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MORPHOLOGICAL-STRUCTURAL MODELS OF ENGLISH AND UZBEK TERMS

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Abstract: This article examines the morphological-structural models through which specialized terms are formed in English and Uzbek. The comparison is based on the typological contrast between predominantly analytic English and agglutinative Uzbek and focuses on the internal organization of one-word and multiword terms. Particular attention is paid to derivation, compounding, conversion, abbreviation, international lexical elements, suffixal extension, attributive combinations, and possessive-type nominal constructions. The study uses a descriptive-comparative method and model-based analysis of representative scientific, educational, medical, and technological terms discussed in recent morphological and terminological research. The analysis shows that English terminology readily combines native and classical affixes, noun-noun compounding, conversion, and compact premodification, whereas Uzbek terminology tends to employ productive suffixation, transparent morpheme sequencing, adjective-noun structures, and postposed relational marking within analytic term combinations. Borrowed international terms in Uzbek often preserve the lexical core while receiving Uzbek derivational or grammatical morphology. These differences are significant for bilingual terminology management, translation equivalence, lexicography, language teaching, and automatic morphological processing. A contrastive model table summarizes the principal structural correspondences and asymmetries between the two languages.

Keywords: terminology, morphology, structural model, derivation, compounding, affixation, English, Uzbek, term formation, comparative linguistics.

INTRODUCTION

Terminology develops at the intersection of conceptual systems and the formal resources of language. A term must name a specialized concept with sufficient precision, but it is simultaneously constrained by the morphological and syntactic patterns of the language in which it functions. For this reason, the same concept may be represented by structurally different models in English and Uzbek even when semantic equivalence is high. Modern morphological theory treats complex lexical units not as accidental combinations of segments but as patterned structures in which roots, affixes, stems, and lexical relations interact systematically. Recent descriptions of English morphology emphasize derivation, compounding, conversion, learned word formation, and productivity, while current research on Uzbek highlights agglutinative organization, the hierarchy of derivational and inflectional morphemes, suffixal productivity, and the adaptation of borrowed vocabulary. These typological properties are especially visible in terminology because specialized naming must continuously respond to new scientific and technological concepts.

The purpose of this article is to identify and compare the main morphological-structural models of English and Uzbek terms and to explain how typological differences influence term formation and interlingual equivalence. The analysis is qualitative and model-based rather than frequency-statistical. Representative examples are used to demonstrate recurrent patterns attested in scientific and professional vocabulary, with attention to both one-word terms and multiword terminological combinations. The central hypothesis is that English tends to compress conceptual relations inside compounds and premodifying structures, whereas Uzbek more often makes those relations explicit through suffixes, adjective formation, possessive linking, or analytic combinations. At the same time, globalization produces an expanding shared layer of international terminology in which structural adaptation becomes as important as direct lexical borrowing.

The first level of comparison concerns simple and derived one-word terms. In English, a specialized lexical item may be morphologically simple from the synchronic point of view, as in gene, cloud, corpus, code, or model, but a large proportion of the terminology of science and technology is constructed through derivation. Prefixes such as bio-, micro-, macro-, cyber-, inter-, trans-, pre-, post-,

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anti-, and multi- are productive in specialized naming, while suffixes such as -tion, -ment, -er, -ist, -ism, -ity, -al, -ive, -ize, and -ization create nouns, adjectives, agents, processes, and abstract concepts. The internal structure may therefore follow models such as Prefix + Root, Root + Suffix, or Prefix + Root + Suffix. Examples include interlanguage, digitization, classifier, renewable, biomedical, and standardization. English also allows several derivational steps in one term: nation -> national -> nationalize -> nationalization illustrates how category-changing morphology can build a hierarchical structure around a lexical base. Bauer and Nation stress the practical importance of recognizing such word-building patterns because English morphology combines native and learned elements and is not completely predictable from orthography alone. In terminology, this means that a formally transparent segment may still require domain knowledge to identify its exact conceptual function. Uzbek also forms many one-word terms by derivation, but the dominant model is Root + Suffix, and successive suffixes are generally attached in a linear, semantically interpretable sequence. Forms such as o‘qituvchi, tadqiqotchi, dasturchi, raqamlashtirish, faollashtirish, and uzluksizlik illustrate the productivity of derivational suffixation. In specialized vocabulary, -chi, -lik, -lash, -lashtir, -uvchi, -iy, and related formatives can turn roots into names of specialists, abstract concepts, processes, or attributes. Recent Uzbek morphological research describes a clear hierarchy in which derivational suffixes are attached closer to the root and grammatical markers follow them. This sequential organization is important for terminological transparency: a recipient can often reconstruct the semantic contribution of each suffix even in a relatively long form.

A second major difference appears in compounding and structural compression. English is highly productive in noun-noun compounding and in constructions that function terminologically as compact nominal units. Models such as N + N, Adj + N, N + V-ing, and N + N + N are common: data security, language model, machine learning, cloud computing, speech recognition system, and research methodology illustrate the preference for premodification. The relation between the components is frequently implicit. Data security may mean the security of data; language model is a model of language or linguistic data; machine learning names a process in which the first noun specifies the domain or instrument associated with learning. The semantic link must be inferred from professional convention. This structural economy is one reason English scientific terminology can be dense. Compounding also interacts with conversion: a form can shift category with little or no overt marking, and a lexical item may become part of a new technical pattern without acquiring a visible derivational suffix. English therefore often places a considerable interpretive load on word order and lexical convention. Uzbek can also combine lexical bases, but many English compounds correspond not to a single compound word but to an analytic term combination. The structural equivalents are commonly Adj + N, N + N with possessive or relational marking, participial/derivational attribute + N, or multiword phrases in which the semantic relation is overtly expressed. Thus data security corresponds naturally to ma’lumotlar xavfsizligi, cloud computing to bulutli hisoblash, renewable energy to qayta tiklanuvchi energiya, distance education to masofaviy ta’lim, and speech recognition to nutqni tanib olish. The English left-branching premodifier is frequently expanded in Uzbek into a structure with an adjective, genitive-like relation, object marking, or verbal noun. The Uzbek pattern is longer, but the grammatical relation between components is often more explicit.

The role of borrowed and international elements forms the third important dimension. Scientific terminology in both languages contains Greek-Latin and international lexical material, but the morphological treatment of such material differs. English integrates classical roots and affixes into patterns such as telemedicine, biotechnology, multilingual, microanalysis, and digitalization. Some of these elements behave like productive combining forms rather than ordinary independent words. Uzbek frequently adopts the international lexical core directly or through an established intermediary form and then adapts it to Uzbek derivational morphology and syntax. A borrowed noun can take Uzbek suffixes and grammatical markers, creating forms that are formally hybrid but structurally regular within Uzbek: digital -> raqamli or digital; monitoring -> monitoring, but monitoringni, monitoringga; modernizatsiya -> modernizatsiyalash; standart -> standartlashtirish. The choice between a borrowed international term

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and a native or calqued equivalent depends on standardization, professional usage, and communicative economy. Nizomova and Safarov note that the development of Uzbek scientific terminology is strongly influenced by the need to adapt international concepts while maintaining the resources and identity of the national language. In morphological terms, adaptation is successful when the borrowed base enters predictable Uzbek paradigms and word-formation chains instead of remaining an isolated foreign form. This process demonstrates that borrowing is not the absence of morphology; it is frequently the starting point for secondary derivation in the recipient language.

A fourth level concerns the opposition between synthetic density and analytic explicitness. English derived terms often encode a process, participant, or abstract category in one lexical word: assessment, digitization, classifier, interoperability, sustainability. Uzbek may have a structurally parallel one-word equivalent, but in many domains the most natural equivalent is a phrase or a mixed model. For example, interoperability can be rendered through an Uzbek term built around o‘zaro ishlash or o‘zaro mos ishlash, while machine learning is commonly expressed as mashinali o‘qitish or, depending on disciplinary convention, a phrase with o‘rganish/o‘qitish. Such cases show that morphological equivalence is not identical to semantic equivalence. A translator should therefore avoid forcing a one-word-to-one-word correspondence when the target language convention selects a multiword term. Conversely, Uzbek derived forms should not automatically be expanded in English if a conventional English derivative exists. The practical unit of comparison is the concept together with its conventional structural realization. This is particularly important for bilingual dictionaries and terminographic databases: the entry should record not only a translation equivalent but also the morphological model, head element, part-of-speech status, and productive derivational relations. Such information allows users to predict related forms and supports automatic term extraction and morphological parsing.

Table 1. Principal morphological-structural models of English and Uzbek terms

Model	English pattern and example	Uzbek pattern and example	Contrastive interpretation
Simple root	N: code, model, corpus	N: kod, model, korpus	Direct lexical equivalence is possible when the concept is internationally established.
Suffixal derivation	Root + suffix: classify + -er -> classifier	Root + suffix: dastur + -chi -> dasturchi	Both languages derive specialist/agent nouns, but Uzbek suffix sequencing is more regular.
Complex derivation	Prefix + root + suffix: digitalization, interoperability	Root + suffix chain: raqam + -lash + -tir + -ish	English combines prefixes and suffixes; Uzbek predominantly builds rightward suffix chains.
Noun compound	N + N: data security, language model	N + N(relational): ma’lumotlar xavfsizligi, til modeli	English often leaves the semantic link implicit; Uzbek commonly marks the relation more explicitly.
Adjectival term	Adj + N: renewable energy	Derived Adj + N: qayta tiklanuvchi energiya	Uzbek frequently uses participial or derivational adjectives to unpack English compact modifiers.
Process term	N + V-ing: machine	Adj/N + verbal noun:	English -ing constructions

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	learning, cloud computing	mashinali o‘qitish, bulutli hisoblash	often correspond to Uzbek verbal-noun structures.
Abbreviation	AI, NLP, ICT	AI/SI, NLP, AKT	International abbreviations may be retained, adapted, or replaced by Uzbek initialisms.
Borrowed base + native morphology	Limited in native grammar: digital + -ize	Borrowed root + Uzbek suffix: standart + -lash + -tir + -ish	Uzbek productively integrates loans into native derivational chains.
Multiword term	N + N + N: speech recognition system	Object + verbal noun + N: nutqni tanib olish tizimi	Uzbek may expand English premodification into syntactically explicit multiword structures.

The comparison summarized in Table 1 shows that the most important contrast is not a simple opposition between “complex English” and “simple Uzbek” morphology. Both languages possess rich resources for term formation, but they distribute structural information differently. English frequently encodes relations through juxtaposition, category flexibility, and combinations of native and classical morphemes. Uzbek relies more heavily on suffixation and grammatically explicit phrase structure. In English, the head of a compound is often the rightmost element, and the preceding component narrows its domain; in Uzbek equivalents, the conceptual modifier may be converted into an adjective or linked to the head noun through possessive and case relations. This explains why literal component-by-component translation can result in structurally unnatural terms even if every individual word is semantically correct. A terminological equivalent should reproduce the concept according to the target language’s productive model rather than imitate the source-language surface order.

Morphological productivity also affects the speed with which new terms enter professional discourse. English can rapidly create compact innovations by attaching a familiar affix to a new base or by combining nouns: cyber- + security, bio- + sensor, data + mining, prompt + engineering. Uzbek has several strategies for the same innovations: direct borrowing, semantic calquing, suffixal derivation, or an analytic descriptive term. The eventual conventional form depends on institutional standardization and usage. From a linguistic perspective, a stable Uzbek term should satisfy two conditions: it should be semantically adequate to the specialized concept and morphologically compatible with Uzbek patterns. When a borrowed term becomes capable of taking Uzbek suffixes, case markers, and possessive forms without structural difficulty, its integration is stronger. Conversely, unnecessary preservation of foreign morphology may reduce transparency and create parallel variants. Current local studies on derivational affixes and morpheme hierarchy support the view that Uzbek word formation favors predictable suffixal organization, while comparative terminology studies show that English-derived innovations remain a major source of new lexical material.

The results have direct implications for translation and terminography. First, bilingual term comparison should distinguish semantic equivalence from structural equivalence. A pair may be semantically equivalent while belonging to different morphological models. Second, term banks should encode morphological segmentation where it is useful: English digit-al-iz-ation and Uzbek raqam-lashtir-ish reveal different paths to a similar process concept. Third, multiword units should be entered as complete terms rather than treated as arbitrary free phrases, because head-dependent relations contribute to specialized meaning. Fourth, automatic processing systems need language-specific rules. Uzbek is suitable for rule-based or hybrid segmentation because many suffix sequences are overt and ordered; English requires stronger lexical and statistical support for conversion, irregular derivation, neoclassical compounds, and ambiguous noun sequences. In multilingual NLP, a shared concept layer combined with language-specific morphological analyzers is therefore more reliable than direct string

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matching. Finally, language teaching in specialized contexts should include morphological awareness: learners who can recognize productive models are better able to infer unfamiliar terms, identify the head of a term, and distinguish a lexicalized technical meaning from an ordinary word combination.

CONCLUSION

The morphological-structural organization of English and Uzbek terminology reflects the general typological character of the two languages. English makes extensive use of derivational prefixes and suffixes, noun-noun compounding, conversion, learned combining forms, abbreviations, and dense premodifying sequences. Uzbek relies primarily on suffixal derivation, transparent morpheme ordering, adjective-noun combinations, relational noun structures, verbal nouns, and analytically expanded term combinations. In bilingual correspondence, the same specialized concept may therefore be represented by different formal models: an English compound can correspond to an Uzbek possessive construction, an English derived noun can correspond to an Uzbek verbal-noun phrase, and an international loan can become the base of a productive Uzbek suffixal chain. The decisive criterion is not formal imitation but terminological adequacy within the morphological norms of the target language.

The comparative analysis also shows that morphological description is essential for terminology standardization. It helps identify productive models, prevent mechanically calqued structures, organize related terms into derivational families, and predict how new international concepts may be integrated into Uzbek. For lexicography and translation, the structural model should be recorded together with semantic equivalence; for computational linguistics, morphological segmentation should be tailored to each language rather than transferred from one system to another. Further research can extend this model-based analysis to larger domain-specific corpora and quantify the frequency and productivity of particular patterns in medicine, information technology, agriculture, pedagogy, and other rapidly developing terminological fields.

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