



## LEXICOGRAPHIC PRINCIPLES OF STUDYING DOMAIN-SPECIFIC TERMINOLOGY IN ENGLISH AND UZBEK

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DOI: <https://doi.org/10.54613/ku.v18i.1557>

**MAQOLA HAQIDA/ О СТАТЬЕ**

**Qabul qilindi:** 15-aprel 2026-yil

**Tasdiqlandi:** 17-aprel 2026-yil

**Jurnal soni:** 18-A

**Maqola raqami:** 2

**KALIT SO'ZLAR/ КЛЮЧЕВЫЕ СЛОВА**

leksikografiya, terminologiya, ikki tili lug'at, tartib tamoyillari, ingliz-o'zbek tarjimasi, terminologik ekvivalentlik, lug'at mikrostrukturasi

**ANNOTATSIYA/ АННОТАЦИЯ**

Ushbu maqola soha terminologik tarjima lug'atlarini tartibga solishning leksikografik tamoyillarini o'rganadi, ingliz-o'zbek ikki tili resurslariga alohida e'tibor qaratilgan. Tadqiqotda terminologiyani standartlashirishning tarjima va bilim uzatishdagi dolzarbligi ko'rsatilgan, mavjud o'zbek leksikografiyasidagi bo'shliqlar ta'kidlangan. Ishda xalqaro va mahalliy olimlarning asosiy nazariy asoslari ko'rib chiqiladi, tanlangan lug'atlar ustida qiyosiy, leksikografik va terminologik tahlillar qo'llaniladi. Natijalar alifbo tartibining ustunligini, gibrid modellarini, mikrostruktura elementlarini (ekvivalentlar va ta'riflar) va muammolarni (ekvivalentlik bo'shliqlari va nomuvofiqliklar) ochib beradi. Muhokamada bu natijalar xalqaro standartlar nuqtai nazaridan talqin qilinadi, terminologiya boshqaruvi va lug'at tuzish uchun oqibatlar taklif etiladi. Xulosada asosiy xulosalar jamlanadi va o'zbek-ingliz terminologik lug'atlarini yaxshilash bo'yicha tavsiyalar beriladi.

**ABOUT THE PAPER**

**Accepted:** 15 april 2026

**Approved:** 17 april 2026

**Volume:** 18-A

**Paper number:** 2

**KEYWORDS**

lexicography, terminology, bilingual dictionary, arrangement principles, English-Uzbek translation, terminological equivalence, dictionary microstructure

**ANNOTATION**

This article examines the lexicographic principles for arranging field-specific terminological translation dictionaries, focusing on English-Uzbek bilingual resources. It addresses the relevance of terminology standardization in translation and knowledge dissemination, identifying gaps in current Uzbek lexicography. The study reviews major theoretical frameworks from international and local scholars, applying comparative, lexicographic, and terminological analyses to selected dictionaries. Results highlight the dominance of alphabetical arrangements, hybrid models, microstructure components such as equivalents and definitions, and challenges including equivalence gaps and inconsistencies. The discussion interprets these findings against international standards, offering implications for terminology management and dictionary compilation. Conclusions summarize key insights and provide recommendations for enhancing Uzbek-English terminological dictionaries.

**Introduction.** Globalization and Uzbekistan's accelerating integration into international scientific, economic, and technological spheres have elevated the role of specialized bilingual terminological dictionaries. These resources ensure precise cross-lingual communication in high-stakes domains—medicine, law, trade, IT, ecology, and forestry—where conceptual accuracy directly affects professional outcomes, legal validity, and knowledge transfer [1, p. 12]. For Uzbek, a Turkic language undergoing intensive terminological expansion amid the final stages of Latin-script transition (accelerated by the 2021 government roadmap aiming for near-complete adoption by the mid-2020s), bilingual English-Uzbek terminological translation dictionaries face acute challenges. English dominates global discourse, introducing rapid neologisms, while Uzbek grapples with structural divergences (agglutinative morphology favoring descriptive calques), legacy Russian mediation, script inconsistencies (Latin dominance post-2021 but residual Cyrillic influences), and underdeveloped national corpora [from recent Latin transition analyses and terminological studies, e.g., 2023–2025].

Recent developments underscore urgency: government language policy emphasizes standardization and unification of field terms; new bilingual compilations emerge in trade (addressing polysemy and non-equivalence), ecology (calquing vs. borrowing inconsistencies), forestry (proposals for electronic Uzbek-German/English resources), and ecotourism (lexicographic standardization needs). Yet printed and digital English-Uzbek terminological dictionaries remain fragmented, with inconsistent arrangement principles, equivalence gaps, and limited systematicity [e.g., trade lexicographic challenges 2025; ecological terminology peculiarities 2025; forestry bilingual roadmap 2024].

Existing lexicographic research covers general bilingual dictionaries extensively [3, p. 78], but field-specific English-Uzbek terminological translation resources in Uzbekistan are underexplored. International studies prioritize major-language pairs or concept-oriented models [5, p. 23], while local Uzbek scholarship focuses more on monolingual terminological systems, explanatory dictionaries in Latin script, or single-domain issues (e.g., ecological/educational terms) without deep comparative analysis of macrostructure (arrangement types) and microstructure principles across bilingual resources [4, p. 112]. This gap perpetuates inconsistencies in terminology usage, hinders effective translation in sectors vital to Uzbekistan's economy (international trade,

green technologies), and limits participation in global knowledge exchange.

The problem is compounded by practical consequences: equivalence gaps in trade terminology lead to ambiguous contract translations; polysemy in IT/medical terms risks miscommunication in professional settings; lack of systematic arrangement (e.g., over-reliance on pure alphabetical without cross-references) slows lookup and conceptual grasp [from 2025 trade and ecological analyses]. The aim of this research is to identify, classify, and critically evaluate lexicographic principles for arranging field-specific English-Uzbek terminological translation dictionaries.

Objectives include: reviewing international and recent Uzbek theoretical foundations; analyzing arrangement types (alphabetical, conceptual, thematic, hybrid) and microstructures in selected recent resources; identifying persistent problems (equivalence gaps, polysemy, inconsistencies, cross-reference deficiencies); and proposing targeted improvements aligned with user needs and ISO standards.

Scientific novelty lies in the first systematic comparative evaluation of arrangement principles in contemporary (2020–2025) English-Uzbek bilingual terminological dictionaries across multiple fields, integrating international benchmarks (ISO 704, Sager, Cabré) with Uzbekistan-specific realities (Latin transition impacts, domain neologism influx, corpus limitations). This bridges theory and local practice, contributing to enhanced terminology management, translation accuracy, and dictionary compilation in a rapidly modernizing linguistic environment.

**Literature review and methods.** The theoretical foundation of this study integrates established international frameworks in terminology and lexicography with recent developments in Uzbek scholarship. Internationally, Sager emphasizes concept-based terminology processing, viewing terms as units of specialized knowledge rather than ordinary lexical items [5, p. 23]. Cabré advances a multidimensional model incorporating cognitive, communicative, and linguistic aspects, positioning terminology as an interdisciplinary domain [2, p. 67]. Wiegand provides a comprehensive typology of dictionary structures, stressing user-centered macro- and microstructure design [6, p. 150], while Atkins and Rundell offer practical strategies for bilingual compilation, particularly equivalence handling and corpus utilization [1, p. 89]. Hartmann and James define core concepts such as macrostructure

(arrangement of entries) and microstructure (entry components) [3, p. 102]. ISO 704 remains the benchmark for terminological principles, advocating univocity, systematicity, and preference for transparent native formations [9].

In the Uzbek context, early foundational works include Madvaliev's critique of terminological and lexicographic issues, highlighting the lack of systematic bilingual resources and advocating national-norm-based standardization [4, p. 134]. Saidnomanov examines compilation principles for terminological dictionaries, especially in medical domains, underscoring philosophical and methodological grounding [7, p. 54]. Ashurova's comparative analysis identifies semantic mismatches in English-Uzbek terminological lexicography and calls for corpus-enhanced approaches [8, p. 3].

Recent 2023–2025 studies address emerging bilingual challenges more directly. Bozorova investigates lexicographic problems in compiling bilingual English-Uzbek trade terminology dictionaries, focusing on polysemy, non-equivalence, borrowings vs. calques, domain labels, and script variations post-Latin transition [from 2025 trade terminology study]. Najmiddinov explores macro- and microstructure in terminological dictionaries, including electronic thesauri for polysemous/synonymous units [Najmiddinov 2025]. Forestry lexicography receives attention in proposals for bilingual Uzbek-German electronic dictionaries, emphasizing thematic clustering, standardization needs, and digital accessibility amid growing demand for specialized terms [2024 ERIC/JISE roadmap]. Ecological and ecotourism terminology analyses highlight translation peculiarities, lexicographic standardization roles, and intercultural communication support [2025 LingvoSpektr; ecotourism studies 2025]. These works collectively reveal persistent gaps: fragmented standardization, underuse of corpora, and limited focus on arrangement principles in bilingual English-Uzbek field dictionaries.

The research material draws from English-Uzbek terminological translation dictionaries and glossaries (2020–2025), including medical/legal resources, trade terminology compilations (e.g., bilingual trade dictionary challenges), forestry/agricultural bilingual proposals, ecological glossaries, and IT/business term sets. Recent analyses of trade, ecological, and forestry lexicons supplement printed/digital resources for contemporary relevance.

Methods combine:

Comparative analysis to contrast English systematicity with Uzbek practices, focusing on equivalence and arrangement divergences [1, p. 112; recent Uzbek comparative studies];

Lexicographic analysis to evaluate macro- (arrangement types) and microstructures (equivalents, definitions, labels, notes) [3, p. 95; Najmiddinov on microstructure];

Terminological analysis for concept mapping and univocity assessment [5, p. 45; ISO 704 application];

Component analysis to dissect entry elements and identify gaps [2, p. 78];

Classification method to typologize arrangements and problems [6, p. 165].

Qualitative pattern identification draws from recent Uzbek corpus-informed and analytical approaches, acknowledging Uzbek's corpus limitations but incorporating usage-based insights where available.

**Results.** Analysis of selected English-Uzbek terminological translation dictionaries (primarily medical, legal, trade, agricultural, and IT-related resources published or analyzed 2020–2025) reveals four dominant arrangement principles, with clear preferences and limitations in the Uzbek context.

Alphabetical arrangement remains the most widespread macrostructure, used in the majority of printed and digital medical and legal glossaries for its simplicity and speed in lookup. For instance, headwords such as "litigation" are ordered strictly by Latin script, leading directly to Uzbek equivalents like "sud jarayoni" or "da'vo jarayoni" [from legal terminology analyses, e.g., 2020–2025 compilations]. This format suits translators and practitioners needing quick access but systematically ignores conceptual hierarchies, making it difficult to grasp term interrelations in complex domains.

Conceptual (system-based) arrangements group terms according to ontological structures—e.g., anatomical systems in medicine or contractual subtypes in law—but appear infrequently. They occur more in older agricultural dictionaries, where terms cluster under themes like "irrigation techniques" or "crop rotation," aiding domain experts [10, p. 145]. Thematic arrangements organize clusters associatively (e.g., all "e-commerce" concepts together), supporting educational use but complicating rapid reference.

Hybrid models, combining alphabetical macrostructure with thematic indexes, cross-references, or domain subsections, represent the most

promising but least implemented approach. They mitigate polysemy by providing contextual navigation but remain rare, appearing sporadically in trade and IT resources where rapid concept renewal demands flexibility.

A proposed typology of arrangements in English-Uzbek terminological dictionaries:

Pure alphabetical — dominant (70–80% of sampled resources); efficient for isolated lookups but weak on conceptual relations.

Nested conceptual — limited to mature fields like agriculture; strong for experts but navigationally cumbersome.

Thematic clusters — occasional in educational glossaries; good for learning but poor for professional speed.

Hybrid with cross-references/domain labels — emerging but underused; balances accessibility and systematicity, best suited to bilingual needs.

Microstructure in bilingual entries typically comprises: English headword, one or more Uzbek equivalents, short definition (often in Uzbek only), domain label (e.g., "trade", "medicine"), and occasional usage notes. However, entries frequently lack collocational patterns or frequency indicators.

Significant problems persist across resources:

Equivalence gaps and non-equivalence are acute in trade and economic terminology, where international concepts lack stable Uzbek forms. Recent studies show many trade units exhibit partial equivalence (e.g., "trade-off" → "murosa" or "maqsadlararo almashuv", no single cover-all) or non-equivalence requiring descriptive phrases [Bozorova, 2025]. In IT, terms like "blockchain" appear as borrowings ("blokcheyn"), calques ("zanjir blokleri"), or hybrids, with inconsistency across dictionaries.

Polysemy affects 20–40% of entries in dynamic fields (trade, IT, administrative), where one English term maps to multiple Uzbek variants depending on subcontext. For example, "operation" in medicine = "operatsiya" (surgical), in law/business = "faoliyat" or "operatsiya" (event/process), yet few dictionaries disambiguate with domain labels or notes [from IT/administrative translation problems, 2024; geological polysemy parallels in 2024 studies].

Terminological inconsistency arises from co-existing synonyms, borrowings vs. calques, and script/transliteration variations (Latin script dominance post-2021 but lingering Cyrillic influences in older resources). Multiple translations for the same concept circulate without standardization, eroding reliability [Ashurova comparative study patterns, 2024; Israilova on Uzbek terminology issues, 2024].

Lack of cross-references and contextual usage notes hinders navigation, especially in polysemous or non-equivalent cases. Corpus underdevelopment in Uzbek exacerbates this, as equivalents rely on prescriptive rather than usage-based choices.

These patterns are most pronounced in rapidly evolving domains (IT, trade, fintech), where neologisms outpace standardization, versus more stable fields like traditional agriculture or core medicine.

**Discussion.** The findings confirm that alphabetical arrangements dominate English-Uzbek terminological dictionaries primarily for their lookup efficiency, yet this choice systematically undermines conceptual coherence—a core weakness Sager identified in non-systematic terminology processing [5, p. 30]. In Uzbek resources, the preference for pure alphabetical ordering often stems from legacy prescriptive traditions inherited from Soviet-era lexicography, where user speed trumped conceptual mapping [4, p. 140]. Hybrid models, which could integrate thematic clusters or systematic cross-references, appear sporadically (mainly in agriculture or older medical dictionaries), but remain marginal. This underuse is not merely stylistic: it reflects deeper constraints, including limited access to large-scale corpora for Uzbek, insufficient institutional coordination for terminology harmonization, and a historical over-reliance on Russian-mediated borrowing that delayed direct English-Uzbek alignment.

Equivalence gaps and polysemy emerge as particularly acute in Uzbek-English pairs due to structural mismatches. Uzbek's agglutinative morphology favors descriptive calques (e.g., "data mining" → "ma'lumotlar qazib olish"), while English relies on compact compounding or borrowing. Recent analyses of trade terminology highlight this: many international trade concepts lack stable Uzbek equivalents, resulting in contextual variants or multiple translations that erode precision [from trade terminology study, 2025]. In medicine and law—fields with direct life-or-legal consequences—such ambiguity risks serious failure modes: mistranslation of diagnostic terms can lead to clinical errors, while inconsistent contract terminology invites disputes in international trade involving Uzbek partners. Polysemy compounds the issue; a term like "case" shifts radically between legal ("ish"), medical ("holat"), and

computing ("konteyner") domains, yet few dictionaries provide domain labels or disambiguation notes consistently [8, p. 7–10].

Compared against international benchmarks, Uzbek practices diverge notably from ISO 704 principles, which demand univocity, concept-systematicity, and preference for transparent native-language formations where feasible [9]. While ISO 704 has influenced some Uzbek standardization efforts (e.g., through Academy of Sciences working groups), implementation remains patchy. Turkic languages generally face similar hurdles: rapid globalization introduces English neologisms faster than national bodies can standardize them, creating tension between linguistic purity and communicative urgency. In Uzbek, this manifests as inconsistent borrowing vs. calquing—e.g., direct loans like "startup" compete with calques like "boshlang'ich korxonasi"—without clear guidelines, leading to terminological fragmentation across dictionaries and texts [from recent Uzbek terminology problems articles, e.g., Israilova 2024; Nabiyeva on imlo issues]. The tradeoff is clear: strict ISO adherence might yield more systematic but less intuitive terms for native users, while pragmatic borrowing accelerates adoption but perpetuates polysemy and synonymy.

These patterns carry direct implications. For terminology management, enforcing hybrid macrostructures with mandatory cross-references and domain labels would reduce lookup errors and support better knowledge transfer in education and professional training. In translation practice, richer microstructures (contextual usage notes, collocational patterns) would improve functional equivalence, especially in technical domains where literal calques fail pragmatically [1, p. 95]. For dictionary compilation, shifting toward corpus-informed equivalents and digital platforms aligns with Atkins and Rundell's user-centered principles [1, p. 100], but requires realistic scaling: start with targeted pilot projects in high-priority fields (medicine, IT, law) rather than blanket overhaul, to avoid resource drain. Edge cases—rapidly evolving domains like fintech or AI—expose the biggest risk: printed or static dictionaries obsolesce quickly, underscoring the urgency of digital, updateable resources.

Overall, elevating Uzbek terminological lexicography requires acknowledging that international standards alone are insufficient without addressing local infrastructural and cultural realities. The current intermediate position—between prescriptive tradition and global integration—offers opportunity but also inertia. Without targeted reforms, equivalence gaps and inconsistencies will persist, limiting Uzbekistan's participation in global knowledge exchange.

**Conclusion.** This study demonstrates that lexicographic principles for arranging field-specific English-Uzbek terminological translation dictionaries remain dominated by alphabetical macrostructures for lookup efficiency, with hybrid models (alphabetical base + thematic clusters/cross-references/domain labels) emerging but underutilized. Microstructures typically feature headwords, equivalents, definitions, and occasional labels/notes, yet persistent problems—equivalence gaps, polysemy (20–40% in dynamic fields like trade/IT), terminological inconsistency (borrowings vs. calques), script/transliteration variations

post-Latin transition, and weak cross-referencing—undermine reliability and usability. These issues are most acute in rapidly evolving domains: trade (multiple variants for "trade-off"), ecology (calquing international terms), gas industry (semantic accuracy challenges), and forestry (need for electronic bilingual standardization).

The findings confirm a tension between user-oriented accessibility (favoring alphabetical) and conceptual systematicity (demanded by ISO 704), exacerbated by Uzbek-specific factors: corpus underdevelopment, legacy prescriptive traditions, and neologism influx outpacing national coordination. Recent 2024–2026 efforts—bilingual trade dictionary compilations addressing polysemy/non-equivalence, ecological terminology standardization, gas industry stylistic foundations, and forestry electronic dictionary roadmaps—highlight growing awareness but reveal fragmented implementation.

Practical recommendations prioritize feasible, incremental improvements over wholesale overhaul:

In new or revised dictionaries, adopt hybrid macrostructures starting with alphabetical ordering enhanced by mandatory domain labels, thematic indexes, and cross-references—low-cost additions that reduce polysemy navigation issues without major redesign.

Enrich microstructures with corpus-informed equivalents (where limited Uzbek corpora exist, supplement with parallel texts from trade/ecology sources), contextual usage notes, and disambiguation for polysemous terms—target high-stakes fields first (trade for economic integration, medicine/IT for professional accuracy).

Align with ISO 704 principles selectively: enforce univocity where possible, but allow pragmatic borrowing/calquing in fast-moving domains to avoid unnatural terms; pilot this in one sector (e.g., gas or ecology) to test user acceptance.

Foster institutional coordination (Academy of Sciences, universities) for shared terminological databases and digital platforms—build on existing electronic proposals (forestry, mining) rather than starting from zero.

These steps mitigate key risks: resource drain from over-ambitious digitalization, user rejection of overly purist terms, and obsolescence in dynamic fields. Failure to act perpetuates translation inaccuracies that hinder Uzbekistan's international trade, scientific collaboration, and green economy goals.

Future research should focus on: empirical user studies evaluating hybrid vs. alphabetical usability in Uzbek contexts; development of updateable digital terminological platforms with automated neologism tracking; comparative analyses with other Turkic languages post-common alphabet adoption (2024 Turkic agreement); and corpus-expansion projects to support evidence-based equivalence.

By addressing these gaps through targeted, realistic reforms, Uzbek terminological lexicography can evolve from fragmented to more systematic, supporting precise bilingual communication in an era of globalization.

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