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Policies, Intellectual Capital, and Competitiveness in Higher Education Institutions of Kazakhstan

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ABSTRACT
The purpose of the present study is to examine the role of policy implementation and intellectual capital dynamics in the processes of achieving sustainable competitive advantage in higher education institutions in Kazakhstan. The study combines bibliometric analysis and systematic review covering publications from the Web of Science and Scopus databases between 2011 and 2025. Inclusion and exclusion criteria were defined using the PRISMA flow; data from 145 studies were analyzed using keyword and co-citation maps using VOSviewer, and thematized using qualitative content analysis. The findings indicate that publication and citation trends are increasing, production is largely concentrated in articles, and visibility is clustered at specific research universities. Features such as "internationalization," "quality assurance," "digital transformation," and "global rankings" are centralized within thematic networks. Bologna alignment, accreditation, academic autonomy, and performance-based funding practices are observed to strengthen institutional capacity, while ranking-focused incentives can increase short-termism. Within the intellectual capital dimension, human capital (faculty competencies, early career support, graduate employment), structural capital (digitalization, AI, governance, and innovation systems), and relational capital (university-industry collaboration, regional partnerships) stand out as the primary determinants of competitive advantage. Triangulation of local databases with internal, qualitative data, ethical and metric balance, and strengthening of regional collaborations are recommended for future studies.

KEYWORDS
Competitiveness; sustainable competitive advantage; higher education; intellectual capital; Kazakhstan.

INTRODUCTION

With the strengthening of the global knowledge economy, higher education institutions are positioned in an increasingly competitive environment. International rankings, performance indicators, and political expectations directly shape their strategic orientations. Competitive advantage is not limited to student attraction but is defined by multidimensional outcomes such as research productivity, social contribution, and engagement with the entrepreneurial ecosystem (Benavides et al., 2020; Ganefri et al., 2024; Lodhi & Ilyassova-Schoenfeld, 2023; Omodan et al., 2024). The Kazakhstani higher education system was restructured through structural reforms in the post-Soviet period, and efforts were made to rapidly implement standards such as the Bologna framework, quality assurance, and credit systems in line with the goal of international harmonization (Olzhebayeva et al., 2025; Tampayeva, 2015). The financing and resource allocation debates accompanying this reform process paved the way for linking funds to performance and reinterpreting the balance between institutional autonomy and accountability (Lodhi & Ilyassova-Schoenfeld, 2023; Robertson & Bayetova, 2022).

The main drivers of competition in higher education are digital transformation, platformization, and data-based governance (Shen & Ho, 2020). University-industry collaborations shape institutional positioning through integration into innovation ecosystems and knowledge transfer (Skute et al., 2019). Quality assurance, accreditation, and performance-based financing institutionalize the alignment of institutional behaviors with competition (Bayanbayeva, 2025; Zhang et al., 2022). Policy-level resource allocation and governance principles determine the innovation and collaboration capacities of institutions (Aitbayeva et al., 2016; Kasa et al., 2020). Furthermore, the improvement of the academic staff, open science, and interdisciplinary collaborations increase research productivity and visibility, while digital infrastructure strengthens structural capital by providing process efficiency and decision support (Steger et al., 2025; Pedro et al., 2019).

The acceleration of reforms in Kazakhstan's higher education system, the pursuit of visibility in global rankings, and employability targets are keeping competitiveness discussions current (Olzhebayeva et al., 2025). Recently, policy-driven reforms and the development of intellectual capital have led to a remarkable rise in academic rankings internationally. For instance, according to data from University Guru (2025), Al-Farabi Kazakh National University has become the country's most comprehensively evaluated institution in the meta-ranking system, encompassing 108 different rankings. UNIRANKS (2025) data also indicates that five universities are ranked "Top by Country" and four are ranked "Top by Region," demonstrating that regional competitiveness policies are delivering tangible results. Nazarbayev University, distinguished by its intellectual capital and research performance, has become a pioneer of sustainable competitive advantage. According to QS 2026, it ranked 52nd in the Asian Full-time MBA category, 1111th in US News, and 2058th in the world in Chemistry by EduRank 2025 (QS Top Universities, 2025; US News, 2025; EduRank, 2025). Demonstrating strong scientific production with 5,659 publications and 77,937 citations, the university has also enhanced the

academic prestige of the capital-Nur-Sultan. According to EduRank data, Almaty, Nur-Sultan, Turkestan, and Karaganda cities have become the country's educational centers with their university density and diversity (EduRank, 2025). Differentiation in discipline-based competitiveness is also observed. According to University Guru, L.N. Gumilyov Eurasian National University is a leader in Linguistics, while Nazarbayev University is a leader in Education (University Guru, 2025). In the 2026 AD Scientific Index, Nazarbayev University ranked 3,117th globally regarding H-Index (AD Scientific Index, 2026). Overall, Kazakhstani universities are among the top 1000 (UniRank, 2025), strengthening its regional leadership position despite not yet achieving "Elite University" status in the UNIRANKS system. Furthermore, data from the Scimago Institutions Rankings confirms the impact of sustainable competitive strategies by demonstrating increased research-focused visibility (Scimago, 2025). Policymakers aligning performance metrics with ranking indicators can lead institutions to focus on short-term results (Bayanbayeva, 2025).

Relevant variables necessitate an interdisciplinary approach to measuring multidimensional capacity building and competitiveness rather than single-axis rankings (Sun et al., 2024). This study examines the relationships among intellectual capital, competitiveness, and sustainable competitive advantage, along with their policy components, in the context of Kazakhstan. The aim of this research is to examine the role of policy implementation and intellectual capital dynamics in the processes of achieving sustainable competitive advantage at higher education institutions in Kazakhstan. By analyzing current academic production via bibliometric and systematic literature review, the study aims not only to examine the interaction of competition, intellectual capital, and policy in higher education but also to identify trends, gaps, and future research areas that support sustainable competitive advantage.

Competition in Higher Education, Competitiveness and the Role of Policies in Enhancing Sustainable Competitive Advantage

The concept of competition in higher education institutions is discussed in the context of comparing universities with other institutions in terms of access to resources, student enrollment, and research productivity, both nationally and internationally (Gurevich, 2011). Marginson (2006) emphasizes that global competition in higher education is directly linked to government policies, economic systems, and societal expectations. This necessitates assessing competitiveness not only through economic indicators but also through academic values and institutional vision. The motivation of universities in being ranked highly internationally restructures their resource allocation, faculty selection, and research priorities (Bayanbayeva, 2025). The concept of competitiveness has also been described as a leading force of economic development (Olzhebayeva et al., 2025). In this context, competitiveness is not solely the result of performance indicators. Sharing of knowledge, participation in international networks, and innovative learning methods are also seen as supporting factors (Iqbal et al., 2019).

It has been stated that for higher education institutions to achieve sustainable competitive advantage, moving beyond performance metrics and adopting an integrated

approach with the strategic management of intellectual capital are both necessary (Pedro et al., 2020). Altynbassov et al. (2015) stated that the Bologna Process aimed to integrate higher education institutions in Kazakhstan into global competition. Different dimensions of competitiveness have also been linked to universities' third-mission activities, namely their interaction with society and knowledge transfer processes (Secundo et al., 2017). The concept of competitive advantage in higher education has been largely interpreted within the framework of Porter's strategic management theories. Porter (1991) indicates that institutions must develop cost leadership, differentiation, and focus strategies to maintain their competitive aspects. This approach shows that universities in the context of higher education can create competitive advantage through differentiated educational programs, unique research areas, and specialized collaborations. Alshahrani et al. (2024) emphasized that intellectual capital, when integrated with innovation capacity, strengthens sustainable competitive advantage. Similarly, Elistia et al. (2025) examined the determinants of competitive advantage in private higher education institutions, finding that knowledge management, faculty qualifications, and institutional vision are critical factors. Relevant literature suggests that competitive advantage is not solely sustained by external pressures but rather by institutions' ability to build internal capacity (Ghlichlee et al., 2024).

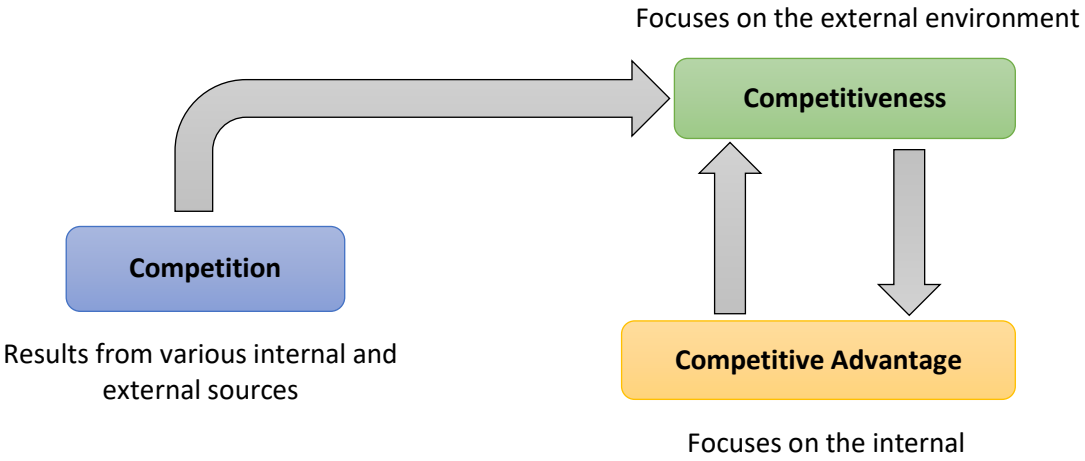
In higher education, the dynamics of competition, competitiveness, and competitive advantage play an influential role in strategy formulation and related outcomes. According to Hart and Rodgers (2024), the advantage of these dynamics are related yet distinct concepts. While competition stems from numerous internal and external factors, increasing levels of competition in higher education fuel competitiveness and drive institutions to achieve competitive advantage. Moreover, while competitiveness reflects external position of an institution, competitive advantage refers more to an internal situation that demonstrates a causal relationship (Koçak & Yörük, 2024; Vasiliev, 2022). This relationship is illustrated in Figure 1.

The complex relationship between competition, competitiveness, and competitive advantage in higher education represents a hierarchical and interconnected framework where each concept builds upon and reinforces the others within the increasingly marketized academic landscape. Competition in higher education emerges from both internal institutional dynamics and external pressures from governments, ranking organizations, and global corporations, creating an environmental context in which universities must contend for students, faculty, research funding, and reputational standing (Rasli et al., 2024). Competitiveness manifests as a higher education institution's dynamic capability to deliver educational, research, and community services with superior quality and effectiveness relative to peer institutions, thereby determining its market position and sustainability (Arnout et al., 2024). Competitive advantage, however, constitutes the underlying source of institutional competitiveness—emerging from intangible assets such as reputation, legitimacy, research capacity, strategic leadership, employability-focused curricula, and technological infrastructure—representing valuable, rare,

and difficult-to-replicate resources that enable universities to differentiate themselves and achieve sustainable performance superiority (Miotto et al., 2020). These three constructs form an integrated theoretical ecosystem wherein competitive advantage generates institutional competitiveness, which enables success in higher education competition, while simultaneously creating recursive pressures where sustained competitive advantage requires continuous adaptation to evolving competitive dynamics driven by globalization, rankings, and stakeholder expectations.

Figure 1.

Relationship among competition, competitiveness, and competitive advantage



(Hart & Rodgers, 2024)

Studies conducted specifically in Kazakhstan indicate that universities struggle to gain international competitive advantage if they develop strategies unsupported by policy reforms (Aubakirova, 2019; Hartley et al., 2016; Ilyassova-Schoenfeld, 2017; Iqbal, 2021). However, global literature has explained that competitive advantage is directly linked to innovation, digitalization, and the effective use of human capital (Hart & Rodgers, 2024; Robertson & Bayetova, 2022). Studies on intellectual capital reveal that the quality of academic staff, research capacity, and relationships with stakeholders are critical for universities to achieve sustainable advantage (Sultanova et al., 2018).

Higher education policies are considered as one of the most important external factors that increase the competitiveness of universities. Olzhebayeva et al. (2025) stated that higher education policies have a direct impact on macroeconomic development, which is reflected in the competitiveness of institutions. In the literature, reforming financing models, linking resources to performance, and increasing accountability are described as important dimensions of institutional competitiveness (Kasa et al., 2020). Hartley et al. (2016) indicate that higher education reforms in Kazakhstan aim to strengthen the competitive capacity of institutions by increasing their level of autonomy. However, it has also been noted that implementation gaps have emerged in policy transfer processes, and these gaps limit institutional outcomes (Ilyassova-Schoenfeld, 2017). Studies conducted in the context of EMI (English Language of

Instruction) policies have shown the emergence of structural problems that directly affect students' academic success and faculty members' research productivity (Kerimkulova et al., 2023; Tajik et al., 2024). These findings suggest that policy should not remain solely at the level of intention but should also be supported in a sustainable manner (Robertson & Bayetova, 2022). Thus, how differences between policy design and implementation affect the competitiveness of universities has become a recurring topic of discussion in the literature (Agbo et al., 2023).

Intellectual Capital and Sustainable Competitive Advantage in Higher Education

Intellectual capital is one of the most critical concepts explaining the sustainable competitive advantage of universities (Hart & Rodgers, 2024). Edvinsson and Malone (1997) defined intellectual capital as hidden brainpower and argued that it is an invisible type of capital in the value creation processes of institutions. Pedro et al. (2019) define intellectual capital in higher education institutions as human, structural and relational capitals. Human capital includes the knowledge, skills, experience, and creativity of academic staff, while structural capital encompasses the organizational memory, management processes, and infrastructure of the institution (Iqbal et al., 2019). Relational capital, on the other hand, refers to universities' collaborations with their stakeholders, visibility in international networks, and social interactions (Secundo et al., 2016). Ghlichlee et al. (2024) found that knowledge-based human resource practices are effective in creating sustainable competitive advantage through intellectual capital. It has been frequently emphasized in the literature that intellectual capital should be associated not only with academic publication production but also with innovation processes and third-party mission activities (Secundo et al., 2017). Therefore, the dimensions of intellectual capital are central to discussions of sustainable competitive advantage in higher education.

Scaringella (2024) demonstrated that doctoral graduates in research centers are directly related to R&D performance. Martínez-Falcó et al. (2025) stated that the concept of green intellectual capital strengthens sustainable competitive advantage and creates higher institutional value when integrated with environmental initiatives. Furthermore, Strazzullo et al. (2024) demonstrated that intellectual capital investments play a critical role in improving research performance at Italian public universities. While Kazakhstan has made significant progress in establishing its green economy policy framework through the 2013 Green Economy Concept and 2050 Strategy, the explicit incorporation of green intellectual capital remains underdeveloped in the national theoretical model (Mukhtarova & Zhidebekkyzy, 2015). Green intellectual capital, encompassing green human capital, green structural capital, and green relational capital, serves as a critical driver for sustainable innovation and technology transfer, particularly in emerging economies transitioning from resource-based to knowledge-based economic systems (Abayeva et al., 2024). For Kazakhstan to fully realize its carbon neutrality goals by 2060 and successfully commercialize green technologies, integrating green intellectual capital into existing policy architecture would enhance the country's capacity to develop skilled

environmental professionals, strengthen institutional frameworks for green innovation, and foster collaborative networks essential for sustainable development transformation (Mukhtarova & Zhidebekkyzy, 2015; Abayeva et al., 2024).

In the Kazakhstani context, Kurmantayeva et al. (2017) stated that developing social and intellectual capital through service learning increases the level of social engagement of students and faculty. Thus, it becomes clear that intellectual capital dimensions should be addressed not only by individual or institutional but also by incorporating societal impacts. Higher education institutions are competing for resources, particularly international students (Hart & Rodgers, 2024). Teixeira et al. (2013) noted that the Portuguese higher education system is transitioning from a traditional situation to an active one to compete and attract students which is also observed at institutions in Europe, America, and other parts of the Western world. Furthermore, limited government funding increases competition for international students and the fees they pay make them important intellectual resources and stakeholders (de Freitas Langrafe et al., 2020).

Elistia et al. (2025) stated that the factors influencing sustainable competitive advantage in private higher education institutions are directly linked to financial sustainability, management capacity, and knowledge management systems. Alshahrani et al. (2024) stated that intellectual capital strengthens sustainable competitive advantage by increasing innovation capacity. The literature indicates that different dimensions of intellectual capital are intertwined with the social value creation processes of universities and strengthens institutional identity (Secundo et al., 2017). According to Hama and Cavusoglu (2023) when intellectual capital is combined with sustainable innovation, it secures long-term competitiveness of the institutions. These findings show that higher education institutions should strengthen their competitive advantage not only through external policies but also via internal capacity development. It is clear that sustainable competitive advantage is a multidimensional concept and cannot be limited to performance measures alone. Especially in transition economies like Kazakhstan, it is important that sustainable advantage be supported by national policies, international collaborations, and intellectual capital dynamics (Olzhebayeva et al., 2025).

Research Gap and the Purpose of the Research

According to Marulanda-Grisales and Vera-Acevedo (2022), the number of publications addressing the relationship between policies, intellectual capital, and competitive advantage in higher education institutions is increasing. Revalde and Sagintayeva (2018) examined the contribution of higher education in Kazakhstan to regional development and competitiveness and found that the rapid adaptation of the Bologna process increased the country's global competitiveness and also supported the visibility of leading universities in QS rankings. Azemkhan (2018) conducted a study on the competitiveness of Kazakhstani higher education institutions in the context of globalization and found that training highly qualified human resources is critical for economic growth and reform of the education system. Kerimkulova et al. (2023) seen that administrative and resource deficiencies between EMI policy objectives and

implementation in Kazakhstan's higher education can negatively affect pedagogical quality. Nurgaliyeva and Nygymetov (2023) stated that the level of development of higher education institutions in Kazakhstan is related to enrollment in higher education institutions. They analyzed variables such as the number of faculty members, students, and service provision (budget, population, businesses), and shared that the high rates in Astana and Almaty stemmed from their status as capitals and largest cities. Nurmukhanova et al. (2021) examined the contribution of universities' strategic management to regional competitiveness and found that self-assessment is a valuable guide in developing entrepreneurship-oriented strategies. Iskakova and Iskakova (2018) searched the transformation processes in the Kazakhstani higher education system and the competitive environment of universities and stated that competition has gained importance as a natural consequence of commercialization in higher education.

When looking at relevant researches, it can be said that they are conducted in a single-discipline and narrowly focused manner. However, the number of studies that map these studies in general and analyze their common outcomes is quite limited. Bibliometric analyses enable objective mapping of the evolution of research fields, collaboration networks, and thematic clusters (Sun et al., 2024; Lin & Yu, 2025). Moreover, the systematic reviews reveal that competitiveness is not only related to the number of publications but also to process capacity and organizational learning (Abelha et al., 2020; Benavides et al., 2020). Such a synthesis will enable the development of applicable strategies at the institutional level.

The present study seeks answer to the following questions:

1. What is the distribution of publications on policy, competition, and intellectual capital in higher education institutions by year, the universities with the most publications, the researchers who published the most, the distribution of co-citations, and the distribution of keywords in terms of sustainable competitive advantage in Kazakhstan?
2. What is the impact of the policies and strategies implemented in increasing the sustainable competitive advantage of higher education institutions in Kazakhstan?
3. How do the elements of intellectual capital (human, structural and relational capitals) in higher education institutions shape competitive advantage?

METHOD

Research Model

This study used a combination of systematic literature review methods. Bibliometric analysis is a systematic method that allows for the quantitative examination of academic publications on a specific topic. Through bibliometric approaches, current trends in the field are identified and findings that provide guidance for future research are presented (Merigó & Yang, 2017). Systematic reviews are rigorous, methodical, and comprehensive (Tranfield et al., 2003). This method allows for the analysis of a large number of documents within the framework of predetermined rules, thus ensuring transparency and reproducibility of the process (Aveyard &

Bradbury-Jones, 2019). Accordingly, this review began with a comprehensive search of relevant databases using predetermined search terms.

Research strategy

The study population included full-text studies available in the *Web of Science* (WoS) and *Scopus* databases. A total of 145 publications were included in the study.

Search Strategy and Inclusion/Exclusion Criteria

(i) The database search was conducted on October 18, 2025.

(ii) The first strategy was to search the databases using the following formulations: *(TITLE (University) AND TITLE (Kazakhstan)) AND (LIMIT-TO (LANGUAGE,"English")) AND (PUBYEAR> 2011 AND PUBYEAR <2025) and (TITLE (Higher Education) AND TITLE (Kazakhstan)) AND (LIMIT-TO (LANGUAGE,"English")) AND (PUBYEAR>2011 AND PUBYEAR <2025) in the Scopus database. Additionally, the WoS database was searched for the terms Kazakhstan (Title) and Universit* (Title) and 2011-2025 (Year Published) and Kazakhstan (Title) and Higher Education (Title) and 2011-2025 (Year Published).*

(iii) As a result of the relevant literature review, the following information was determined and extracted: author, year of publication, publication title, database, subject, university information, journal information, citation information, keywords, and abstract.

(iv) Using the Academic Publication Evaluation Form prepared for this purpose, each study was numbered. Studies, except those specified, were removed from the research for the reporting process, using APA 7 bibliography style.

Reasons for exclusion of research studies from publications:

(i) Were not found in relevant databases

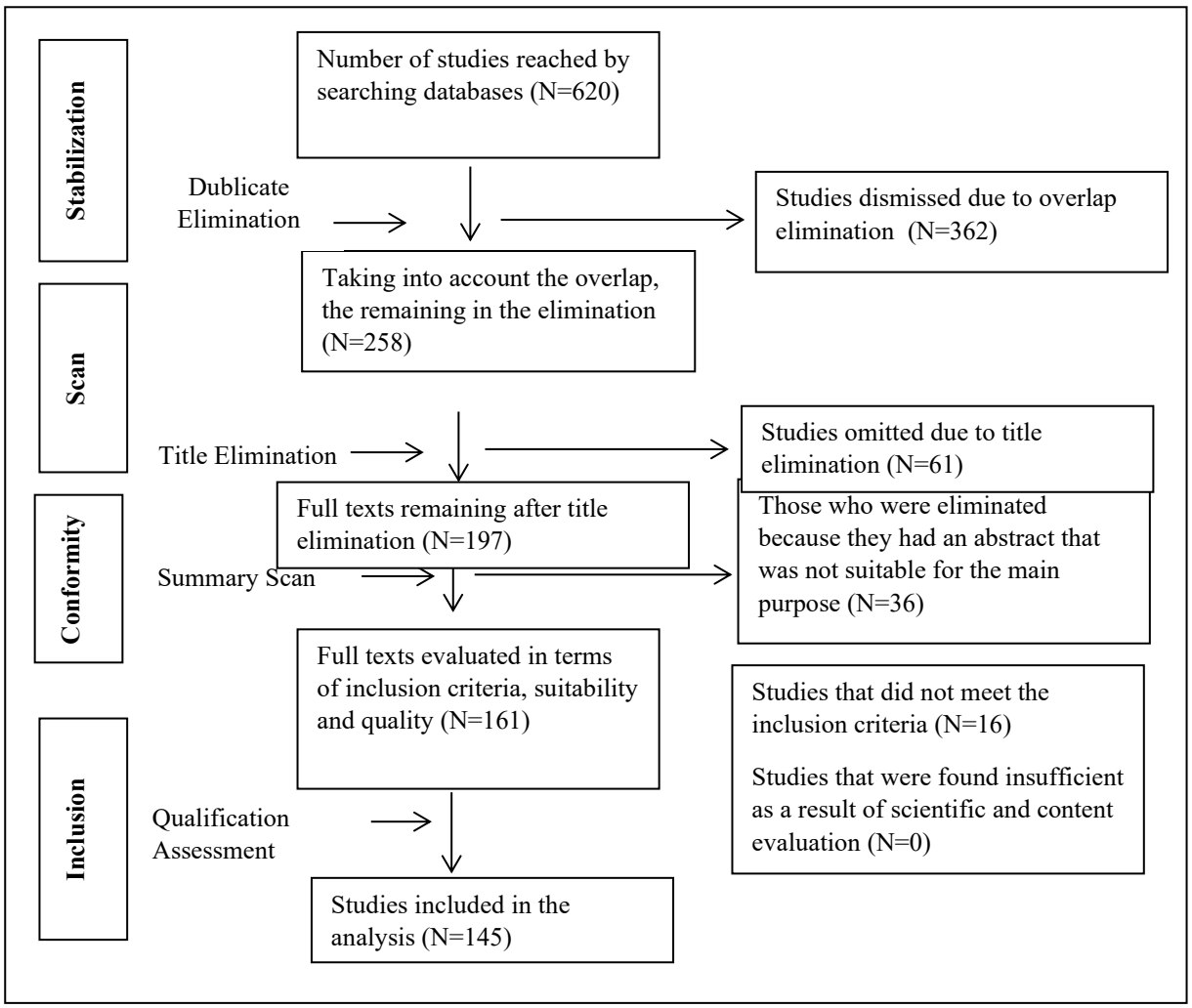
(ii) Did not have access to the full text

(iii) Were not focusing on competition in higher education.

As seen in the PRISMA diagram in Figure 2, all relevant databases were searched for keywords to identify suitable studies for analysis. Of the studies with accessible full text, 620 were included in the pool. Of the studies examined, 362 were excluded because they duplicated/overlapped the same studies in both the keywords and the databases. In the second stage, the remaining 258 studies were examined in depth and 61 were removed from the pool due to irrelevant topics. Besides, 36 were removed for non-compliance with the main purpose, and 16 were removed for not meeting the inclusion criteria. The remaining 145 studies were transferred to the *Mendeley* database for further evaluation as they were suitable for the purpose.

Figure 2.

Flowchart of Studies Included in the Analysis



Data Analysis

Document analysis was used to analyze the data in the study which include journals, biographies and autobiographies, technical documents, field notes, diaries, official records, memorandums, reports, or statistics, primary or secondary sources, historical events or chronologies, projects, plans, letters, photographs, books, and articles (Cohen, Manion, & Morrison, 2007). It is known that documents are important sources for obtaining information about a relevant field, and that researchers generally work with these written documents in qualitative research (Wallwn & Fraenkel, 2000).

Document analysis was conducted in two stages within the study. These were;

(i) In the first stage, descriptive analyses were conducted to obtain data on author, journal, institution, change over time, publication type, and relevant academic journals. Keywords, abstract, and co-citation analyses were then conducted using the *VOSviewer* program.

(ii) In the second stage, the computerized studies were analyzed in code order using the *Academic Publication Evaluation Form* developed for the study. Content analysis techniques

were employed in the data analysis process in the qualitative research. By determining the frequency of message elements as codes, countable units were identified and expressed as themes and subthemes. During the analysis, the aim was to count message elements according to the frequency of a particular element, and these counts were expressed in terms of frequency. This approach allows for understanding the frequency of a particular element and its intensity and importance within the context of the analysis (Köhler & Stemmler, 1997).

Validity and Reliability of the Research

In qualitative research, validity means that the researcher observes the phenomenon as realistically and objectively as possible. Furthermore, the researcher's ability to explain the data collection process, the methods used to reach the results, and the detailed reporting of the data obtained are among the fundamental criteria for the validity of the research (Creswell & Poth, 2016).

Validity in qualitative research is generally considered in two dimensions: internal and external validity. Internal validity can be defined as the research process's ability to uncover the phenomenon under study. Therefore, the researcher is expected to act consistently throughout both data collection, analysis, and interpretation (Patton, 2014). To enhance internal validity in this study, detailed definitions were included in the findings section. Interpretation began after presenting information related to the research topic with objective data. Furthermore, similarities and differences were clearly demonstrated by considering criteria of consistency, internal homogeneity, and external heterogeneity among the data. External validity, on the other hand, relates to the generalizability of research findings. The ability to replicate research results in similar settings and situations demonstrates that external validity has been achieved (Patton, 2014). To support external validity in this study, the process of retrieving the publications from the databases used is explained in detail, and the raw data are presented as appendices. Furthermore, the data are described in detail to facilitate comparison with different databases.

Reliability, on the other hand, relates to the research process and presenting data in a clear, detailed manner that can be evaluated by other researchers. In short, it refers to the replicability of research findings (Creswell & Poth, 2016). In this context, data analysis was conducted by two experts, and the formula developed by Miles and Huberman (1994) was applied to determine the reliability level of the study.

Reliability = Consensus / (Consensus + Disagreement)

The reliability of the study was found to be 82% based on the calculation made using the reliability formula. Reliability calculations above 70% indicate that the study is reliable. Based on the results, it can be concluded that the study conducted is reliable.

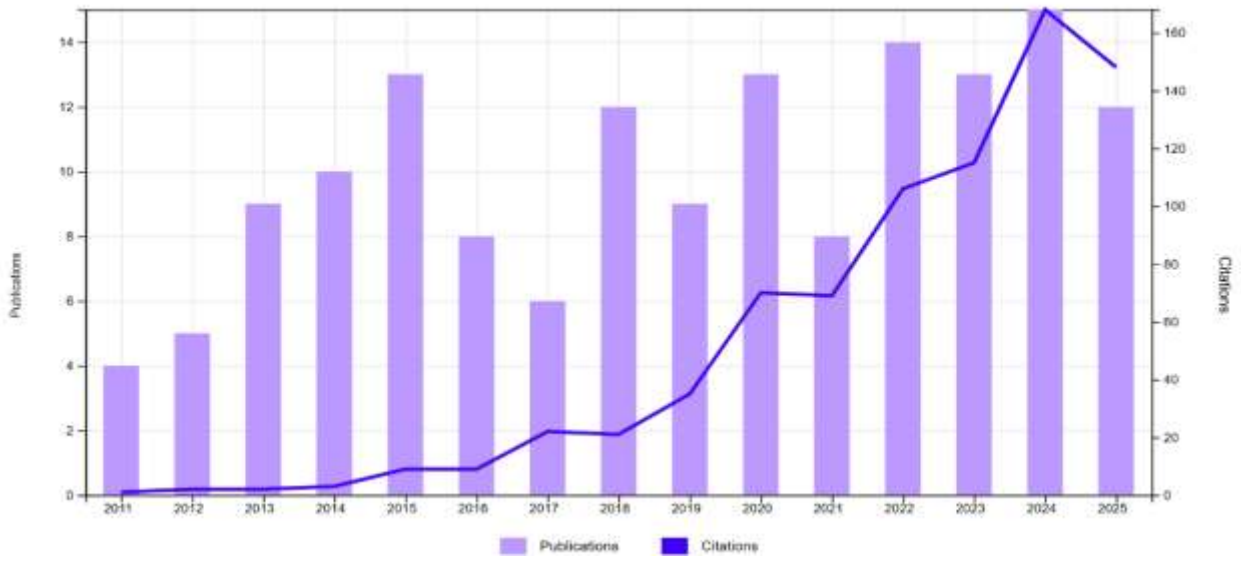
FINDINGS

Findings Regarding the First Sub-Research Question

The findings regarding the distribution of the studies in the first sub-research question of the research regarding the number and citations by year are presented in Table 1.

Figure 3.

Number of studies and citation distributions by year

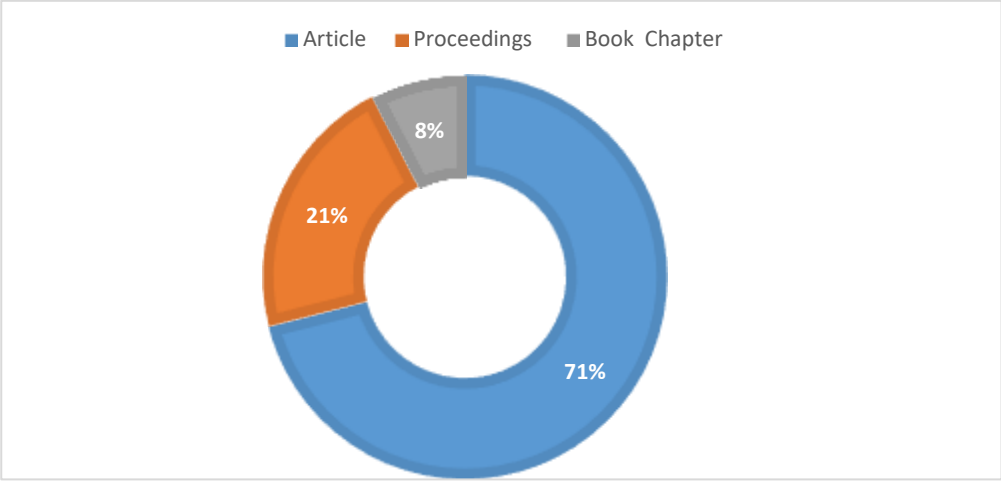


As shown in Figure 3, 145 publications were examined, and when publication and citation trends are examined by year, a general increase is observed in both the number of publications and the number of citations received between 2011 and 2025. A significant increase was observed in the number of publications, particularly starting in 2022, reaching a peak of 15 in 2024. Citation numbers followed a similar trend, reaching a peak of 171 citations in 2024. These findings demonstrate that researches' interest to this area has been increasing recently and its scientific impact has strengthened.

The distribution of studies by type is presented in Figure 4.

Figure 4.

Distribution of studies by type

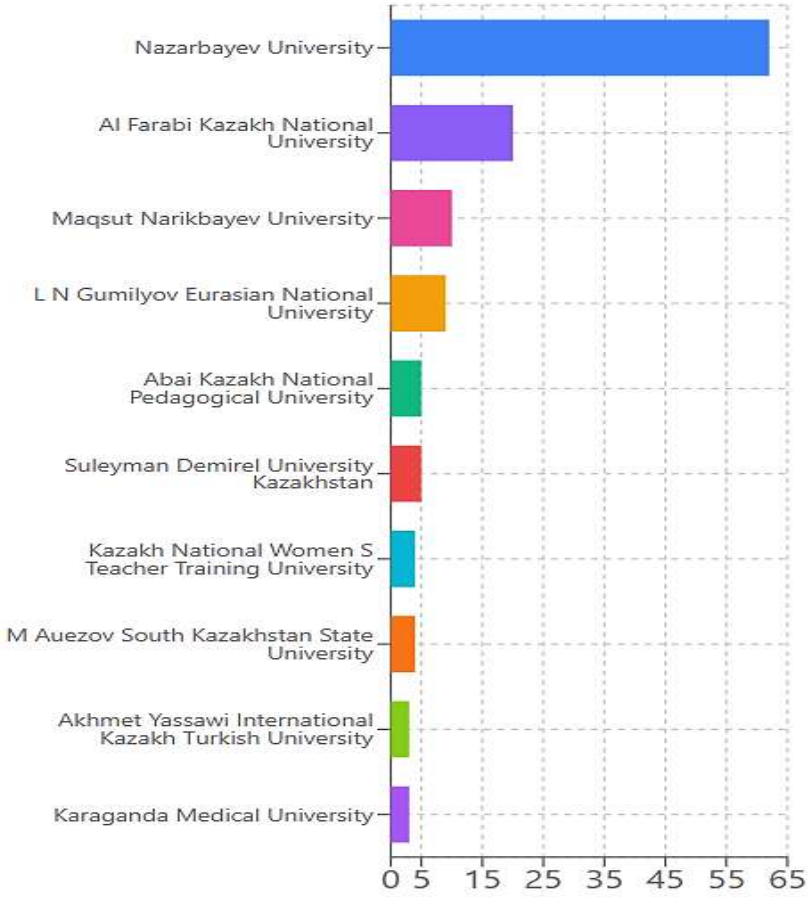


When examining the distribution of relevant research by type, articles constitute the largest share (71.03%) (n=103). Proceedings follow at 21.38% (n=31), and book chapters constitute the smallest share (7.59%) (n=11). This distribution demonstrates that scientific production in the field is primarily mediated by articles published in peer-reviewed journals.

The distribution of the studies according to the universities where the study was conducted is presented in Figure 5.

Figure 5.

Distribution of research by universities



As seen in Figure 5, when examining the top 10 universities in terms of publications, Nazarbayev University is the institution that produced the most publications with 62 studies. Al Farabi Kazakh National University comes in second with 20 studies, while Maqsut Narikbayev University comes in third with 10. This distribution demonstrates that academic production in Kazakhstan in this field is concentrated in certain leading universities, with Nazarbayev University holding a leading position in the field.

The 10 authors who published the most on the relevant subject are presented in Table 1.

According to the data in Table 1, a total of 37 studies (25.69%) were produced by these 10 authors. Sagintayeva A. is the author who published the most studies, with 7 studies (4.86%). She is followed by Jonbekova D (5 articles, 3.47%) and Kuzhabekova A (4 articles, 2.78%).

Table 1.

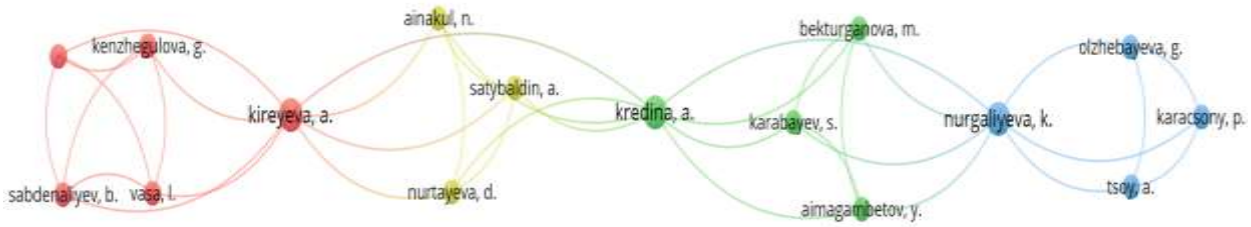
The 10 authors who published the most on the relevant subject

Author	Research Number	(%)
Sagintayeva A	7	4.86
Jonbekova D	5	3.47
Kuzhabekova A	4	2.78
Hwami M	3	2.08
Kuchumova G	3	2.08
Bayanbayeva A	3	2.08
Mhamed AAS	3	2.08
Kerimkulova S	3	2.08
Mukhamejanova D	3	2.08
Sparks J	3	2.08
Total	**37**	**25.69**

The findings of the co-citation analysis are presented in Figure 6.

Figure 6.

Researchers featured in co-citation analysis



The network map visualizes collaboration patterns among authors within a research field and the structure of scientific networks. The analysis results indicate that multiple independent collaboration clusters exist within the field, and these clusters are represented by different colors. The red cluster on the left represents a dense network of collaborations among authors such as Kenzhegaliyova G., Sabdenaliyev B., Vasa I., and Kireyeva A. Another cluster in the center, highlighted in yellow, reveals the academic ties among Ainakul N., Satybaldin A., and Nurtayeva D. The green cluster reflects the collaborative relationships among Bekturganova M., Kredina A., Karabayev S., and Aimagambetov Y. The blue cluster on the right represents collaborations among Olzhabayeva G., Nurgaliyeva K., Karacsony P., and Tsoy A. An examination of the network structure reveals that the clusters have limited connections with each other, and researchers collaborate intensively primarily within their own groups. This suggests that the

field is dominated by a clustered collaboration structure, with relatively low interdisciplinary interaction among different research groups. Node sizes and link densities suggest that some authors hold central roles within their clusters.

Table 2.

Journals in which the most research on the relevant subject is published

Journal *	**N**	**%**
Studies in Higher Education	4	2,76
Life Science Journal	4	2,76
Problems and Perspectives in Management	3	2,07
Scientific Herald of Uzhhorod University. Series Physics	3	2,07
Cogent Education	2	1,38
Economic Annals-XXI	2	1,38
Education Economics	2	1,38
Espacios	2	1,38
Higher Education Policy	2	1,38
International Journal of Ecology and Development	2	1,38
International Journal of Educational Development	2	1,38
Middle East Journal of Scientific Research	2	1,38
Power and Education	2	1,38
Public Policy and Administration	2	1,38
Globalisation, Societies and Education	2	1,38
International Journal of Educational Reform	2	1,38
Education Sciences	2	1,38
Total	40	27,59

*Journals in which more than one study was published are included in the table.

According to the data in Table 2, the journals with the most research published are *Studies in Higher Education* and *Life Science Journal*, each with 4 articles (2.76%). They are followed by *Problems and Perspectives in Management and Scientific Herald of Uzhhorod University*. Series *Physics* with 3 articles (2.07%).

The keyword network map visualizes key concepts, thematic focal points, and conceptual relationships within the research area. Analysis results show that the terms "Kazakhstan" and "higher education" are the largest nodes at the center of the network and have the highest link density. Color coding reflects the terms' usage periods and temporal trends. Blue nodes represent concepts prominent in early-stage research around 2018 (e.g., education, universities, quality, innovations, management). Green tones represent mid-stage themes around 2020 (e.g., university sector, Central Asia, innovation, engineering education, and reform). Yellow nodes indicate current themes for 2022-2024 (e.g., internationalization, Bologna Process, global university rankings, digital transformation, online learning, and quality of higher education).

An examination of conceptual clusters reveals conceptual groups addressing various thematic areas, such as educational policy and services (educational policy, educational services, educational programs), employment and labor market (employment, labor market, employability), digital transformation (digital technologies, digital transformation, online learning), quality assurance (accreditation, academic autonomy), and internationalization (internationalization, Bologna Process, global university rankings). This structure demonstrates that the Kazakhstani higher education system is subject to multidimensional academic scrutiny along the axes of reform, quality, digitalization, and internationalization.

Figure 7.

Keyword map

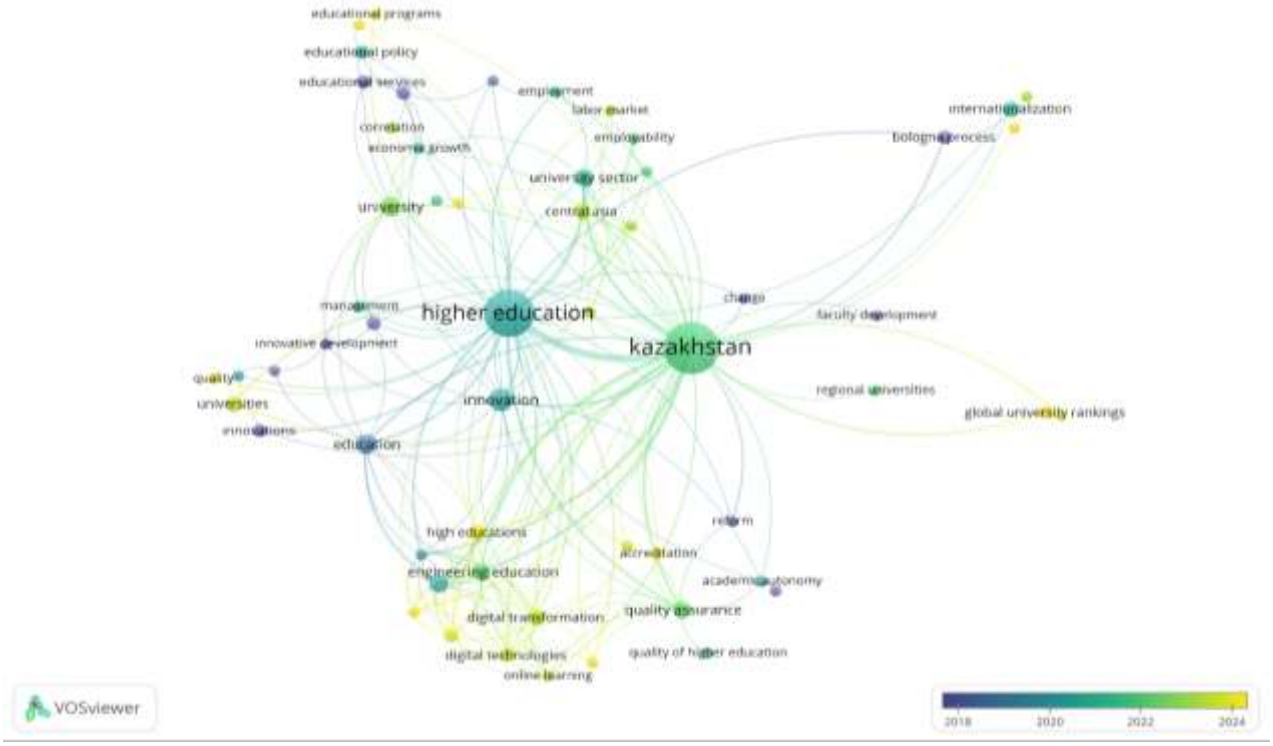


Figure 8a and Figure 8b show the analysis of the words in the abstract sections of relevant studies.

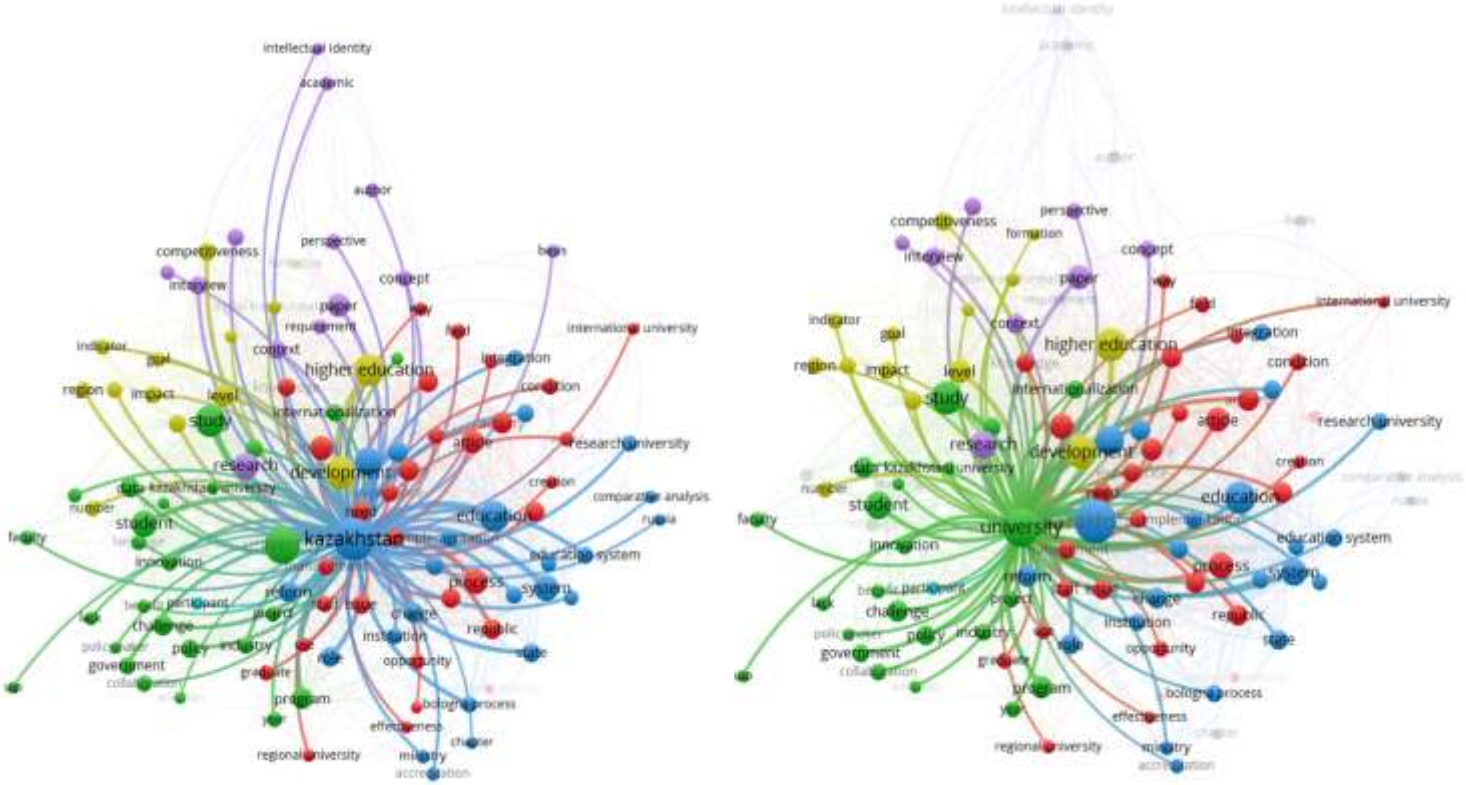
As seen in Figure 8a and Figure 8b, the first visual displays the central nodes "Kazakhstan." Concepts such as "education," "research," "development," "student," "reform," "innovation," and "management" within these nodes exhibit strong secondary-level connections. Green tones represent concepts such as student, innovation, and institutional. Red tones represent concepts such as education, article, and process. Blue tones represent concepts such as system, accreditation and the Bologna Process and purple ones represent concepts such as academic identity and competitiveness. The second visual presents a focused view centered on the concept of "university." This perspective shows that concepts directly related to the concept of university, such as "student," "research," "development," "reform," "innovation," "management," "government," and "policy," are concentrated around the university node. This

focus demonstrates that sustainable university competitiveness is a central factor, directly linked to research, student development, policymaking, and governance processes. Taken together, the two figures present studies across a broad thematic spectrum, from university governance and reform at the institutional level, to education system and policy analysis at the national level, and to integration and accreditation processes at the international level.

Figure 8a.

Kazakhstan-centered word map

Figure 8b. *University-centered word map*



Findings Regarding the Second Sub-Research Question

The findings regarding the impact of the policies and strategies implemented in increasing the sustainable competitive advantage of higher education institutions in Kazakhstan, which is included in the second sub-research question of the research, are presented in Table 3 (see appendix).

When the impact of the policies and strategies implemented by Kazakhstan's higher education institutions in enhancing their sustainable competitive advantage is considered it is seen that global partnerships and transnational university models developed within the framework of internationalization policies not only strengthen institutional capacity but also create new competitive areas. Compliance with the Bologna Process facilitates mobility through international staff recruitment and qualification comparability, and supports integration with European standards. Moreover, quality assurance systems enhance institutional credibility through national and international accreditation processes, while stakeholder-based

assessments ensure transparency. Quality assurance, particularly in engineering and informatics, fosters sectoral competition. Academic autonomy policies, on the other hand, provide universities with strategic flexibility, strengthen decision-making mechanisms, and support innovation capacity and academic freedom.

Governance and financial reforms represent a transition from post-Soviet legacies to modern governance systems, increasing efficiency and accountability. Performance- and innovation-focused funding models strengthen research capacity, while effective contracting systems increase academic motivation. Ranking-focused strategies, influenced by local and global competition, shape institutional performance indicators, and publication pressures, while increasing productivity, can also lead to ethical issues. Besides, the establishment of research universities strengthens the national innovation system, while agriculturally focused research universities support sectoral innovation. Language policies also stand out as a key element in enhancing international competitiveness. The trilingual education model balances globalization while preserving national identity. English-medium instruction (EMI) policies encourage international student and faculty mobility, providing students with both challenges and opportunities. Overall, these findings suggest that institutional capacity, international recognition, research productivity, and innovation potential have been strengthened in Kazakhstani higher education through internationalization, quality assurance, autonomy, governance reforms, competitive research structures, and language policies.

Findings Regarding the Third Sub-Research Question

The findings regarding how the intellectual capital elements (human, structural and relational capitals) in higher education institutions shape the competitive advantage in the third sub-research question of the research are presented in Table 4 (see appendix).

Table 4 presents findings on how intellectual capital elements shape competitive advantage in higher education institutions. In terms of human capital, the competencies of academic staff are observed to enhance institutional performance by enhancing the quality of education and research. The role of faculty members is particularly crucial in technological transformation processes. It is understood that the employment rates of university graduates directly impact the market value and prestige of institutions, and that detailed analysis of employment factors supports policy development. Furthermore, the so-called diploma sickness syndrome reveals the mismatch between education and employment. It has also been found that supporting early-career researchers strengthens their future potential, improving the research environment increases publication performance, and highlights the development needs of researchers, particularly in regional universities.

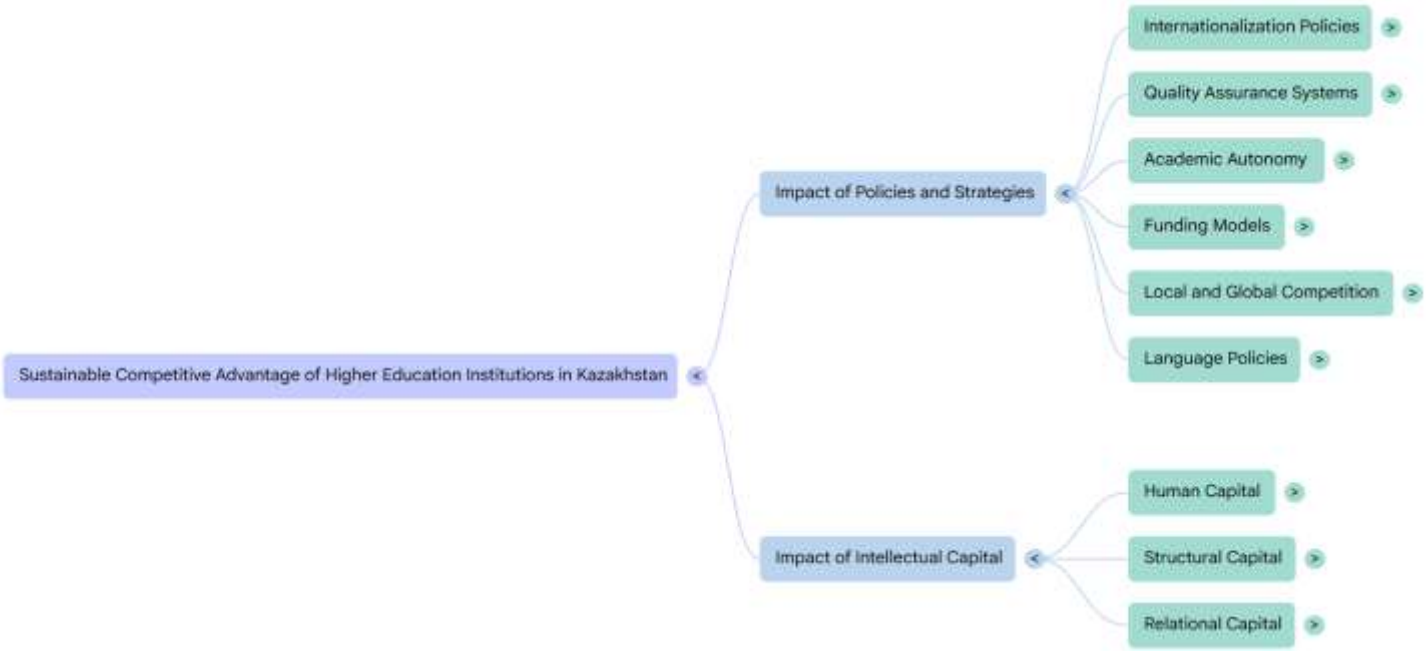
Findings regarding structural capital indicate that digital transformation improves educational quality and institutional effectiveness by increasing operational efficiency and access. AI integration transforms educational processes, while smart university systems optimize campus management. It is understood that corporate governance principles strengthen organizational capacity by increasing transparency and accountability, while

innovation management and entrepreneurial culture reinforce institutional dynamism. Relational capital demonstrates that interaction with external stakeholders is a key element in creating competitive advantage. University-industry collaborations generate mutual value in terms of innovation and employment, while the commercialization of university developments contributes to economic growth. These collaborations also contribute to the development of students' employability skills. Regional collaborations are observed to support economic and social development, and capacity-building activities strengthen local potential. Also, the social engagement of academics increases the societal impact of universities, while the role of educational communities in policy development supports institutional autonomy.

The sustainable competitive advantage of higher education institutions in Kazakhstan is shaped by two fundamental dimensions. The first dimension encompasses the impact of policies and strategies. Within this framework, internationalization policies determine institutions' positioning in the global academic environment, while quality assurance systems ensure the maintenance of educational and research standards. Academic autonomy refers to institutions' independence in decision-making, while funding models regulate the allocation and management of resources. Moreover, local and global competitive dynamics and language policies directly impact institutions' accessibility and capacity for international cooperation.

Figure 9.

Sustainable competitive advantage of higher education institutions in Kazakhstan



The second dimension focuses on the impact of intellectual capital. In this context, human capital represents the knowledge, skills, and competencies of academic staff. Structural capital represents institutional infrastructure, processes, and systems and relational capital represents strategic relationships and collaboration networks with stakeholders. The

integration of these two dimensions forms the basis of the long-term competitiveness of higher education institutions.

DISCUSSION AND COMMENTARY

Publication distribution and bibliometric patterns

This study aims to examine how policy components and intellectual capital dynamics interact in the processes of achieving sustainable competitive advantage at higher education institutions in Kazakhstan by integrating bibliometric and systematic review approaches. The findings indicate that the field has transformed into a maturing knowledge field with significant acceleration in recent years, and that publication-citation trends are on a sustained increase (Sun et al., 2024; Benavides et al., 2020). Moreover, a significant portion of publications is concentrated in the peer-reviewed article format, which increases the field's methodological standardization and the comparability of results (Abelha et al., 2020). Also, institutional distributions are clustered at specific research universities, indicating the mutually reinforcing relationship between research infrastructure, academic networks, and resource attraction capacity (Kuzhabekova, 2016; Jumakulov et al., 2019). An examination of keyword maps reveals the centrality of the nodes "Kazakhstan" and "higher education," and the increasing visibility of themes such as digital transformation, quality assurance, and internationalization. A thematic shift toward internationalization and online learning appears to be aligned with transformations in global higher education (Olzhebayeva et al., 2025).

Journals publishing relevant research cluster in the fields of education, economics, and management, creating a publishing ecology open to interdisciplinary growth but dominated by intra-field norms (Studies in Higher Education; Higher Education Policy; Cogent Education). However, it appears that the bibliometric trend is not limited to purely quantitative growth. Thematic focuses are becoming increasingly refined along the axes of policy, governance, and intellectual capital (Vasiliev, 2022). Evidence suggests that interdisciplinary interaction is sensitive to the strengthening of early-career research ecosystems and the improvement of data infrastructure (Kuzembayeva et al., 2022).

Policy and strategy effects on competitiveness

Findings indicate that internationalization policies reinforce competitive advantage through partnerships, transnational models, and mobility channels that strengthen institutional capacity (Kerimkulova et al., 2023). Furthermore, it is stated that Bologna alignment has established a standards-based quality language by increasing the comparability of qualifications (Burkhanova et al., 2016). Besides, it can be said that quality assurance and accreditation mechanisms strengthen both national and international recognition. The stakeholder-participatory evaluations increase transparency and accountability (Abdiraiymova et al., 2014; Manarbek & Kondybayeva, 2024; Nurgaliyeva et al., 2018). It is emphasized that academic autonomy policies create strategic flexibility in decision-making processes and stimulate innovation capacity (Hartley et al., 2016; Soltys & Bizhanova, 2020).

The transition from post-Soviet legacy to modern governance mechanisms appears to have produced gains in efficiency and accountability and institutionalized a culture of competition (Azimbayeva, 2017; Turekulova et al., 2017). Besides, performance- and innovation-focused funding models encourage research capacity and publication productivity. However, ranking pressures increase short-term targets and this can be challenging (Abuova et al., 2021; Bayanbayeva, 2025). Indeed, the establishment of research universities and field-specific structures appear to have accelerated the national innovation system (Jumakulov et al., 2019; Kuzhabekova, 2016; Shakirova et al., 2019). Also, sectoral focuses such as agricultural research universities are considered to have opened channels for regional innovation and job creation (Abdyrov et al., 2017; Syzdykov & Özkan, 2019). It is understood that EMI and multilingual education policies create new challenges and opportunities in teaching processes while supporting international competition (Goodman & Kambatyrova, 2022).

Related research suggests that autonomy and quality assurance increase competitiveness, while metricization can produce undesirable effects (Hart & Rodgers, 2024). Furthermore, findings suggest that language policies play a balancing role between national identity and global integration, and that this balance affects international students and faculty mobility (Bayetova & Robertson, 2025; Yermekova et al., 2024). Besides, it has been argued that governance reforms strengthen human capital motivation through effective contract systems and personnel policies, but sustainability depends on institutional learning and process stability (Belkhozhayeva et al., 2024; Madina et al., 2017). Additionally, while ranking-focused strategies provide increased visibility, they can also trigger ethical debates, and policy frameworks need to manage these tensions (Bayanbayeva, 2025a; Sultanova et al., 2018). In this context, the findings related to this research question show that competitive capacity increases with internationalization, quality assurance, autonomy, and coordination of financing mechanisms. However, design-implementation gaps and metric pressures require careful management (Hartley et al., 2016; Kaša et al., 2020; Robertson & Bayetova, 2022; Sagintayeva & Kurakbayev, 2015).

Intellectual capital components shaping competitive advantage

Findings indicate that human capital is a primary determinant of institutional performance through the quality of teaching and research, and that competence, experience, and creative capacity foster competitive advantage. Nevertheless, supporting early-career researchers and improving the research environment strengthens sustained publication performance and future capacity building (Shakirova et al., 2019). Graduate employability directly impacts institutions' market value and reputation, and employment indicators are understood to provide critical feedback for policymaking (Fursova et al., 2017; Khassenova et al., 2023; Sekerbayeva et al., 2024). The phenomenon referred to as "diploma disease" highlights education-employment mismatches and necessitates the redesign of curricula and stakeholder collaborations (Jonbekova, 2020; Gafu, 2025).

In terms of structural capital, digitalization strategies, AI integration, and smart campus systems increase institutional effectiveness by enhancing process efficiency, access, and decision support (Aisulu, 2024; Bazyl et al., 2025). Furthermore, corporate governance principles and innovation management permanently strengthen organizational capacity through transparency, accountability, and an entrepreneurial culture (Sagintayeva & Kurakbayev, 2015; Soltys & Bizhanova, 2020). Furthermore, university-industry collaborations, commercialization, and regional partnerships, through relational capital, accelerate knowledge transfer and support the development of employability skills (Kredina et al., 2023; Smirnova, 2016). Moreover, the contribution of regional collaborations to economic and social development establishes concrete links between higher education's tertiary mission activities and competitive advantage (Revalde & Sagintayeva, 2018; Myrzakhmet et al., 2022). The social participation of academics and their role in policy processes of educational communities form supportive grounds for institutional autonomy and legitimacy (Schneijderberg et al., 2021; Hartley et al., 2016).

Relevant literature shows that sustainable competitive advantage is strengthened when intellectual capital is integrated with innovation capacity, and this effect becomes permanent through the harmonious interaction of human, structural, and relational capital components (Hama & Cavusoglu, 2023; Pedro et al., 2019). Furthermore, the effectiveness of investments in structural capital is directly linked to the quality of governance and the maturity of the data infrastructure. Therefore, process design is understood to be of strategic importance (Sankhayeva et al., 2019; Tshanov, 2015). Furthermore, the regional and sectoral diversity of relational networks allows universities to position themselves in different competitive arenas, and this flexibility stands out as a factor that enhances institutional resilience (Abdyrov et al., 2017; Jonbekova et al., 2020). When investments in human capital development are considered, regular analysis of data on graduate employment and consideration of feedback from stakeholders increases the suitability of program designs for the target and strengthens the accuracy of planning (Sekerbayeva et al., 2024; Bezler & Sedlarski, 2022).

Early career support mechanisms and international collaborative projects produce complementary levers that increase academic publishing capacity and visibility (Kuzembayeva et al., 2022a; Jumakulov et al., 2019). However, the uneven distribution of intellectual capital components, the fragmentation of networks, and the limitations of resource diversity necessitate that institutional strategies be constructed in an inclusive manner (Vasiliev, 2022; Secundo et al., 2016). From a comparative perspective, the findings, in line with the trends emphasized in the global literature, show that capacity building is the most reliable determinant of competitive advantage and that this process produces higher effects when coordinated with the policy architecture (Hart & Rodgers, 2024; Pedro et al., 2020). In conclusion, the complementary and relational capital structure of human provides a strategic framework that should be evaluated together with an integrated governance approach and data-based decision

support systems, and this framework is supported by concrete institutional examples in the context of Kazakhstan (Secundo et al., 2017; Kuderov et al., 2018; Revalde & Sagintayeva, 2018).

Implications

Research shows that human capital management requires more than just recruitment and promotion. It also requires holistic talent management with early career support, mentoring, joint publishing networks, and data-driven performance mechanisms (Kuzembayeva et al., 2022a). Digitalization and the integration of AI provide coordinated efficiency in education, research, and management processes. Stakeholder participation in quality assurance and external accreditation enhance institutional credibility (Abdiraiymova et al., 2014; Manarbek & Kondybayeva, 2024). Autonomy supports innovation through decision-making and flexible budget tools, while hybrid financing models balance long-term capacity investments (Soltys & Bizhanova, 2020). University-industry collaborations grow relational capital and develop employability skills through internships, joint laboratories, and project-based work (Jonbekova et al., 2024b). Balancing EMI practices with pedagogical support and bilingualism strategies increases access while ensuring quality (Goodman & Kambatyrova, 2022). Tracking graduate data and establishing feedback loops with the labor market is a critical tool for reducing graduate unemployment and skills mismatch (Sekerbayeva et al., 2024). Overall, the findings suggest that competitive advantage in higher education is achieved through the coordination of intellectual capital components, the coherence of policy architecture, and the enhancement of governance quality. This framework offers a holistic change program for institutions (Pedro et al., 2020).

Limitations and Recommendations

Since the present study uses secondary data based on published documents, it reflects the contextual depth that field research can provide to a limited extent. Limiting databases to selective sources can lead to the exclusion of studies in local languages and institutional repositories. The predominance of publications in English can create cultural and linguistic biases in the representation of findings. The study includes publications through 2025, but the database search was conducted in October 2025, which represents a limitation for capturing the most recent data from the final two months of the year. The reliance of bibliometric metrics on counting and matching logic results in limited representation of content depth. Co-citation and keyword networks are affected by software and parameter selection, which can lead to variations due to different methodological choices. Examining policy and governance impacts through secondary data offers limited clarity in detailing implementation gaps. Furthermore, methodological changes in ranking and index data can complicate temporal comparisons. Differences in institutional names, the accurate attribution of author contributions, and heterogeneity in thematic indicators can also create uncertainties in measurements. For all these reasons, interpretations of the study should be context-sensitive and consider methodological limitations.

In future researches, expanding bibliometric coverage to Kazakhstani databases and institutional archives could mitigate representativeness issues. Supporting bibliometric analyses with qualitative methods and conducting in-depth interviews with stakeholders would enrich contextual understanding. Monitoring early-career researchers, evaluating mentoring programs, and comparative studies on research university models could inform capacity building. Multifaceted analyses of EMI practices, ranking pressures, and graduate tracking systems would inform policy design. Regional collaborations, digital transformation projects, and applied studies focusing on the university-industry ecosystem would strengthen relational and structural capital. Furthermore, disseminating open science principles and continuously updating feedback loops would support institutional learning and sustainable competitive advantage.

CONCLUSION

This study examines the interaction between policy architecture and intellectual capital components in Kazakhstani higher education, revealing the multivariate nature of competitive advantage. The analysis demonstrates that institutional capacity is significantly strengthened when internationalization, quality assurance, autonomy, and financing mechanisms are implemented in concert with human, structural, and relational capital. The connections established by research universities with the national innovation system place the economic and social impact of the third mission at the heart of institutional competitiveness. The balancing of language policies between access and quality demonstrates that global integration and local identity can be managed together.

While ranking and visibility-focused incentives provide a powerful external boost, they can have negative side effects if not supported by ethical and integrity principles. Graduate tracking systems, labor market feedback, and the integration of industry partnerships into program design offer concrete channels for fostering competitive advantage. The integration of digital transformation and AI, combined with governance principles and data security, serves as a strategic lever for increasing structural capital maturity. Supporting early-career researchers and disseminating international projects strengthens the continuity and visibility of knowledge production.

Deepening regional collaborations and technology transfer channels enhances both competitiveness and societal impact by perpetuating relational capital. This integrated approach emphasizes that competitive advantage should be assessed not only through performance metrics but also through the principles of value creation, transparency, and accountability. By bringing together fragmented findings, the study bridges the gap between theory and practice and provides an evidence-based foundation for policy design. Consequently, it clearly shows that sustainable competitive advantage need to be developed simultaneously with institutional capacity, policy coherence, and collaboration networks. Supporting this

process with periodic reviews and feedback within a long-term learning cycle is a fundamental requirement.

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Appendix

Table 3. What is the impact of implemented policies and strategies in increasing the sustainable competitive advantage of higher education institutions in Kazakhstan?

Theme	Sub-theme	Category	n	Related Researches
The Impact of Internationalization Policies on Competitive Advantage	Global partnerships and collaborations strengthen institutional capacity	International collaborations increase institutional capacity and reputation.	5	Kerimkulova (2011); Maudarbekova & Kashkinbayeva (2014); Jantassova et al. (2021); Kuzhabekova (2020); Almukhambetova (2025);
		Transnational university models create new areas of competition	4	Varpahovskis & Kuteleva (2023); Ruby et al. (2016); Berdibaev et al. (2024); Anarbek et al. (2016)
	Bologna Process harmonization ensures integration with European standards	International staff recruitment brings global standards	3	Ruby et al. (2016); Hwami (2023); Jantassova et al. (2021)
		Comparability of qualifications facilitates international mobility.	3	Abylaiuly & Ibraeva (2013); Yergebekov & Temirbekova (2012); Burkhanova et al. (2016)
Quality Assurance Systems Ensure Corporate Reliability.	Accreditation processes provide national and international recognition.	National and international accreditation ensures compliance with global standards.	5	Kerimkulova (2014); Mukhatayev et al. (2024); Manarbek & Kondybayeva (2024); Azhibayeva et al. (2024); Abdiraiymova et al. (2014)
		Stakeholder-based quality assessment increases the	3	Abdiraiymova et al. (2014); Manarbek & Kondybayeva (2024); Nurgaliyeva et al. (2025)

Theme	Sub-theme	Category	n	Related Researches
		transparency of the system.		
		Quality assurance in engineering and IT education supports sectoral competitiveness.	3	Ahrens et al. (2020); Syzdykov & Özkan (2019); Yaskevich et al. (2022)
	Academic autonomy creates strategic flexibility and innovation capacity	The transition to autonomy strengthens institutional decision-making mechanisms.	4	Sagintayeva & Kurakbayev (2015); Nurgaliyeva et al. (2018); Soltys & Bizhanova (2020); Sagintayeva (2013)
		Institutional autonomy fosters academic freedom and innovation	5	Akatayeva (2021); Hartley et al. (2016); Soltys & Bizhanova (2020); Sagintayeva & Kurakbayev (2015); Nurgaliyeva et al. (2018)
Governance, structural, and financial reforms improve institutional effectiveness	Transition to modern management systems increases operational performance	The transformation from the post-Soviet system to modern governance creates a culture of competition	6	Azimbayeva (2017); Kasenova & Boretsky (2013); Turekulova et al. (2017); Mazhitova (2014); Gurevich (2011); Sydyknazarov (2012)
		Management system reforms increase efficiency and accountability	5	Kasenova & Boretsky (2013); Turekulova et al. (2017); Azimbayeva (2017); Tshanov (2015); Ussenova et al. (2017)
	State financing models ensure institutional stability	Performance and innovation-focused financing enhances research capacity	6	Mhamed et al. (2021); Ashirbekov et al. (2016); Kaša et al. (2020); Jumakulov et al. (2019); Bishimbayeva (2017); Bersimbayeva (2017)
		Effective contract systems increase academic staff motivation	3	Madina et al. (2017); Belkhozhayeva et al. (2024); Aidarov et al. (2020)
Local and global competition enhances the university's publication and research portfolio	Global competition determines strategic orientation	Ranking-focused strategies shape corporate performance indicators	4	Bayanbayeva (2025a); Bayanbayeva (2025b); Hwami (2024); Abuova et al. (2021)
		While the pressure to publish increases research	2	Bayanbayeva (2025c); Sultanova et al. (2018)

Theme	Sub-theme	Category	n	Related Researches
		productivity, it also creates ethical problems.		
	Research-oriented structuring supports the national innovation system	Establishing research universities increases scientific productivity	6	Bersimbayeva (2017); Kuzhabekova (2016); Ashirbekov et al. (2016); Jumakulov et al. (2019); Shakirova et al. (2019); Aralbayeva et al. (2019)
		Agricultural research universities support sectoral innovation	3	Abdyrov et al. (2017); Syzdykov & Özkan (2019); Jonbekova et al. (2020)
Language Policies Support International Competition	English-medium education (EMI) with its multilingual education model provides national and global balance.	The trilingual system supports globalization while preserving national identity.	6	Konopyanova et al. (2017); Kerimkulova et al. (2023); Bayetova & Robertson (2025); Yermekova et al. (2024); Tazhitova et al. (2024); Calafato (2021)
		EMI policies increase international student and academic mobility	5	Kerimkulova et al. (2023); Goodman & Kambatyrova (2022); Tajik et al. (2022); Yermekova et al. (2024); Calafato (2021)
		EMI applications present opportunities while creating challenges for students	2	Tajik et al. (2022); Goodman & Kambatyrova (2022)

Table 4. Findings on how intellectual capital elements (human, structural, relational capitals) shape competitive advantage in higher education institutions

Themes	Sub-themes	Categories	n	Related Researches
Human Capital Increases Corporate Performance	The competencies of academic staff increase the quality of education.	The intellectual capital of faculty members increases the quality of teaching and research.	6	Sultanova et al. (2018); Seitova (2016); Menlibekova et al. (2014); Tulegenova et al. (2019); Aidarov et al. (2020); Selvanathan et al. (2019)
		The role of faculty members in technological transformation is critical	3	Tulegenova et al. (2019); Aisulu (2024); Potluri & Kilaru (2024)
	Employment of university graduates increases	Employment rates determine the market value and prestige of universities.	5	Fursova et al. (2017); Sekerbayeva et al. (2024); Khassenova et al. (2023); Gafu (2025); Jonbekova et al. (2024)

Themes	Sub-themes	Categories	n	Related Researches
	corporate reputation	Analysis of employment factors supports policy development	5	Sekerbayeva et al. (2024); Khassenova et al. (2023); Bezler & Sedlarski (2022); Fursova et al. (2017); Gafu (2025)
		Diploma sickness syndrome demonstrates employment-education mismatch	2	Jonbekova (2020); Gafu (2025)
	Researcher capacity determines scientific competitiveness	Supporting early career researchers creates future potential	6	Kuzembayeva et al. (2022a); Kuzembayeva et al. (2022b); Kuzhabekova (2016); Ashirbekov et al. (2016); Jumakulov et al. (2019); Bersimbayeva (2017)
		Improving the research environment increases publication performance	5	Kuzhabekova (2016); Shakirova et al. (2019); Bayanbayeva (2025c); Sultanova et al. (2018); Jumakulov et al. (2019)
		Researcher development needs are emerging in regional universities	3	Kuzembayeva et al. (2022a); Kuzembayeva et al. (2022b); Kuzhabekova (2016)
Structural Capital Strengthens Institutional Infrastructure and Processes	Digital transformation increases operational efficiency and Access	Digitalization strategies improve educational quality and institutional effectiveness	4	Aisulu (2024); Berdykulova et al. (2022); Ipalakova et al. (2025); Yaskevich et al. (2022)
		Integration of artificial intelligence transforms educational processes	2	Bazyl et al. (2025); Potluri & Kilaru (2024)
		Smart university systems optimize campus management	3	Saparkhojayev & Akkozieva (2016); Yaskevich et al. (2022); Ipalakova et al. (2025)
	Corporate governance and innovation structures determine organizational capacity	Corporate governance principles increase transparency and accountability	2	Sankhayeva et al. (2019); Sagintayeva & Kurakbayev (2015)
		Innovation management and entrepreneurship culture strengthen corporate dynamism	2	Kuderov et al. (2018); Aralbayeva et al. (2019)
Relational Capital Strengthens	University-industry collaborations	The development of university-industry partnerships creates	6	Jonbekova et al. (2020); Jonbekova et al. (2024a); Bishimbayeva (2017)

Themes	Sub-themes	Categories	n	Related Researches
Interaction with External Stakeholders	create mutual value	innovation and employment.		
		Commercialization of university developments creates economic value.	3	Sitenko (2025); Smirnova (2016); Kredina et al. (2023)
		Developing employability skills through collaboration	3	Jonbekova et al. (2024); Sekerbayeva et al. (2024); Gafu (2025)
	Regional collaborations contribute to local development.	Contribution to regional competitiveness supports economic and social development	4	Revalde & Sagintayeva (2018); Myrzakhmet et al. (2022); Kuzembayeva et al. (2022a); Olzhebayeva et al. (2025)
		Capacity building at regional universities strengthens local potential	3	Kuzembayeva et al. (2022a); Kuzembayeva et al. (2022b); Kuzhabekova (2016)
		Academics' community engagement strengthens the university's social impact.	3	Schneijderberg et al. (2021); Soltys & Bizhanova (2020); Bespalyy et al. (2024)
		The role of the education community in policy development supports institutional autonomy	2	Soltys & Bizhanova (2020); Hartley et al. (2016)