002
Perceived local challenges impact	Type of institution	3.75	0.025

4. CONCLUSION

Kazakhstani educators are acutely aware of global issues such as the development of global competencies, sustainable development, and technological advancements. Younger educators, in particular, perceive these issues as having a greater impact, reflecting their heightened sensitivity to generational differences and international trends. Addressing the socioeconomic needs of the region, preserving cultural heritage, and promoting inclusive education are also viewed as essential local responsibilities. The impact of local challenges is more pronounced among teachers from specialized institutions, highlighting the unique local contexts, and demands these institutions face. To navigate the balance between local and global demands, universities employ a variety of strategies, including international partnerships, innovative curricula, and quality control systems.

The perceived effectiveness of these strategies varies based on the institution type and the instructors' prior teaching experience. For example, public universities received higher ratings for the effectiveness of their curriculum development. More experienced teachers are inclined to view quality assurance mechanisms as more effective, suggesting that familiarity and ongoing involvement with these processes bolster their confidence in their effectiveness. The of institution type (public, private, or specialized), academic standing, and years of teaching experience were all found to significantly affect these perceptions. These variations highlight the need for customized strategies that consider specific institutional and demographic contexts.

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