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## The Impact of Information Technologies on Language and Communication Methods

### Abstract

This article examines the impact of information technologies on language and communication methods, especially lexical, syntactic, and cultural changes. The rapid development of the Internet and social networks has resulted in the enrichment of language with new terms, changes in communication forms, as well as new perspectives brought by artificial intelligence and natural language processing. The article also examines the impact of digital communication tools on the functional simplification of language and the expansion of visual elements. In addition, the threats of global standardization of language and the issues of preserving cultural diversity are discussed. The results of the article show that information technologies have both a positive and negative role in language development, and continuous research in this area is important.

**Keywords:** *information technologies, digital communication, language development, social networks, artificial intelligence, natural language processing, lexical changes, syntax, cultural diversity*

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## İnformasiya texnologiyalarının dil və ünsiyyət metodlarına təsiri

### Xülasə

Bu məqalədə informasiya texnologiyalarının dil və ünsiyyət metodlarına təsiri, xüsusilə leksik, sintaktik və mədəni dəyişikliklər araşdırılır. İnternetin və sosial şəbəkələrin sürətli inkişafı dilin yeni terminlərlə zənginləşməsi, ünsiyyət formalarının dəyişməsi, eləcə də süni intellektin və təbii dil emalının gətirdiyi yeni perspektivlərlə nəticələndi. Məqalədə rəqəmsal kommunikasiya vasitələrinin dilin funksional sadələşdirilməsinə və vizual elementlərin genişlənməsinə təsiri də araşdırılır. Bundan əlavə, dilin global standartlaşması təhlükələri və mədəni müxtəlifliyin qorunması məsələləri müzakirə olunur. Məqalənin nəticələri göstərir ki, informasiya texnologiyaları dilin inkişafında həm müsbət, həm də mənfi rola malikdir və bu sahədə davamlı tədqiqatlar vacibdir.

**Açar sözlər:** *informasiya texnologiyaları, rəqəmsal ünsiyyət, dil inkişafı, sosial şəbəkələr, süni intellekt, təbii dilin işlənməsi, leksik dəyişikliklər, sintaksis, mədəni müxtəliflik*

### Introduction

The rapid development of information technologies in modern times has led to fundamental changes in the social, cultural, and linguistic spheres. The widespread use of the Internet, the increasing use of mobile devices, and the popularization of social media platforms have fundamentally changed the way people communicate in their daily lives. These changes not only enrich the language with new terms but also significantly transform its structure, functions, and use.

This phenomenon has been studied in the literature from various aspects. Krotova (Krotova, 2019) analyzed the emergence of new terms brought about by information technologies and their adaptation to the language, while Ivanov (Ivanov, 2021) assessed the features of this process in the context of the Russian language. Volkova (Volkova, 2020), drawing attention to the issue of syntactic and morphological changes in the language arising in social networks, notes that the speed of digital communication and the brevity of the text simplify the formal structure of the language and lead to the formation of new grammatical constructions.

Studies by Derks, Fischer, and Bosun (Derks, Fischer, Bos, 2008) show that visual elements such as emojis have become an important component of digital communication, enriching the written language and acting as new paralinguistic tools. Androutsopoulos (Androutsopoulos, 2014), examining the interaction between globalization and localization of social media language, emphasized that new linguistic trends emerging in this environment have an impact on language development at both the international and national levels.

Recent developments in artificial intelligence and natural language processing (Jurafsky, Martin, 2023) further improve the process of digital communication and open new perspectives on how language will change in the future. At the same time, researchers such as Bender (Bender, 2020) draw attention to the dangers that artificial intelligence may lead to language unification and a decrease in cultural diversity.

Although existing studies mainly analyze individual aspects, studies that examine the impact of information technologies on language in a comprehensive manner, from both lexical, syntactic, and cultural aspects, are still limited. This article aims to fill this gap and evaluate the integration of information technologies into language in a wide range. This analysis, conducted in the context of the Azerbaijani language, has both theoretical and practical significance, since the protection of the national language and cultural diversity is an important priority in a globalized world.

In this regard, our article examines the impact of information technologies on language from a broad perspective, making new scientific contributions to the existing literature, and also providing important recommendations for the development and preservation of the language.

### **Research**

*Lexical impact of information technologies.* The rapid development of information technologies (IT) has had a significant impact on all areas of the modern world, including language. As a result of this development, new terms and concepts used in communication tools and technological processes have emerged, which are often internationally accepted English words and expressions. Examples of such terms include words such as “web”, “cloud computing”, “e-mail”, “hashtag” (hashtag) (Krotova, 2019, Ivanov, 2021). These words are widely used not only in English, but also in other languages, including Russian and Azerbaijani.

In the Azerbaijani language, words and expressions related to information technologies are gradually entering the lexical fund of our language. For example, terms such as “social networks”, “blog”, “mobile application”, “startup”, “hacker” are now widespread both in everyday speech and in official technical documents. Although some of these terms can be replaced with full equivalents in the Azerbaijani language, their original, i.e., English forms often prevail. This is a natural phenomenon in the process of language integration as a result of the rapid development of information technologies and globalization.

These lexical changes are not limited to the emergence of new words, but also significantly change the functional dynamics of the language and the form of communication. The successful integration of new technological concepts into the language increases the effectiveness of communication processes in modern society, as well as ensures the development of the language. On the other hand, this process shows the interrelationship of globalization and the impact of technological innovations on the language. As a result of globalization, the mutual exchange of terms between different languages intensifies, which, along with the enrichment of the language, also creates the risk of its homogenization.

Lexical innovations add new means of expression and layers of meaning to the language, making it more dynamic and flexible. However, the selection, use, and adaptation of these innovations are extremely important in terms of preserving the uniqueness of the language and national identity. The role of linguists, translators, and terminologists in the field of adaptation and normalization of new terms included in the lexicon in order to preserve the original structure and cultural characteristics of the language is increasing.

At the same time, the lexical impact of information technologies is also manifested in the functional areas of the language. For example, the differences between the terminology used in social networks, the language of technical documents, and everyday conversational language are decreasing, which leads to the expansion of the social and communicative role of language. As a result, language is becoming more widespread as a tool both in the field of technology and in other layers of society, and its use is becoming more accessible.

As a result, the change in the lexical level of information technologies serves both to enrich the language and to increase its functionality in the global space. However, in this process, the preservation of national language features and the adaptation of technological terms to the local language remain important issues for the future development of the language. In this regard, it is necessary to conduct continuous research in the field of language policy and terminology regulations and to apply a systematic approach to the integration of new terms into the national language.

*Syntactic and morphological changes.* The rapid development and widespread use of modern communication tools have led to fundamental changes in the way people communicate. In particular, on platforms such as SMS, instant messaging programs, and social networks, users prefer quick, effective, and minimally time-consuming communication methods. This trend leads to simplifications at the syntax and morphology levels of language (Volkova, 2020; Smith, 2018).

At the syntactic level, these changes are mainly manifested in the shortening and simplification of sentence structure. For example, short phrases or fragments are used instead of full, complex sentences. Instead of the sentence "I'll call you later," the phrase "Later" is sufficient. Such language use also leads to the reduction of sentence elements (topic, news), and sometimes their replacement altogether. As a result, language takes on a more contextually and situationally understandable form, which increases the speed of communication.

At the morphological level, there is a shortening of full-form variants of words, as well as a certain simplification of grammatical categories (e.g., time, person, cases). Thus, in written messages, grammatical rules are often not fully followed, abbreviations, numbers, and other informal means of expression are widespread. For example, abbreviations such as "sn" instead of "sén" and "yy" instead of "yakhşı" are used. This also strengthens the informal character of the written language and creates flexibility in the morphological system.

These syntactic and morphological simplifications reflect the functional adaptation of the language. That is, they adapt to the needs of language users and ensure rapid information exchange. However, in the long term, these trends can lead to fundamental changes in the grammatical structure of the language. Thus, as a result of the weakening of standard grammatical rules or changes in forms, differences in the normative rules of the language, written and spoken languages, can increase, leading to the emergence of new language forms.

At the same time, these processes show the living and changing nature of the language, confirming that it adapts to new communicative conditions over time. These new syntactic and morphological constructions formed on social networks and other digital platforms will become an important object of linguistic research in the future.

As a result, the syntactic and morphological effects of information technologies are one of the main components of the adaptation and transformation processes of modern language and open up new perspectives for the future development of language.

*The role of visual elements.* Digital communication is not limited to text; it also includes the use of various visual elements – emojis, GIFs, memes, and other multimedia tools. These visual

elements enrich the paralinguistic aspects of modern language and create new communicative opportunities for the expression of emotions, reactions, and intentions. Studies by Derks and colleagues (Derks, Fischer, Bos, 2008) show that emojis play an important role in conveying the emotional tone of written language, adding additional meaning to the text, and making communication more colorful and understandable.

Emojis, overcoming the limitations of traditional written communication, introduce additional facial and emotional components in a text environment that lacks facial expressions, intonation, and artistic expression. Thus, emojis are used to clarify the meaning of the text, soften or strengthen its tone, and even express subtle intentions such as irony and humor. With these features, they form a new paradigm of digital language – visual-verbal communication.

Visual language and textual communication complement and enrich each other on social networks and online platforms. GIFs and memes, like emojis, are used to convey certain situations, emotions, and reactions in a concise and effective way. This creates conditions for the emergence of new forms of language and communicative strategies. For example, a certain emoji or GIF can have different meanings depending on the culture of the platform and the group of users, which is a manifestation of the localization of digital language and social group dynamics.

In addition, the use of visual elements in the digital space serves the principles of economy of language – that is, the principle of expressing maximum meaning with minimum means. This is especially evident in environments where short and fast transmission of text is important – on platforms such as SMS, Twitter, and Instagram.

As a result, emojis and other visual communication tools not only express emotions but also stimulate structural and functional changes in language. They expand the boundaries of written language, turning the communication process into a multimodal form, thus playing a significant role in the future development of language.

*The role of social networks in shaping language.* In modern times, Facebook, Twitter, Instagram, and other social networks have become the main platforms for communication. These platforms not only serve to connect people, but also have a significant impact on the development of language, especially the emergence and spread of new language forms among the younger generation. The rapid, informal, and often non-standard nature of communication on social networks leads to lexical, syntactic, and stylistic changes in the language (Androutsopoulos, 2014).

The most striking example of these changes can be the new slang and abbreviations that have emerged on social networks. For example, lexical units such as “LOL” (laugh out loud), “OMG” (oh my god), borrowed from English, as well as the newly created and widespread “selfie” (taking a picture of yourself) and “hashtag”, have already become an integral part of global communication. These terms are actively used not only among network users but also in everyday colloquial speech.

The form of communication on social networks also leads to changes in grammatical structure. In order for communication to be fast and effective, language is becoming simpler, concise, and easily understandable. For this reason, fragments, short phrases, and abbreviated forms are used more often than long and complex sentences. Also, written language in social networks is getting closer to spoken language; this leads to certain softening and changes in the normative structure of the language.

Thus, social networks have become not only a passive recipient of language but also platforms that actively participate in its formation. These platforms increase the dynamism of the language, ensure its adaptation to a rapidly changing environment, and create conditions for the emergence of new communicative strategies and stylistic features.

In addition, the language of social networks acts as a meeting point of languages between different social groups and cultures. This leads to the acceleration of the globalization of the language, but at the same time creates new opportunities for the preservation and development of local language and stylistic features.

Consequently, social networks play an important role in the formation of modern language, and their influence is among the main factors determining the future development directions of the language.

*The language-changing prospects of artificial intelligence and natural language processing.* Significant advances in recent years in the field of artificial intelligence (AI) and natural language processing (NLP) have created conditions for the improvement of communication processes and the transition of human-machine interactions to a new stage. Jurafsky and Martin (Jurafsky, Martin, 2023) note that machine translation, autocorrection, and voice assistants (e.g., Siri, Alexa) are widely used in people's daily communication activities and significantly expand the areas of application of language. Through these technologies, language becomes more efficient and flexible in terms of both information transmission and processing.

In addition, the development of AI and NLP allows the creation of new language models, automated text creation, and the modeling of various aspects of human language. This reshapes language not only as a means of communication but also as a tool for creating and managing information.

However, Bender (Bender, 2020) and other researchers draw attention to the risks that such technologies may lead to the unification and homogenization of language. The global application of universal language models may lead to the weakening and forgetting of minority and national languages. This may result in the loss of cultural diversity and linguistic richness. In addition, the impact of artificial intelligence on language raises new challenges in ethical and social aspects; for example, issues such as language manipulation, the spread of misinformation, and automated language classification are gaining relevance. In this regard, along with the development of AI and NLP technologies, appropriate language policies and technological regulations are necessary to protect linguistic diversity. Future research should investigate the impact of these technologies on the functional structure and cultural aspects of language in more depth, and propose strategies to both benefit from technological innovations and protect linguistic and cultural diversity.

*Protection of cultural diversity and language policy.* The rapid development of the digital age has made the issue of preserving national languages and cultural diversity a particularly urgent problem. As a result of the acceleration of the globalization process of information and communication technologies, the risk of language homogenization, that is, the strengthening of the influence of dominant languages over other languages, increases. This, in turn, can lead to the weakening of local languages and even the disappearance of some of them. Crystal (Crystal, 2012) notes that technologies should not be a means of homogenizing the language, but rather a means of enriching it and preserving its diversity.

The survival and development of national languages requires serious attention not only in the field of linguistics but also in the context of culture and politics. In this regard, the study of the impact of information technologies on language should not be limited to linguistic studies, but should also be closely linked to state language policy, education systems, and cultural strategies. Language policy is the main mechanism for preserving national identity, historical and cultural heritage, and transmitting it to future generations. Enriching digital platforms with multilingualism and local content, and promoting the creation and use of online resources in national languages are important steps towards preserving cultural diversity. At the same time, the development of artificial intelligence and natural language processing technologies creates new opportunities for the translation and teaching of various languages. However, these technologies should not serve to strengthen dominant languages, but should support linguistic diversity (Humbataliyev, Taghiyev, 2024; Humbataliyev, Huseynova, 2024; Huseynova, Humbataliyev, 2025; Ismayilova, Ahmadov, Humbataliyev, 2020; Humbataliyev, 2007; Humbataliyev, 2014).

Consequently, the protection of cultural diversity and national languages in the digital era requires a comprehensive language policy approach, combined with the development of information technologies. This will both preserve the richness of the language and create a balance in the field of global communication.

## Conclusion

Thus, information technologies transform language in a multifaceted way. Changes observed in lexical, syntactic, and cultural aspects have both positive and negative consequences. New technologies create conditions for the enrichment of language and renewal of forms of communication, but at the same time, they also bring to the agenda risks such as homogenization of the language and reduction of cultural diversity.

This analysis, conducted in the context of the Azerbaijani language, shows that adaptation to new technological realities is essential for the development and preservation of the language. At the same time, language policy and the preservation of cultural diversity should be a priority in the digital era. Future research should be directed towards a more in-depth study of the impact of artificial intelligence and natural language processing on language.

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