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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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IDEOLOGICAL FAULT LINES IN PHARMACEUTICAL POLICY OF KAZAKHSTAN: A Q-METHODOLOGICAL APPROACH

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Abstract.

The pharmaceutical sector in Kazakhstan faces a complex interplay of regulatory, economic, and social challenges, including a high dependency on imports, fragmented policy perspectives, and limited integration of international innovation practices.

This study applied Q-methodology to identify and structure the dominant and latent viewpoints within the professional community regarding the development of Kazakhstan's pharmaceutical industry.

A set of 39 statements was developed through literature review, policy document analysis, and preliminary interviews with sector stakeholders. Twenty experts were selected based on professional relevance from public agencies, academia, and the pharmaceutical industry. Factor analysis using principal components with varimax rotation was conducted to extract shared perspectives. Three distinct factors were identified, representing structured ideological positions. Factor 1 supports strong state involvement in pricing, R&D, and domestic production; Factor 2 expresses skepticism toward state-led strategies, emphasizing economic pragmatism and reliance on imports; Factor 3 advocates for deregulation, market-driven growth, and international integration. Each factor was aligned with specific professional backgrounds and interpreted through follow-up interviews. Market indicators (imports, investment projects, sales dynamics) were used to contextualize the factor interpretations and to illustrate how each viewpoint reads the same empirical baseline, rather than to validate the factors as accurate or inaccurate.

The findings reveal a significant divergence of expert opinion, which may hinder cohesive policy development in the pharmaceutical sector. Ideological fragmentation poses risks in the context of weak institutional coordination and external market pressures. Q-methodology proved effective in mapping nuanced perspectives and may serve as a tool for informed policy dialogue in healthcare governance.

Key words. Pharmaceutical economics, health policy, drug industry, Q methodology, health care sector, evidence-based practice.

Introduction.

The pharmaceutical sector of Kazakhstan remains one of the most vulnerable to external factors in terms of production, logistics, and pricing [1].

Despite the course declared in state programs to strengthen pharmaceutical independence and localize production, the actual market structure is still determined by a high level of external dependence [2].

At the same time, there is a lack of a stable analytical framework that would allow for aligning declared priorities with the realistic capacities of the system [3].

The development and implementation of pharmaceutical policy is complicated not only by economic or technological barriers but also by ideological discord within the professional community [4].

The impact of these disagreements on strategic decisions is often underestimated: the positions of specialists on key issues—from the acceptable level of state intervention to the role of transnational corporations—range from protectionist to market-oriented, from optimistic to skeptical [5].

There is no systematic approach to identifying, typologizing, and taking these views into account in the decision-making process [6].

The use of Q-methodology helps to bridge this gap [7,8]. Unlike traditional surveys, it makes it possible to capture not an averaged opinion, but structural configurations of expert positions, including marginal or latent viewpoints [9,10]. This is critical in situations where key decisions in healthcare are made in an environment of limited consensus, and development strategy is often replaced by a set of tactical compromises.

In turn, the need to analyze the internal fragmentation of the expert field is not an abstract task—it directly affects the realism and sustainability of pharmaceutical policy in Kazakhstan.

Materials and Methods.

Methodological Approach:

To analyze perceptions and expert positions regarding the pharmaceutical sector of the Republic of Kazakhstan, Q-methodology was used due to its ability to combine qualitative procedures (interpretation of opinions) with quantitative methods (factor analysis of Q-sorts) [11].

Within the Q-methodological framework, the unit of analysis is the individual respondent as a bearer of a particular system of views. The study operates with the concept of "operant subjectivity"—the open expression of views through the sorting of statements that are personally meaningful to the participant.

The procedure included: 1) formation of a Q-set consisting of 39 statements based on interviews, regulatory, and industry sources; 2) individual sorting along a scale from –4 to +4 with enforced quasi-normal distribution; 3) factor analysis using the principal component method with varimax rotation to identify groups of similar opinions.

Each Q-sort was analyzed as a whole and compared with others using correlation analysis. Factors were identified when at least two respondents had high loadings, eigenvalue >1, and logical consistency of views.

Q-set development:

For the formation of the statement set (Q-set), a combined approach was used, which included the analysis of 47 publications from academic and industry literature, content analysis of 9 normative and strategic documents related to pharmaceutical policy in Kazakhstan, as well as 6 preliminary interviews with representatives of government agencies, private companies, and the university sector.

The selection involved 3 experts with experience in pharmaceutical regulation and healthcare. The final Q-set included 39 statements reflecting the key areas of discussion: government regulation, investment and R&D, localization of production, the role of transnational companies, trust in medicines, and the impact of marketing and advertising.

The complete list of the 39 Q statements used for sorting is provided in Table 1. The statements were distributed across six thematic blocks based on their content and expert validation.

P-set sample of respondents:

The study included 20 respondents, purposefully selected according to the principle of expert relevance, which is consistent with the approach recommended for Q methodology [12]. The sample (P-set) was formed from representatives of the Ministry of Health and its subordinate organizations (n=6), the university scientific community (n=5), private and public pharmaceutical companies (n=6), as well as independent consultants and industry analysts (n=3). The distribution of respondents was designed to proportionally reflect their relative involvement in pharmaceutical policy-making in Kazakhstan. Government agencies and pharmaceutical companies were prioritized due to their direct regulatory and operational influence, while academia and consulting firms represent analytical and advisory contributions. This rationale ensures that all key stakeholders were proportionally represented in the Q-analysis.

The main inclusion criterion was a confirmed professional experience of at least 5 years in the fields of healthcare, pharmaceutical regulation, policy, or investment management in the sector.

Q-Sorting Procedure:

Each of the 20 respondents was asked to sort 39 statements on a nine-point scale from –4 (maximum disagreement) to +4 (maximum agreement) using a forced quasi-normal distribution, which corresponds to standard Q methodology practice.

The distribution included 2 statements at the extreme poles, 3 at the ±3 levels, 4 at the ±2 levels, 5 at the ±1 levels, and 11 statements in the neutral position (0), which ensures a symmetrical pyramidal shape and encourages cognitive differentiation of significant positions.

After completing the sorting, each respondent participated in a short structured interview lasting 10–15 minutes, aimed at clarifying the reasoning for the extreme values and identifying contextual factors influencing their choices. Conducting a post-sorting interview is recommended as part of the interpretative phase in Q studies.

Table 2 shows the distribution of 20 anonymous respondents by stakeholder group and factor membership. Factor 1 (n=11) comprises 54.5% government regulators, 27.3% academia, and 18.2% industry. Factor 2 (n=6) consists of 50.0% industry, 33.3% academia, and 16.7% consultants, with no government participants. Factor 3 (n=2) is equally represented by industry.

Data Processing:

Q-sorts were processed using principal component analysis (PCA) followed by varimax rotation, which corresponds to the accepted standards of Q-methodology [12].

The threshold for a significant factor loading for inclusion of a sort in a factor was set at ≥0.40, providing acceptable statistical interpretability. The constructed correlation matrix between all sorts made it possible to identify clusters of similar views, based on which factor arrays were formed.

Thus, the criteria for including factors in the interpretation included: an eigenvalue of at least 1.0; the presence of at least two respondents with a factor loading of ≥0.40 on a specific factor; conceptual coherence of statements with high and low values for each factor (face validity).

Given the abductive nature of Q interpretation, we retained a three-factor solution as the most conceptually informative. Factor 3, defined by two Q-sorts, was therefore framed as a minority viewpoint (ideal type) and discussed as a qualitative position rather than as a stable subgroup estimate. Factor interpretation relied on the analysis of extreme positions in the distribution and distinguishing statements specific to each factor. Additionally, post-sorting interviews (on average 10–12 minutes) were conducted, during which participants explained their motivations and emphases, especially regarding positions that occupied extreme values on the scale. Data processing and visualization of factor solutions were carried out using Ken-Q Analysis Desktop Edition software (version 1.0.6). Market indicators were incorporated as contextual reference points. This step was intended to enhance the policy interpretability of factor narratives and to show how each factor frames the same market conditions, rather than to validate factors as true OR false statements. In Q-methodology, factors represent shared viewpoints. The empirical indicators are presented as the background against which those viewpoints are articulated.

Results.

Factor Extraction:

A factor analysis of Q-sort data was performed using the Principal Component Analysis (PCA) method, which is standard practice in Q-methodology [13]. Based on 20 Q-sorts, an inter-correlation matrix was constructed, reflecting the degree of similarity in opinions among all participants. On this basis, factors representing stable configurations of viewpoints were extracted using PCA.

After extracting the components, an orthogonal varimax rotation was applied to enhance the distinctiveness of the factors and reduce their intercorrelations.

As a result of the analysis, three stable factors were identified. Each is interpreted as a type of position within the expert community regarding the development of the pharmaceutical sector. The general characteristics of the factors are presented in Table 3.

Taken together, the three factors account for 49% of the total variance. The first factor reflects the most common configuration

Table 1. *Q-set statements used for Q-sorting (n = 39).*

№	Statement
1	The pharmaceutical industry spends an unreasonably lot of money for advertisement of drugs.
2	Pharmaceutical advertisement is very useful because the consumers are getting very useful information through it about new drugs.
3	Most doctors prescribe conventional and well-known drugs.
4	It would be desirable to monitor the R&D activities of pharmaceutical companies more closely.
5	The price of medicines should be determined by the state.
6	It is advisable to keep the medicines for acute diseases at a persistently low level.
7	People are consuming unnecessarily many medications. It would be reasonable to sell the drug for medical prescription only.
8	The pharmaceutical industry is one of the most profitable industries. For international firms the profit is more important than the healing of diseases.
9	The pharmaceutical industry should operate based on the same ethical principles, like the doctors. The profit is secondary.
10	The income of doctors largely depends on their relationship with the pharmaceutical industry, this undermines the credibility of the doctors.
11	The drug consumption is unjustifiably high.
12	The aim of marketing is to know and understand the customer so well the product or service fits him and sells itself.
13	Understanding patient behaviour is essential to influencing them.
14	Models of consumer behaviour can help pharmacists increase medication adherence, change smoking behaviour, communicate health messages, design services, and influence physician prescribing.
15	Some patients have more diseases and they get treatment for them. Used drugs interact. We need independent research to study this issue.
16	The pharmacy store should be an intimate private area where the consumer and the pharmacist can discuss how the consumer should use her/his medicines.
17	The customers can use the competence of the pharmacists as support, when they decide what drugs to take, and when to take them.
18	The pharmacist should make a thorough professional review of each drugs bought by the consumer.
19	The pharmacist should confirm to the consumer that the chosen drug is safe for use.
20	The pharmacy should be like a health marketplace, where consumers can get drugs, lifestyle advice, blood pressure measurements or whatever they need.
21	The pharmacy I leave with good questions for the physician visit when I have discussed my drug use with the pharmacist.
22	The pharmacist knows the medicine better than the physician, so it is advisable to ask him before the prescription of the medication.
23	The pharmacist’s connections with the physicians make it 100% certain that everybody get the right drug on.
24	When a consumer has questions about his/her drugs, the pharmacist should answer them.
25	Each drug has side effects, to use them for medication is based on the patient’s assessment of risks versus benefits.
26	The use of a drug is enough a belief that the disease will get better with treatment.
27	The protection of intellectual property is a barrier to scientific progress. If world scientists could make their findings public, they would have solved a number of diseases.
28	From a business interest, they also buy patents that they do not want to use. This slows down scientific progress.
29	Most of the innovations are not born today because explorers "want to make the world better", but from business interests or research fame.
30	Research across the world of pharmaceuticals with minimal coordination would be enough to treat illnesses that affect only few people or poor people.
31	The branded drugs in the world are much more expensive than the quality difference justifies. The success of the drug is largely based on marketing.
32	A researcher, when he discovers a new drug, is best sold to his patent to world business.
33	In the pharmaceutical industry, research and licensing costs are so high that small-scale small companies can maintain a meaningless research laboratory.
34	Newer pharmaceutical companies are trying unnecessarily with research, and market success cannot be achieved.
35	In all countries it is advisable to maintain laboratories for pharmaceutical research, not because they could expect economic results, but because without that, the country would still be unable to follow the development of world science.
36	There are some types of drugs that are used to treat the most important for life, but with the quality of life ethically questionable.
37	People trust local pharmaceutical drugs because of their quality-price ratio.
38	The quality of pharmaceutical drugs satisfies the need of local consumers.
39	In Kazakhstan, Ukrainian, Russian and Belarusian medicines are more recognizable than medicines from Europe and the USA.

Table 2. *Distribution of stakeholder groups across extracted factors (n=20).*

Stakeholder group	Factor 1 State-Led Faction n (%)	Factor 2 Pragmatic Skeptics n (%)	Factor 3 Market-Integration n (%)	Unassigned n (%)
Government regulatory bodies	6 (54.5%)	0 (0.0%)	0 (0.0%)	0 (0.0%)
Academia	3 (27.3%)	2 (33.3%)	0 (0.0%)	0 (0.0%)
Pharmaceutical industry	2 (18.2%)	3 (50.0%)	1 (50.0%)	0 (0.0%)
Consultants analysts	0 (0.0%)	1 (16.7%)	1 (50.0%)	1 (100%)
Total	11 (100%)	6 (100%)	2 (100%)	1 (100%)

Table 3. *Characteristics of extracted factors (according to PCA and varimax rotation results).*

Factor	Eigenvalue	Explained Variance (%)	Reliability (Cronbach's alpha)	Number of Respondents (n)
1	3.74	25.0	0.960	11
2	1.99	13.0	0.941	6
3	1.69	11.0	0.952	2

Table 4. *Correlation Coefficients between Factors.*

Factor Pair	Coefficient of Correlation (r)
Factor 1 and Factor 2	0.193
Factor 1 and Factor 3	–0.245
Factor 2 and Factor 3	–0.197

of opinions in the sample and is distinguished by high internal consistency. The second and third factors represent less common but conceptually significant positions formed among a subset of respondents. Reliability levels ($\alpha > 0.94$) confirm the internal coherence of judgments within each group.

Correlations between factors:

To assess the relationships between the identified factors, a factor correlation matrix was calculated (Table 4).

The analysis showed that Factor 1 and Factor 2 demonstrate a weak positive correlation ($r = 0.193$), indicating a partial overlap in positions, for example, regarding the role of the state in pricing policy. There is a moderate negative correlation between Factor 1 and Factor 3 ($r = –0.245$), reflecting a conceptual divergence in views on the priorities of the pharmaceutical sector: from an active state role (Factor 1) to a market model with minimal intervention (Factor 3). The correlation between Factors 2 and 3 is also negative ($r = –0.197$), confirming the presence of methodological differences between the skeptical position and the market approach.

Factor description (typology of expert positions):

Factor 1 grouped 11 respondents (55% of the sample) and demonstrated the highest proportion of explained variance (25%) and the maximum eigenvalue (Eigenvalue = 3.74). The internal consistency of the assessments is confirmed by high reliability ($\alpha = 0.960$). The group includes specialists directly involved in state regulation, scientific research, as well as representatives of the university sector and major domestic pharmaceutical companies.

Respondents' Answers:

Key statements for Factor A are presented in Figure 1.

– "Development of national pharmaceutical production should be a priority of state policy" (+4);

– "The state should actively invest in R&D in the pharmaceutical sector" (+3);

– "Price regulation for essential medicines is a necessary measure" (+3);

– "Excessive influence of transnational companies hinders the formation of an independent sector" (+2);

– "Marketing and advertising by pharmaceutical companies should be strictly regulated" (+2).

– Negative ratings were given to statements reflecting a market-based approach:

– "State price regulation undermines market mechanisms" (–4);

– "Private investment should be the sole source of funding for the pharmaceutical sector" (–3);

– "Import is more efficient and reliable than local production" (–3).

Group profile indicates a high level of trust in the state's role as the main driver in the development of the pharmaceutical sector. Participants emphasize the need for pharmaceutical independence, localization of production, strengthening price control mechanisms, and increasing public investment in science. Attitudes toward international pharmaceutical companies are restrained: their technological significance is acknowledged, but concerns are raised regarding their influence on accessibility and policy priorities.

Factor 2 — Sceptics regarding the independent development of the pharmaceutical sector:

Factor 2 includes 6 respondents (30% of the sample), with an eigenvalue of 1.99, explained variance of 13%, and a reliability coefficient of 0.941. Representatives of this factor are mainly economists, managers, and private sector representatives who are not directly involved in state regulation or drug development. Their positions are shaped by a rational and critical view of the limitations of the pharmaceutical sector under the current conditions in Kazakhstan.

The key statements that received the highest positive scores, as well as the most negatively rated statements related to the maximalist role of the state for Factor 2, are presented in Figure 2. Key statements with the highest positive scores:

– "Kazakhstan does not have a sufficient scientific and industrial base to produce complex pharmaceuticals" (+4);

– "Imported medicines should remain the foundation of pharmaceutical market supply" (+3);

– "Excessive state regulation may hinder business development" (+3);

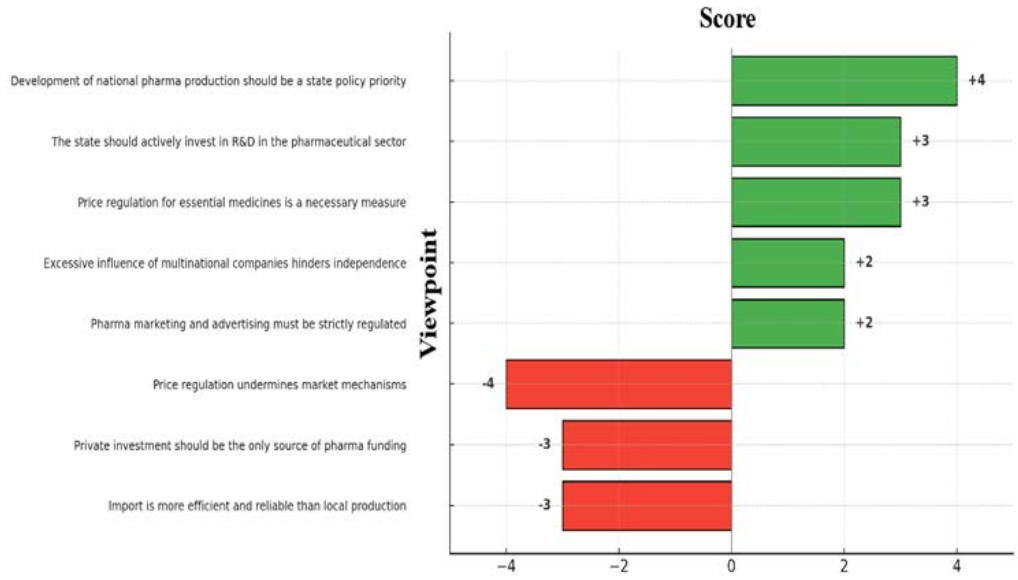

Figure 1. *Key statements for factor 1 among respondents.*

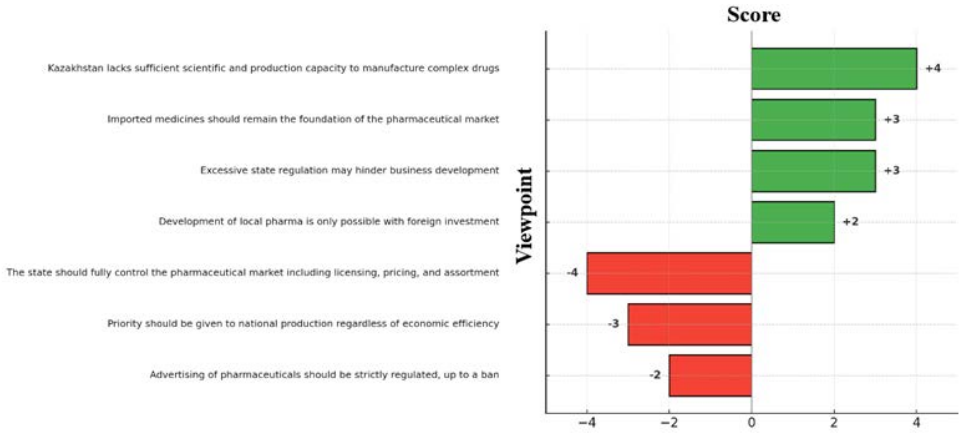

Figure 2. *Key statements for Factor 2.*

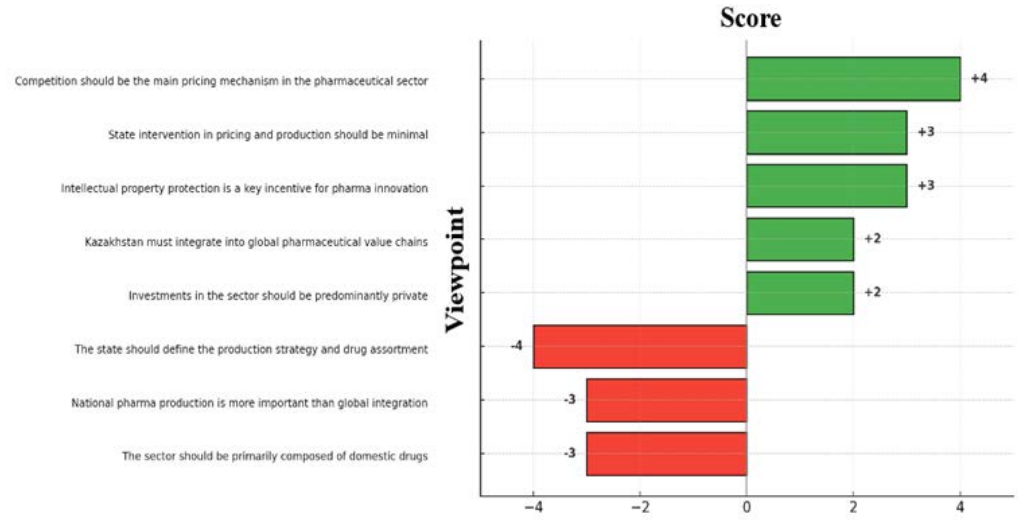

Figure 3. *Key statements for Factor 3.*

– “Development of the domestic pharmaceutical industry is possible only with the participation of foreign investors” (+2).

The most negatively rated statements related to the maximalist state role:

– “The state should fully control the pharmaceutical market, including licensing, pricing, and product range” (–4);

– “Priority should be given to national production regardless of economic efficiency” (–3);

– “Regulation of pharmaceutical advertising should be strict, up to and including a ban” (–2).

The profile of respondents in this factor is characterized by high sensitivity to economic and institutional constraints. The idea of optimizing the role of the state is supported, but without excessive interference in pricing and market relations. The prevailing opinion is that sustainable sector development is possible in the context of external partnership and reliance on proven imported models.

Factor 3 — Supporters of the market model and international integration:

Factor 3 includes 2 respondents (10% of the sample), with an eigenvalue of 1.69, explained variance of 11%, and Cronbach’s alpha reliability of 0.952. Despite the limited number, the factor demonstrates conceptual coherence and reflects a stable liberal stance within the expert community. Both respondents have experience working on international projects or have studied at foreign academic institutions focused on market principles in healthcare (Figure 3).

The most strongly agreed statements and sharply negative evaluations among supporters of the market model and international integration are presented in Figure 3, namely:

– “Competition should be the main mechanism for pricing in the pharmaceutical sector” (+4);

– “Government intervention in pricing and production should be minimal” (+3);

– “Intellectual property protection is a key driver of innovation in pharmaceuticals” (+3);

– “Kazakhstan needs to integrate into global pharmaceutical supply chains” (+2);

– “Investment in the sector should be predominantly private” (+2).

Statements associated with an enhanced state role received sharply negative ratings:

– “The state should determine the strategy for production and the range of medicines” (–4);

– “Development of national pharmaceutical production is more important than integration into international networks” (–3);

– “The sector should be based primarily on domestic drugs” (–3).

The expert position of this group emphasizes the effectiveness of the free market and the mechanisms of international partnership. It is noted that excessive regulation reduces innovation dynamics and limits access to advanced developments. The state is assigned the role of arbiter and facilitator, but not a direct player. The ideology of import substitution and the prioritization of national production outside market principles are viewed critically. Factor 3 should be interpreted as a minority ideal-type position.

Table 5 shows that Factor 2 and Factor 3 are separated by multiple statistically significant pairwise distinguishing statements with opposite (or markedly different) placements and z-scores.

For Factor 2, the strongest distinguishing item is the statement that Kazakhstan lacks a sufficient scientific/industrial base for complex pharmaceutical development, which is placed at +4 (Z=+1.85) in Factor 2 but at −1 (Z=−0.25) in Factor 3 (Diff=+2.10; $p<0.01$). Factor 2 also more strongly supports the statement that imports should remain the foundation of market supply (+3; Z=+1.10) compared with a neutral placement in Factor 3 (0; Z=+0.05) (Diff=+1.05; $p<0.05$). Several statements related to domestic production and state role are less negatively positioned in Factor 2 than in Factor 3, including “the state should determine production strategy and medicine range” (−2 vs −4; Z=−0.85 vs −1.80; Diff=+0.95; $p<0.05$), “national production is more important than integration into international networks” (−1 vs −3; Z=−0.40 vs −1.10; Diff=+0.70; $p<0.05$), and “the sector should be based primarily on domestic drugs” (−1 vs −3; Z=−0.35 vs −1.05; Diff=+0.70; $p<0.05$).

For Factor 3, the most distinguishing statements emphasize market mechanisms and limited state involvement: “competition should be the main mechanism for pricing” is neutral in Factor 2 (0; Z=+0.05) but placed at +4 in Factor 3 (Z=+1.75) (Diff=−1.70; $p<0.01$), and “government intervention in pricing/production should be minimal” is placed at −1 in Factor 2 (Z=−0.35) versus +3 in Factor 3 (Z=+1.20) (Diff=−1.55; $p<0.01$). Factor 3 also places higher emphasis on “intellectual property protection as a key driver of innovation” (0 vs +3; Z=+0.10 vs +1.10; Diff=−1.00; $p<0.05$) and on predominantly private investment in the sector (0 vs +2; Z=+0.05 vs +0.80; Diff=−0.75; $p<0.05$).

Comparative analysis of expert positions:

Based on the results of factor analysis with varimax rotation, 19 out of 20 respondents were clearly distributed among three factors according to the dominant factor loading (≥0.40). One participant had cross-loadings below the threshold and was excluded from the interpretable groups. The distribution is as follows: Factor 1 — supporters of active government policy (11 people, 55%), Factor 2 — skeptics of national pharmaceutical development (6 people, 30%), Factor 3 — market liberals and internationalists (2 people, 10%). One respondent was not classified (5%) into any factor because all factor loadings were below the 0.40 threshold, which indicates a lack of strong alignment with any of the identified ideological positions.

The factor analysis made it possible to identify three stable groups of expert opinions that differ in several key parameters.

A comparative analysis of the positions of the expert groups across four key areas revealed persistent differences in the perception of the role of the state, the strategy of national production, attitudes toward imports, and international companies.

On the issue of state regulation, participants assigned to the first factor group expressed clear support for an active role of the state, including price controls, public investment in research and development, and stimulation of national production. For

Table 5. *Pairwise distinguishing statements between Factor 2 (Skeptics) and Factor 3 (Market liberalists and international integration).*

№	Statement	F2 Q-sort score	F3 Q-sort score	Z(F2)	Z(F3)	Diff. Z (F2−F3)	Sig.	Distinguishing for
1	Kazakhstan lacks sufficient scientific/ industrial base for complex pharma	+4	−1	+1.85	−0.25	+2.10	p<0.01	F2
8	Competition should be the main mechanism for pricing	0	+4	+0.05	+1.75	−1.70	p<0.01	F3
9	Government intervention in pricing/ production should be minimal	−1	+3	−0.35	+1.20	−1.55	p<0.01	F3
2	Imports should remain the foundation of market supply	+3	0	+1.10	+0.05	+1.05	p<0.05	F2
10	Intellectual property protection is a key driver of innovation	0	+3	+0.10	+1.10	−1.00	p<0.05	F3
13	State should determine production strategy and medicine range	−2	−4	−0.85	−1.80	+0.95	p<0.05	F2 (less negative)
12	Investment in the sector should be predominantly private	0	+2	+0.05	+0.80	−0.75	p<0.05	F3
14	National production is more important than integration into international networks	−1	−3	−0.40	−1.10	+0.70	p<0.05	F2 (less negative)
15	The sector should be based primarily on domestic drugs	−1	−3	−0.35	−1.05	+0.70	p<0.05	F2 (less negative)

Ken-Q distinguishing statements

Table 6. *Import Dependency of the Market.*

Indicator (1 half-year 2024)	Domestic	Imported
Share in sales volume (monetary)	13%	87%
Share in sales volume (physical units)	25%	75%

Table 7. *Investment Activity.*

Investor / Project	Investment Volume	Purpose and Nature of Investment
AstraZeneca (UK/SE)	$14 million	Contract manufacturing of 4 drugs (CKD, CVD, diabetes) in partnership with Kazakh plants
Roche & Nobel AFF (CH/KZ)	$70 million	New plant in Almaty: oncology drugs, R&D, automated warehouse
Pfizer (USA)	n/a	Localization of the 20-valent vaccine; 10-year supply contract
EIPICO (Egypt)	$33 million	Plant for biosimilars and oncology drugs in Karaganda region (200 new jobs)
Medservice Plus (Kazakhstan)	$11.8 million	Modernization of production in Almaty region

Table 8. *Sales Volumes and Market Dynamics.*

Segment	Sales (9 months 2024), mln $	Growth compared to 2023
Retail (pharmacies)	955.7	+21%
Hospital	738.7	+19.4%
Total	1,694.4	+20.5%

them, regulation represents not only a tool for market control but also a way to protect public interests. The second group allows for the necessity of government intervention but emphasizes its moderation. They highlight the risk of reduced business efficiency with excessive regulation. The third group adheres to a market paradigm: competition is seen as the main regulator, and the role of the state is limited to ensuring transparency and compliance with legal norms.

Significant differences emerged regarding the strategy for national production. Representatives of the first group see the development of domestic pharmaceutical manufacturing as a key government task to ensure drug security and strengthen sovereignty. The second group takes a more restrained stance: experts point to the lack of technological and human resources and question the advisability of large-scale investments given limited resources. Participants in the third group do not consider national production a value in itself but as a tool for integration into global production networks. They prefer cooperation with international companies and integration into existing logistical and innovation chains.

Assessment of dependence on imports also varies among the groups. For the first group, the focus is on import substitution, especially in critically important categories of medicines. The second group tends to consider imports as a more reliable and economically justified way to meet market needs, given the current infrastructure. The third group perceives external dependence as a natural and functional component of the modern pharmaceutical sector, the necessity of which is not questioned.

There are opposing views regarding international pharmaceutical companies. The first group tends to criticize transnational corporations for the commercialization of healthcare and the potential harm to drug accessibility. The second group holds a more neutral position, acknowledging their importance as suppliers and investors, provided transparency requirements are met. The third group demonstrates a positive attitude, viewing international companies as sources of advanced technologies, financial resources, and opportunities for the growth of the national sector.

Integration of expert perspectives with market indicators:

Tables 6–8 are presented as an empirical backdrop for factor

interpretation. These indicators are not used to adjudicate whether any factor is 'accurate'. Instead, they specify the market baseline that each ideological position interprets differently and from which it derives distinct policy priorities.

High import dependency (Table 6) is a useful example of interpretive divergence. Factor 1 frames the 87% import share (value) as a vulnerability that legitimizes stronger state coordination, selective localization, and greater public investment in domestic capacity. Factor 2 treats the same indicator as a realistic constraint: given limited technological and human capital, import reliance is interpreted as a rational near-term supply strategy rather than a failure of policy intent. Factor 3 reads the import structure as a functional feature of global pharmaceutical production and supply chains, placing emphasis on regulatory predictability, competition, intellectual property protection, and integration mechanisms instead of import substitution targets.

Investment projects (Table 7) and sales dynamics (Table 8) further illustrate this pattern: the market shows growth and substantial reliance on external partners, but factors differ in what they see as the problem and the solution. For Factor 3, foreign projects are primarily an opportunity to embed Kazakhstan into value chains through contract manufacturing, licensing, and technology transfer; for Factor 2, they are evidence that development is feasible mainly via external capital and know-how; for Factor 1, they highlight a governance gap - private and transnational initiatives are advancing faster than state-led capacity building-reinforcing calls for a stronger coordinating and investment role of the state.

Factor analysis revealed conceptual differences in the perception of the current state and development directions of Kazakhstan's pharmaceutical industry. The three identified respondent groups hold consistent yet diverse views regarding the role of the state, production strategies, cooperation with international companies, and investment priorities.

Role of the State:

An analysis of expert positions across four dimensions—role of the state, production strategy, attitudes toward international pharmaceutical companies, and approaches to investment in R&D—demonstrates a clear ideological divergence between the three identified factors.

Participants in the first group consistently advocate for an active role of the state. In their view, the state should act as a coordinator and investor, ensuring price regulation, assortment formation, direct funding of scientific research, and stimulation of local production. This understanding of the state's role is linked to the priority of a sovereign approach to pharmaceutical supply and support for import substitution programs. Regarding transnational companies, representatives of this group take a critical stance, associating their dominance with risks of price pressure and restricted access to essential medicines. The need to increase public investment in the R&D sector and pharmaceutical production is also emphasized.

The second group expresses more moderate views. Participants acknowledge the need for state involvement, but only in providing basic guarantees of accessibility and price control. At the same time, they oppose direct interference in market mechanisms. There is skepticism regarding national production: in their opinion, the domestic market is not capable of providing a sustainable model of pharmaceutical independence without significant external resources. International companies are seen as acceptable and, under certain conditions, necessary participants, provided transparency requirements are met. Funding for scientific research and technological development in this group is associated with international partnerships and targeted private mechanisms.

The third group is characterized by market logic. State intervention is seen as a factor restraining development and is proposed to be limited to legal regulation and protection of competition. The main focus is on deregulatory policy and an open market. Priority is given to integration into international supply chains, licensing, contract manufacturing, and adherence to international standards. National production, if developed at all, is only as part of transnational schemes. International corporations are viewed as strategic partners and the main source of innovation, investment, and professional capital. According to this group, sector development should be based on creating a favourable investment environment for transnational business.

Discussion.

The results of the Q-analysis demonstrate a significant divergence of views within the professional community involved in the formation and implementation of pharmaceutical policy in Kazakhstan. At first glance, such diversity can be seen as an expression of pluralism; however, in the context of a weakly institutionalized healthcare system and limited coordination between the regulator, business, and the expert community, this diversity takes on a risky character [14,15].

In practice, differences in expert positions can directly affect the pace and direction of reforms [16,17]. For example, the group supporting an active role for the state (Factor 1) may endorse import substitution and localization measures without adequate assessment of market realities, which is fraught with inefficient resource allocation. Conversely, market liberals (Factor 3), who focus on international standards and deregulatory policy mechanisms, risk underestimating the vulnerability of the domestic sector and dependence on external supplies during crises. The skeptical position (Factor 2), in turn, can lead to paralysis of initiatives if this group dominates, strategic measures are postponed or do not receive institutional support. This is consistent with research showing that group ideologies filter the interpretation of empirical data [18].

Although Factor 1 and Factor 2 diverge in their normative orientation and preferred policy instruments, the weak positive correlation between them ($r = 0.193$) suggests a limited overlap in how key constraints of the sector are framed. This should not be interpreted as a substantive consensus, rather, it likely reflects a shared recognition of structural obstacles that shape feasible policy choices. In this sense, the correlation may indicate a narrow baseline for dialogue on governance fundamentals, while major disagreements remain regarding the acceptable intensity and modalities of state intervention.

Although Factor 3 included only two respondents, the conceptual consistency of their positions can be explained by their shared international professional experience. This suggests

that the liberal market-oriented viewpoint is deeply rooted in exposure to global pharmaceutical governance practices, rather than being an idiosyncratic opinion. Nonetheless, further studies with larger samples are required to verify the stability of this perspective across the wider expert community.

The findings of this study indicate that the absence of coordination mechanisms between these three ideological groups represents a significant weakness of the current approach. None of the positions fully cover the entire range of tasks facing the pharmaceutical sector. This assumption requires further verification, especially in the context of real interactions between the expert community, government bodies, and the private sector when developing specific policies.

The fact that the same objective indicator (87% import dependency) was interpreted differently by each factor illustrates how ideological predispositions shape evidence interpretation. This diversity of interpretation appears to be a fundamental source of difficulties in achieving consensus in policy-making, as each group perceives empirical evidence through the lens of its normative assumptions. The ideological fragmentation revealed by the study imposes an additional burden on the decision-making system. In the context of external pressures (sanctions, global competition for supply chains) and internal weaknesses (low level of technological autonomy, dependence on transnational manufacturers), such disunity reduces policy adaptability [19]. The absence of a coherent strategic agenda may lead to reactive, unsystematic management of the sector, where short-term decisions prevail at the expense of long-term priorities [20].

While the factors diverge on preferred policy instruments, they also reveal several non-polarizing entry points that can serve as a practical starting agenda for a dialogue platform. First, all perspectives can converge on governance basics. Second, a shared minimum objective is safeguarding access to essential medicines and reducing exposure to supply disruptions. Third, the agenda can focus on “sequencing rather than ideology”. In this sense, Q-methodology can be used not only to map fault lines, but also to structure deliberation by making trade-offs explicit and negotiable

The Q-analysis results can be used not only as a tool for analytical typology but also as a basis for creating dialogue platforms and strategic sessions. Establishing agreed-upon positions on key areas (pricing, R&D, production strategy) is a necessary condition for enhancing the resilience of pharmaceutical policy in Kazakhstan.

Conclusion.

The conducted study made it possible to identify three stable types of expert positions regarding the development of the pharmaceutical sector in Kazakhstan: statist, skeptical, and market-oriented. Each of them is based on a coherent system of views, supported both by the individual experience of respondents and by objective market trends. The use of Q-methodology enabled the identification of non-obvious differences within the expert community and made it possible to analyze not just isolated opinions, but structured ideological constructs.

Strengths of the Study.

For the first time in Kazakhstan, this study applied Q-methodology to analyze expert perspectives in the field of healthcare, allowing us to move beyond traditional quantitative analysis. The integration of qualitative and quantitative approaches made it possible to identify previously unformalized ideological differences within the professional community. An additional advantage was the comparison of expert positions with macroeconomic and market data, which increased the validity and practical value of the results. The inclusion of post-sorting interviews enhanced the interpretative depth of the analysis and made it possible to capture the reasoning of respondents underlying extreme positions, thereby complementing the factor structure with empirical explanations.

Limitations.

At the same time, the study has several limitations. The sample size (n = 20) is predetermined by the specifics of Q-methodology, which is aimed at identifying deep structures of opinions rather than achieving statistical representativeness. Factor 3 was defined by two defining Q-sorts. Accordingly, we interpret it as a minority type perspective captured by the Q-method rather than as an estimate of the size or stability of a distinct subgroup, which warrants replication with an expanded expert set. All respondents represented the professional community directly related to the pharmaceutical sector, which does not allow the findings to be extrapolated to a broader range of stakeholders, including consumers of medical services. The interpretation of the extracted factors is based on the researchers’ analytical assumptions, which may introduce an element of subjectivity when categorizing positions. In addition, the Kazakhstani context in which the study was conducted has specific institutional and market characteristics, which limits the applicability of the results outside the country.

Conflicts of Interest.

The authors report no financial or any other conflicts of interest in this work.

Ethical Aspects.

The ethical aspects of the study were in accordance with the main principles for conducting social and behavioral research involving adult experts. The study was approved by the Local Ethics Committee of the "S.D. Asfendiyarov Kazakh National University" (Protocol No. 6, May 24, 2023). All 20 respondents were preliminarily informed about the purpose, structure, and format of the study, including the nature of the Q-sorting, the data processing procedure, and the planned publication of results in an aggregated form. Each participant provided written informed consent for participation and for the use of their evaluations in anonymized form. No personal identifiers were used during the process; all sorts were coded numerically to eliminate the possibility of reverse identification. The study did not involve interventions, psychological testing, collection of sensitive data, or assessment of personal characteristics. Post-sorting interviews were also conducted in accordance with the principles of voluntariness and privacy, without recording any

personal data. Since only professional opinions were analyzed, the risks to participants were considered minimal, and the project did not require formal ethical review.

Data Availability.

The authors confirm that the data supporting the findings of this study are available within the article.

Consent For Publication.

All authors have read and approved the final manuscript.

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