Khazar University

Faculty: Graduate School of Science, Art and Technology

Department: English Language and Literature

Major: Translation

Master Thesis

The Use of Softwares in Translation and Azerbaijani Students' Attitudes Towards Their Use

Master Student: Shams Asadova

Supervisor: Dr. Irina Orujova

Advisor: PhD candidate Zamira Gurbanova

May - 2023

ACKNOWLEDGMENT

I am deeply grateful to my scientific supervisor Dr. Irina Orujova for her invaluable guidance, unwavering commitment and continuous support throughout the research process. Her expertise, insight and dedicated participation have been instrumental in shaping this thesis and enriching my understanding of various aspects of research. At the same time, I would like to express my deep gratitude to my advisor PhD candidate Zamira Gurbanova. Both Professors' encouragement and strong belief in my abilities was the main driving force behind my pursuit of excellence.

Along with this, I want to express my deep gratitude to my family members who have worked hard to reach these days. Their great support and belief in my abilities has been a source of strength and inspiration. I deeply appreciate their dedication and support along the way.

I would like to thank everyone who gave their valuable time to support me in this research and participated in the survey. Their contributions were instrumental in shaping the results of this study.

Finally, I would like to express my deep gratitude to the researchers, academics and authors whose extensive work and contributions formed the basis of this study. Their invaluable insights, ideas and commitment to the advancement of knowledge in this field have greatly influenced and contributed to this research work.

TABLE OF CONTENT

LIST OF FIGURES

INTRODUCTION

Actuality of investigation. One of the areas affected by technological developments is translation practices and the translation profession. The most sought-after thing in the translation-technology relationship is the ability to make translations through machines, without human factor. In this way, especially since the years of the second world war, studies have been intensified and a certain distance has been covered. However, in the process, it was understood that human-independent translation would not be possible, and from this point of view, translation programs were tried to be developed in a way that would minimize human action. In this context, rule-based, statistical and neural machine translation programs have been developed, respectively.

Keeping in mind the relevance of machine translation today and especially the contributions of artificial intelligence tools that are developing day by day to this field, we can say that a great deal of attention should be paid to the level of development of the subject being worked on. Researches conducted by researchers from different countries are found especially in the mentioned direction.

As a result of the researches, it has been determined that the mentioned programs can be used both as desktop and mobile applications, they have statistical and neural Machine Translation methods, source text inputs can be made in the form of direct writing, photo taking, voice command, document upload, and some of them provide offline translation services in mobile applications. A large part of the study is devoted to the analysis of how the aforementioned Translation Software translate sections of different text types.

Accordingly, it has been determined that the programs generally offer acceptable and qualified translations in technical translation and medical translation, while human intervention is highly needed in the translation of literature, everyday language and idiomatic expressions. The reasons for the success of the programs in the field of technical translation and medical translation can be listed as the use of words with their basic meanings, the fact that the sentences have a regular structure and are short, and the ability to transfer most of the words in the medical language into Azerbaijani with the borrowing strategy.

On the other hand, in the field of literature, Machine Translation programs cannot achieve the same success in technical translation and medical translation due to reasons such as the presence of long and inverted sentence structures, the author's style, the use of luscious language, the

predominance of the discourse dimension of everyday language and idiomatic expressions, and the presence of references.

The object and subject of the research. The object of investigation in this thesis is the utilization of software in the field of translation. This includes examining the types of translation software commonly used, their features, functionalities, and effectiveness in supporting the translation process. The subject of this research work is the attitudes of Azerbaijani students towards the use of software in translation. The research will delve into their perceptions, opinions, beliefs, and experiences regarding the use of translation software. Based on the high level of development of artificial intelligence in modern times, the relevance of machine translation increases the demand for analysis and research. It is no coincidence that this topic was chosen and the research conducted at the same time covers such an actual topic. Thus, the study of the trend of using the used technologies is of particular interest.

The goals and objectives of the research. The purpose of the study is to investigate the efficiency of using translation software in modern times. Aims of investigation are to examine the types of translation software commonly used in the field of translation, to evaluate the features and functionalities of translation software and their effectiveness in supporting the translation process, to explore the attitudes of Azerbaijani translation students towards the use of software in translation. To achieve the research goals and objectives mentioned above, we have five main and broad research questions:

- Research Question 1: How does machine translation technology compare to other translation software tools in terms of accuracy, efficiency, and overall quality of translations?
- Research Question 2: What are the advantages and disadvantages of using machine translation software in translation research?
- Research Question 3: What are the key features and functionalities of translation software, and how do they support the translation process?
- Research Question 4: How can computer-assisted translation (CAT) tools enhance the productivity and quality of translation research?
- Research Question 5: What are the attitudes of Azerbaijani students towards the use of translation software in their translation tasks?

Research methods. We carried out a study that combined empirical, exploratory, and comparative approaches, primarily relying on qualitative methods to address the research questions mentioned earlier. However, we also incorporated quantitative methods alongside the qualitative

approach. Survey, data collection, statistical analysis, ANOVA test, coefficient calculation, etc. are used in the research work.

The main clauses that are defended. There are several propositions defended in the research paper. The initial premise is that it is useful to develop a number of methods to increase the efficiency of the use of translation software in our country and to inform translators about these programs. The second premise is that it is important to teach the difference between translation programs and automated translation programs. The survey shows once again that there are still some gaps in this direction. The third proposition is that although there is a large number of studies in this direction today, it is useful to look at the issue from a different point of view.

Scientific innovation of research. This thesis contributes to the existing body of knowledge by focusing on the use of translation software in the specific context of Azerbaijani students. While previous studies have examined the use of software in translation, this thesis provides a unique perspective by specifically addressing the attitudes and perceptions of Azerbaijani students towards these tools. Considering that the use of such programs and tools is expanding in modern times, the gaps in this field should be eliminated. The research specifically targets Azerbaijani students and examines their attitudes towards the use of translation software. By exploring their perceptions, beliefs, and experiences, it offers unique insights into how these students view and interact with machine translation systems and CAT tools.

Based on the findings, the thesis provides practical recommendations to enhance the effective use of translation software among Azerbaijani students. These recommendations can be valuable for educators, translators, and professionals in the field, offering guidance on how to optimize the use of software tools in translation tasks specifically tailored to the needs and attitudes of Azerbaijani students.

Overall, it contributes to the existing knowledge by offering unique insights and guidance for the effective use of software in the translation process within the Azerbaijani student context.

Theoretical and practical significance of the research. The thesis contributes to the field of Translation Studies by expanding the understanding of the use of software in translation. The thesis adds to the existing body of knowledge on the attitudes and perceptions of translators, specifically focusing on Azerbaijani students.

The thesis provides practical implications for translation educators and curriculum developers by offering insights into the attitudes and preferences of Azerbaijani students towards translation software. This knowledge can guide the integration of software training and education

programs to better align with the needs and attitudes of students, thus enhancing translation education practices.

In summary, the theoretical significance of the thesis lies in its contributions to Translation Studies, translation technology, and attitude research, while the practical significance resides in its potential to enhance translation education, improve translation quality in the Azerbaijani context. This dissertation can serve as literature for students studying translation in the future.

The structure of the dissertation. Dissertation consists of an introduction, two chapters (theoretical and practical), survey, analysis, result and conclusion parts.

CHAPTER I. LITERATURE REVIEW

1.1. TRANSLATION TECHNOLOGY: MACHINE TRANSLATION AND TRANSLATION SOFTWARE

1.1.1. History of translation technology

Translation plays an important role in the cultural development of society. In translation, the nation of one country gets information about the life, everyday life, history, literature, and scientific achievements of the people of other countries. There is probably no one who would not appreciate the role of translation in human life and development. Translation has been and remains one of the most powerful tools connecting the world. Translation plays such a role in the mutual understanding of different tribes, peoples and nations that without it they would be far from each other and would not develop at all. Translation is an activity that creates the basis for people to get close, make friends, benefit from each other's development and communicate with each other. Since ancient times, people have understood this as the truth and have dedicated their lives to this necessary art (Abdullayeva, F., 2014). Without the art of translation, today we would not be able to use the science and culture not only of the West, but also of the East, of which we are a part.

Translation is an activity that consists of interpreting the meaning of a text in the original language and producing a new, equivalent text in another language, often known as translation. Translation has traditionally been a human activity, while attempts have been made to automate and computerise the translation of natural language documents (machine translation) or to employ computers as a translation assistance (computer-assisted translation) (Orujova, I., 2018).

In the translation process, speech is written and spoken. Both types of translation require the specialist to have a perfect knowledge of working languages, up-to-date knowledge of the relevant field, and certain skills. In addition to these requirements, there are a number of important aspects that distinguish written translation from oral translation. First of all, translation involves the translation of a written source text into another language, and oral translation involves the translation of an oral text into another language. In terms of time, oral translation involves immediate translation of the text, while written translation does not have this urgency. That is, in oral translation, time does not wait for the translator, he hears the original text once. In written translation, since the material is obvious, the translator can review any point many times and correct the mistakes he made. Therefore, while the written translator has enough time and opportunity to

refer to various sources during the work, the problem in oral translation should be solved on the spot. Dilmanj does not have the opportunity to turn to any source, so he has to rely on his own knowledge and habits. While accuracy is expected to be 70% in oral translation, this indicator is 99% in written translation (Alcina, A., 2016).

The purpose of translation is to establish an equivalency relationship between the original and translated texts (that is, to ensure that both texts express the same meaning), while taking a number of restrictions into account. These constraints include context, the original language's grammar rules, writing standards, idioms, and the like (Orujova, I., 2018).

A written translation is not a handwritten target text at all. Now the client does not accept handwritten text. The scope of the work does not allow it. In other words, it is impossible to live without a computer. When the translation is compiled on the computer, it is often stored in memory, if possible, transferred to a separate disk or flash drive. Because in the course of work, the computer will be damaged, there will be interruptions in the electric current, and thus there is a danger of losing the written text. In order to continue the translation in another place and on a safe computer, it is recommended to transfer it from time to time. The translation is not sent to the customer immediately after it is compiled on the computer, because it is possible that there may be certain computer errors and other errors. If there is still a certain amount of time left before the handover of the work, then it is necessary to put the text aside for a certain period of time. Depending on the time at our disposal, the break can be a few hours or 1-2 days. After that, you need to review the text from cover to cover with a new eye. By doing so, the translator will quickly notice aspects that are overlooked during the work. Revising the translation can also be understood as the allocation and editing of the text.

In order for the translator to start working, it is necessary to organize his working conditions. Obviously, the current forward typewriter or handwritten texts are no longer acceptable. It can do nothing but lose a large amount of material in translation. Therefore, when starting work, the translator must first of all have the tools he needs. In this case, most of all, the use of the computer is saved. Then comes the translator's frequent reference (dictionaries, in book form or electronic version) in the course of his work. The source, depending on other sources of information, forms the basis of terminological dictionaries, books and translation libraries of encyclopedic studies in the field.

When talking about the translator's working conditions, we emphasized that it is impossible to do without a computer at the moment. The computer is considered both the work tool of the

translator and the source of the sources he refers to. When we say the source of resources, we mean that computer programs are stored in the computer's memory, archive. In many cases, non-specialists confuse automated machine translation with translation software. Therefore, we know that it is necessary to differentiate them (Fitria, T. N., 2020).

There are a number of considerations as to whether machine translation will replace the labor of a translator or interpreter in the future: According to opponents of machine translation, it is impossible for a computer to understand and translate 100 percent of the language because it is so subtle and complex. In addition to language, language communication also includes non-verbal issues, including communication about the movement and position of body parts, intonation and context, and the influence of cultural elements. In this regard, it is doubtful that a computer can perform such subtleties.

Those who are confident about the future of machine translation can argue that, no matter how complex it is, since the brain is capable of performing many actions, it will be possible to fully study it in the future and repeat its functions in the operation of the machine. If it is currently possible to play text stored on a computer, it will be possible to perform more complex operations in the future. For now, machine translation is not able to perfectly replace traditional translation. In the current machine translation, a person helps the machine. However, computer programs called "Computer-Assisted Translation Tools" help people in the translation process. Today, it is possible to use machine translation specifically for a number of purposes. For example, in the case of core translation of large-volume materials, the customer can decide whether the material is suitable for his purpose after reviewing the overall content of the machine translation.

At this time, if necessary, the original is already given to a specialist for quality translation in the traditional way. This type of translation is used to translate weather information in bilingual countries such as Canada and India. At this time, the machine operates within the framework of specific, daily-repeated vocabulary and grammatical structures. Alta Vista's Babel Fish is an example of machine translation.

Since it was easier to rewrite a written culture, translations were usually retranslated. It is no coincidence that the use of paper coincides with translation schools in Baghdad in the 9th century and in Toledo in the 13th century. The use of printing technology in the 15th century supported the ideal of a final text, hence a final translation, and thus notions of equivalence as a link between fixed, stable texts. What can we say now that our main technologies are electronic? Like our software, the texts on the web are constantly updated. Sometimes they ask us to do nothing but

updates or adaptations. Thus, we can expect our translations to move away from the ideal of equivalence between fixed texts and become more of a set of emendations among many. In the field of electronic technology, as in concordance books, translators are used less often to translate whole texts. Translation, like the production of plain texts, is more akin to working with databases, dictionaries and electronic toolkits than complete final source texts. Here we will look at a number of electronic tools that enhance human capabilities in some way (Alcina, A., 2016).

Electronic formats apply not only to our texts in this digital age, but also to our communication with clients and other translators. Professionals from all over the world can now contact on a regular basis via e-mail or various forms of instant messaging thanks to the Internet. Work can be electronically sent and received across national and cultural boundaries. This has a number of ramifications. To begin with, you can theoretically work for clients anywhere in the world. It is not necessary for the transfer market to be in your city or nation.

A 5:00 p.m. original text obtained in Tarragona can be submitted to a translator in New Zealand, who will return the translation at 9:00 a.m. Tarragona time. Time zones can be exploited imaginatively in this manner, and work can come from companies far away. All you have to do is list your name, language combinations, and areas of competence on one of the many websites created to connect translators with clients. According to global market theory, this process should result in transfer fees that are nearly the same all over the world. However, this is far from the case.

Translation tools remain a service based on mutual trust between the translator and the client. A few regular high-paying jobs will come from unknown clients; rates paid in different countries continue to vary widely; and the best contacts are probably face-to-face and verbal communication (Gunjan, V. K., Diaz, V. G., Cardona, M., Solanki, V. K., & Sunitha, K. V. N., 2019). Increased security risk is a secondary consequence of electronic communications. Translators often work with material that is not in the public domain, so trust is very important. When sending and receiving files, you must master various forms of archiving, secure FTP or other company-specific forms of encryption, and associated passwords. A third effect is that electronic communication greatly facilitates the distribution of large sums of money.

They employ a marketing firm, which hires a language service provider, who hires a number of brokers for each language, who then outsource the job to a number of translation businesses, which subcontract the texts to translators, who are frequently freelancers. A client can spend four times the price of a genuine translator per translated page in such a system. However, each step in the chain revises, coordinates, and creates various translation products that add value. This means

that the text supplied by the translation is not always the same as the text actually utilised, and so the translator's work is free of copyright difficulties.

It also implies that translators are sometimes far removed from the end client and the overall context of the texts they are working on. Translators working on projects such as software localization often see more than glossaries and lists of terms. As a result, employment can be highly isolating and dehumanizing. Electronic communications, especially through Internet forums for professional translators, have also been used to improve translator communication. They are usually categorized by subject and/or language pair. Some may be open to everyone, while others may only be open to registered members.

Each group's traffic (number of e-mails) ranges from a few e-mails every month to hundreds of e-mails per day. Translators are eager to exchange advice, give advise, and generally discuss their work in these forums. Students and aspiring translators can learn about translation and discover how experts help one another by just reading posted posts. Professional discussion groups typically have their own communication standards, so new members see a certain method for professionals to participate (Dorman, S. J., Wolf, K., Polyakov, N., & Healy, J., 2018).

For example, when asked about terminology, professional translators usually send a short message stating the term, some context, suggested translations, and sources used. This model provides valuable tips for learning terminology and teamwork skills. Or, when reading articles about a particular computer tool, novice translators often find that the program is in a state of constant development and has features that would otherwise be overlooked. Thus, these forums provide a valuable bridge between students and the professional world. They also put an end to the stereotype of a professional translator isolated behind a wall of dusty dictionaries.

Technology is an activity that shapes or changes culture. It is a set of techniques, skills, methods and processes used in the production of goods and services or to achieve objectives such as scientific research. Technology can be incorporated into machines, computers, and other devices that humans can control without detailed knowledge of the consequences of such things.

Technology is defined in two ways: "the search for life by means other than life", "organized inorganic matter". Technology has made life easier and better in our society today because it takes less time. Modern technologies that have evolved over the years have expanded human capabilities to such an extent that the original technologies are no longer relevant. They are outdated or replaced by modern technology. It simplifies life in many ways, and everyone sees it differently. Translation and modern technologies expand human capabilities. A monkey uses a stick to knock down a

banana from a tree, and that stick is technology, in this case a simple tool. More common technologies are toolkits (Fitria, T. N., 2020).

Some of these tools affect our communication and hence our translation. These can be both tangible and intangible entities created by the application of mental and physical efforts to achieve any goal. In this sense, technology refers to tools and machines that can be used to solve our problems. Tools and machines must be tangible; virtual technologies like complex software can be trivial. Wise use of machine translation should mean that our best human efforts are directed where they are most needed. However, technology is not perfect and translators should be aware of these imperfections.

The translation brings so many points of view of serious linguistics to the civilizations, cultures and even the philosophical concepts of the societies to which they are adapted systematically and in close contact with two different languages. The translation must communicate with the source language system (SL) and target language (TL). Text can be transferred from one natural language to another without any changes other than those required by the grammar of the target language. Given two expressions, one in English (moneme) and one in French (monème), there is an exact correspondence between them in terms of structure and meaning, and the equivalence is obtained, then a literal translation is obtained and can be applied without risk (Fitria, T. N., 2020).

The industrial application of translation memory tools is based on the idea that translation is a word-changing activity. On the other hand, translation theories since the 1980s have tended to view translators as communicators whose task goes beyond replacing words in the source text; Interpreters are employed to ensure constructive communication. Translation memory makes this difficult. Indeed, they return translators to the paradigms of linguistic equivalence of the 1960s. Worse, since texts usually contain not only written words, but also images, videos, and layout (think of any website), translation requires a division of labor. With our tools, translators usually only deal with written words; they are encouraged to forget other elements that personalize the text. This division of labor cannot always ensure satisfactory long-term employment.

The employment of software tools to facilitate the process of transforming written text from one language to another is referred to as translation technology. Translation technology tools, like most things done with technology, can boost productivity, accuracy, and general efficiency.

The word "translation technology" refers to everything from translation memories and term management software to machine translation (MT), virtual translation technology, and even speech-to-text technologies.

Translation was done by hand before the advent of translation technology, with translators employing paper dictionaries and common sense.

The following factors had a substantial negative influence on business:

Market Postponement

Total content relevance loss

The high cost of efficient operations

Poor output quality as a result of the need to manually check for errors

Everything changed when translation technology was invented. Translation memory and translation management systems that retain previous translations to inform and accelerate future projects help automate repetitive processes and increase control.

Today's translation technology tools enable companies to:

Ensure quality by checking for spelling and grammar issues.

Preserve previous translations that can be reused or used in future projects to improve content consistency.

Increase operational efficiency by automating translation management tasks.

Accelerate time to market by producing more content in less time.

Before we look at the various types of translation technologies, let's take a look at how translation technologies have evolved over time.

Some of the methods used in modern translation technology date back to the 9th century, when an Arabic cryptographer named Al-Kindi developed the method of frequency analysis that is still used today.

It wasn't until the middle of the 20th century, however, as computers became affordable and affordable that translation technology really began to take shape.

A brief history of translation technology evolution (Anthony, P., 2018):

The history of translation technology dates back to ancient times when humans started developing tools and techniques to facilitate the translation process. The development of writing systems in ancient civilizations, such as cuneiform in Mesopotamia and hieroglyphs in Egypt, can be seen as an early form of translation technology. These writing systems allowed for the preservation and dissemination of written texts across different languages.

Mechanical Aids: In the Middle Ages, mechanical aids like translation wheels and translation tables emerged. These tools aimed to assist translators in finding equivalent words or phrases in different languages. They relied on predetermined rules and provided a basic level of support for translation tasks.

Printing Press: The invention of the printing press by Johannes Gutenberg in the 15th century revolutionized the dissemination of translated texts. It enabled faster and more accurate reproduction of translated works, facilitating the spread of knowledge across language barriers.

Machine Translation (MT) Systems: The development of electronic computers in the mid-20th century paved the way for the emergence of machine translation systems. In the 1950s, the Georgetown-IBM experiment and subsequent research projects explored the use of computers to automatically translate texts. Early MT systems relied on rule-based approaches and linguistic algorithms to generate translations. Despite being unreliable and inefficient, this early kind of machine translation was revolutionary—a step towards more advanced technology.

The US Department of Defence and the Defence Advanced Research Projects Agency began developing voice recognition technologies in the 1970s, which eventually led to speech-to-text technology.

The advent of electronic dictionaries and terminological databases in the 1980s was another significant turning point. These technologies have assisted translators in making translation more accessible by providing them with rapid access to information (including translation terminology) that may be used throughout a project (Anthony, P., 2018).

Mid-1980s: Coventry-Lanchester Polytechnic University and its ALP system were the forerunners of modern translation management systems (TMS).

IBM researchers introduced statistical machine translation (SMT) in the late 1980s and early 1990s. These word-based systems are intended to translate from one language to another by comparing large quantities of parallel texts in both languages (bilingual corpora). They will, for example, examine how frequently the German term "das auto" is translated as "car", "automobile", or “machine” and select the most popular translation for the present content.

The early 1990s. The majority of commercial computer-aided (or assisted) translation (CAT) programmes appeared during this decade, marking a watershed moment in translation technology. This enabled a new generation of translators to operate more successfully and efficiently.

Late 1990s: IBM releases a new version of its statistical translation engine, this time based on phrases rather than words. For many years, it was the commercial standard until Google entered the game in 2006 with Neural Machine Translation technology.

The first cloud-based TMS systems hit the market in the early 2000s, allowing translation teams to operate more flexibly and interact with other company personnel regardless of location.

Google Translate - still a statistic - was created in 2006 and swept the globe by storm. The technology translated the input text into English first, then into the target language. Previously, the system employed prediction algorithms to forecast what words will appear next based on the words and sentences it had learnt. These approximations frequently resulted in linguistic errors.

2016: Google Translate introduced Neural Machine Translation (NMT), surpassing expression-based CAT tools to become the new commercial standard.

In this fast-paced, always-connected world, consumers demand a seamless experience that is as user-friendly and accessible as possible. They also need high-quality products and services that are culturally sensitive and tailored to their needs.

In the context of the information economy, this can mean delivering dozens of types of content to a wide audience in different languages. Translation technology allows businesses to not only overcome these challenges, but also to maximize translation costs by improving speed and quality, while reducing costs.

Today's decision makers, who must balance the expectations and demands that come with globalization while also focusing on cost and performance, can rely on translation technology to help them succeed on all fronts.

Translation technology allows companies to go global quickly, easily and cheaply, allowing them to simplify the entire localization process. It provides scalable and efficient solutions that can help them reach new markets faster and more efficiently than ever before.

Modern translation technology are continually evolving, with new developments appearing on a yearly basis. The following is a (non-exhaustive) list of the most widely used translation technology.

Tools for Computer-Aided Translation (CAT)

CAT tools are software programmes that aid translators in their daily tasks. To facilitate the translation process, CAT programmes leverage a database of prior translations (typically from a certain source language and a target language), as well as frequency data, segmentation data, and several other resources.

CAT tools have revolutionized translation technology, saving time and money by making it easier for companies to streamline the translation process and manage large volumes of content more efficiently. The main benefit for translators is that they can use the time saved on repetitive tasks to focus more on the translation itself.

CAT tools are also highly scalable and customizable, making them invaluable to any business looking to optimize the translation process for the specific needs of their content and target audience.

The history of translation technology showcases the continuous evolution of tools and approaches to support the translation process. From early mechanical aids to modern machine translation and CAT tools, the field has witnessed significant advancements that have transformed the way translations are produced, shared, and improved.

1.1.2. An overview of machine translation and its benefits

Machine translation (MT) is a subfield of computational linguistics that focuses on the automatic translation of text or speech from one language to another using computer-based systems. Here is an overview of machine translation. Machine translation refers to the process of using computer algorithms and software to translate text or speech from a source language to a target language without the direct involvement of human translators.

Brief information from the history of the development of the direction. The date of birth of machine translation as a scientific direction is considered to be 1946, when Warren Weaver, director of the Natural Sciences Department of the Rockefeller Foundation, in correspondence with Andrew Booth and Norbert Wiener, first formulated the concept of machine translation, which he developed somewhat later in his memorandum “Translation” addressed to the Foundation.

In 1952, the first MT conference was held at the Massachusetts Institute of Technology, and in 1954, the first MT system was introduced in New York - IBM Mark II, developed by IBM together with Georgetown University (this event went down in history as the Georgetown experiment). By the beginning of the 1950s, a number of research groups in the USA and Europe were working in the field of MT. Significant funds were invested in these studies, but the results soon disappointed investors.

One of the main reasons for the low quality of MT in those years was the limited capabilities of hardware: a small amount of memory with slow access to the information contained in it, the inability to fully use high-level programming languages. With the development of computer

technology in the late 70s (the advent of microcomputers, the development of networks, the increase in memory resources), machine translation entered the era of "Renaissance". At the same time, the emphasis shifted somewhat: the researchers now set as their goal the development of "realistic" MT systems, which assumed the participation of a person at various stages of the translation process. The 1990s brought with it the rapid development of the market for personal computers and information technology, the widespread use of the Internet (which is becoming more international and multilingual). All this made it possible, and most importantly, in demand, the further development of MT systems.

There are two main incentives for the development of machine translation in modern times. The first is scientific, where translation is dictated by the complexity of computer simulation. Translation, as a kind of linguistic activity, affects all levels of language, from graphic recognition to conveying the meaning of sound and text. In addition, it stands out for its ability to quickly evaluate translation feedback and theoretical assumptions about the organization of certain language levels, as well as the success of the proposed algorithms. This divergent aspect of translation in general and machine translation in particular arouses the interest of theorists and continues to lead to the development of new theories of translation automation and the formalization of linguistic data and processes (Fitria, T. N., 2018).

The second impulse is of a social nature and is related to the increasing importance of machine translation practice in the modern world as an important condition for ensuring interlingual communication, the volume of which is increasing every year. In terms of effectiveness, other methods of overcoming language barriers in the way of communication - the creation or acquisition of a common language, as well as learning a foreign language - cannot be compared with translation. Translation in this context has no alternative, so the creation of high-quality and high-performance machine translation systems helps to solve the most important social and communicative tasks.

Using a machine translation system can significantly reduce the time required to translate texts, is also low translation cost. We have to pay for each page of the translation, using the services of professional translators. However, it is often necessary not to get a perfect translation of the text, but to quickly grasp the meaning of a letter sent over the Internet or the content of a page. In this case, the translation system will undoubtedly be a reliable and effective helper.

Many users regularly use MT systems to translate personal letters, because not everyone is ready to entrust the translation of personal correspondence or financial documents to a foreign translator.

Advantages of using machine translation in the translation process include increased efficiency and speed, cost-effectiveness, consistency in translations, and accessibility to multiple languages. However, there are also several disadvantages associated with machine translation, such as potential inaccuracies and reduced translation quality, limitations in contextual understanding, lack of linguistic analysis depth, challenges with domain-specific terminology, the absence of a human touch, and the need for post-editing to improve the output.

Advantages of using machine translation:

Efficiency and Speed: Machine translation software can quickly process large volumes of text, enabling researchers to analyze and compare translations more efficiently. It saves time compared to manual translation, allowing researchers to focus on other aspects of their research.

Cost-Effectiveness: Machine translation can be a cost-effective solution, especially for research projects with limited budgets. It eliminates the need to hire human translators for every translation task, reducing translation expenses.

Consistency: Machine translation software can provide consistent translations within a given context or domain. It maintains consistency in terminology, style, and specific phrasing, which can be advantageous for research projects requiring consistent translations.

Accessibility to Multiple Languages: Machine translation software supports a wide range of language pairs, making it accessible for research involving multiple languages. This allows researchers to analyze and compare translations across different languages, broadening the scope of their research.

Disadvantages of using machine translation:

Accuracy and Quality: Machine translation software may produce translations that are not always accurate or of high quality. The output can be influenced by linguistic complexities, idiomatic expressions, cultural nuances, and other factors, leading to inaccuracies and mistranslations.

Lack of Contextual Understanding: Machine translation systems often struggle to grasp the full context of the source text, leading to errors in translation. They may misinterpret ambiguous words, phrases, or cultural references, resulting in inaccurate or nonsensical translations.

Limited Linguistic Analysis: Machine translation software primarily focuses on lexical and syntactic analysis, lacking the depth of understanding that human translators possess. They may overlook the finer nuances of language, making it challenging to capture the full meaning and intention of the source text.

Domain-Specific Limitations: Machine translation systems may struggle with domain-specific terminology, jargon, or technical language. Research projects that involve specialized fields or industry-specific terminology may require human translators with subject matter expertise.

Lack of Human Touch: Machine translation lacks the human touch, including the ability to understand and adapt translations based on the target audience or intended purpose. Human translators can employ cultural sensitivity and make contextually appropriate choices that machine translation software may miss.

Need for Post-Editing: In many cases, machine-translated output requires post-editing by human translators to improve accuracy, readability, and overall quality. This additional step adds time and effort to the research process.

It is important for researchers to carefully consider these advantages and disadvantages when incorporating machine translation software into their translation research. The specific research goals, language pairs, domain requirements, and quality expectations should be taken into account to determine the most suitable approach.

As a rule, a professional translator has experience in translating articles on a specific topic. The translator program can translate documents from different areas: all that is required is to combine the appropriate options to correctly translate certain phrases. Online translation and translation of website information are available. The advantages of online data translation services are obvious. Online translation services are always available and if you don't have a translation software, they will help you quickly translate material at the right time. You can also translate website content and search engine queries using modern translation tools.

Special translation serves various subject branches of knowledge that have a specific terminological nomenclature. The object of special translation are materials that relate to various areas of human knowledge and practice of science and technology. These materials are characterized by an extremely precise expression of thought, and therefore by a wide use of terminology. Such a translation is most easily implemented in machine form, since special texts are characterized by a strict logic of text construction, a rigid sentence structure, and the absence

of emotional coloring and subtext. The forms of translation are understood as the method in which translation is carried out: written (written-written, visual-written, written translation by ear); oral (oral translation, visual-oral translation or translation from the sheet, i.e. oral translation of the visually perceived source written text).

Machine implementation is easier for written translation, since oral translation requires solving an additional task - recognition and synthesis of oral speech. There are three types of machine translation according to the degree of automation. Currently, types of machine translation are distinguished according to the degree of automation: fully automatic; automated machine translation with human participation (with pre-, inter- or post-editing); human translation using a computer (for example, using electronic dictionaries). The first MT systems are characterized by a strategy of direct (word by word) translation. The essence of this approach to the construction of the MT lies in the fact that the source text in the input language is gradually transformed through a series of stages into the text of the output language. Transformations come down to the fact that the word (phrase) in the input language is replaced by its dictionary equivalent in the output language. It is clear that in first generation systems using the direct translation strategy, there is no need to model the functioning of the language system as a whole.

For the operation of such systems, it turns out that the rules of dictionary correspondences are quite sufficient. In rare cases, a context analysis is performed to translate multi-word expressions, again presented in the system dictionary. It is important to keep in mind that the direct translation strategy does not distinguish between understanding (analysis) and synthesis (generation), since they are actually excluded from transformations according to the rules of dictionary correspondences. Direct translation is always tied to a specific language pair [6, p.14]. For example, the ambiguity of expressions in the input language is resolved only to the extent that it is necessary for the target language. According to the time frame, the first generation's systems were mainly created in the period from the late 40s to the mid 60s.

A significant modification of the direct translation strategy is found in systems with transfer, a stage of interlingual operations that is not limited to the replacement of input language lexemes with dictionary matches of the output language. The presence of the transfer stage involves the construction of an "intermediate" or "internal" representation, which is then "adapted" to the sentence structure of the target language. Unlike the first strategy, in the architecture of MT systems with transfer, analysis (understanding) and synthesis exist as special procedures and are served by

different algorithms. The development of the idea of transfer led to the emergence of a translation based on in-depth linguistic analysis.

This strategy involves the analysis of the input text at all language levels (morphological, syntactic, semantic, pragmatic), as well as a multilevel synthesis of the output text. Criticism of the direct translation strategy led to the creation of an intermediary language (interlingua) strategy. The main feature of this strategy is that between the structures of the input language and the structures of the output language there is one or more intermediate languages, into which, according to the appropriate rules, the expressions of the input language are sequentially "rewritten". Analysis and synthesis when using an intermediary language are fundamentally separated.

The analysis is carried out in the categories of the input language, and the synthesis is carried out in the categories of the output language. Language(s)-intermediaries can be languages of representation of syntactic and semantic-syntactic structure, purely semantic languages, languages of deep semantics, approaching conceptual representation in the categories of knowledge theory (frames, scenarios, plans). Recently, a translation memory strategy has been developed. (Daems, J., Vandepitte, S., Hartsuiker, R. J., & Macken, L., 2017).

Although machine translation has always been at the center of debates about reliability and quality, there is no denying the great benefits it brings.

One of the most important advantages of machine translation is speed. Any machine translation can quickly translate large amounts of text. While its accuracy may not match that of human translators, machine translation clearly wins when it comes to speed.

Buying machine translation software may seem expensive at first. However, compared to hiring human translators for many translation projects, these costs are negligible in the long run. Once you've paid for the translation software, you'll have access to it whenever you need it. And if you don't want to pay, there are more free solutions.

In addition, machine translation can memorize and learn words and then reuse them when needed. As a rule, a professional translator has experience in translating texts on a certain topic. The translation program can manage the translation of documents from different fields: all that is required is to combine the appropriate parameters to correctly translate specific expressions. Online translation and translation of information of Internet pages. The advantages of online data translation services are obvious. Online translation services are available anytime, and if you don't have a translation software, they will help you quickly translate the material at the right time. In

addition, you can translate website content and search engine queries using modern translation tools (Anthony, P., 2018).

The main theme of the context determines the use of a certain meaning of the term. Just as context affects the literal meaning of a polysemous word, it can lead to semantic ambiguity where the distinction between individual lexical meanings is unnecessary. The meanings of words differ not only by their lexical compatibility and expressiveness, but also in some cases by their grammatical compatibility.

The reason for this is that in most of the topics discussed, not the etymology of the word, but the semantics is important. If the word is chosen in ordinary usage or a synonym is found in the ordinary sense for figurative use, the problem of ambiguity is considered resolved.

It is known that many independent tasks arise when working with polysemy. In particular, we can distinguish larger, "classical" problems. The reason for this is that in the vast majority of the mentioned topics, not the etymology of the word, but the semantics is important. If the word is chosen in its ordinary sense or a synonym is found in its ordinary sense for figurative use, the problem of ambiguity is considered solved. It is known that a number of independent problems arise during the solution of polysemy (Nirenburg, S., Somers, H. L., & Wilks, Y., 2019).

These are automatic mechanisms, assuming a completely computer-based solution to this problem. These are interactive mechanisms, involving a joint solution of a problem by a person and a computer, and boil down to the fact that the computer provides the user with a set of alternatives from which he must choose one option. One of the automatic methods for resolving ambiguity are filters, that is, methods that do not reveal the exact value, but explicitly impose restrictions on their range (Kastberg, P., & Andersson, T. B., 2018).

Here are some examples of famous machine translation systems:

Google Translate: Google Translate is one of the most well-known machine translation systems available. It supports a wide range of languages and provides translation services for text, documents, websites, and even real-time speech translation. Google Translate utilizes neural machine translation technology, which has significantly improved translation quality.

Microsoft Translator: Microsoft Translator is another popular machine translation system developed by Microsoft. It offers translation services for text, documents, websites, and speech. Microsoft Translator incorporates neural machine translation technology and provides APIs and developer tools for integration with various applications and platforms.

DeepL Translator: DeepL Translator is known for its high-quality translations, particularly for European languages. It employs deep learning techniques to generate accurate translations and is praised for its linguistic accuracy and natural-sounding translations. DeepL Translator supports translation for texts and documents.

Amazon Translate: Amazon Translate is a machine translation service offered by Amazon Web Services (AWS). It uses neural machine translation models to deliver fast and accurate translations. Amazon Translate provides translation APIs for integrating translation capabilities into applications, websites, and other services.

Yandex.Translate: Yandex.Translate is a machine translation system developed by Yandex, a Russian technology company. It supports translation between multiple languages and provides text and website translation services. Yandex.Translate utilizes neural machine translation technology and offers various translation options and customization features.

These are just a few examples of famous machine translation systems that have gained recognition for their translation capabilities. Each system has its own strengths and weaknesses, and the choice of machine translation system may depend on factors such as language support, translation quality, usability, and integration options. It's worth noting that while machine translation has improved significantly over the years, it may not always produce perfect translations and may still require human editing or review for certain contexts or specialized content.

To translate polysemantic words, contextual dictionaries are also used, the dictionary entries of which are algorithms for querying the context for the presence or absence of contextual value determinants. For each polysemantic word, its priority translation equivalent, specific to the subject area under consideration, is indicated. At present, there is no need to combine the contextual dictionary and sets of contexts with a special algorithmic procedure, since modern programming languages allow a variety of implementations of the dictionary system on a computer, depending on the general conditions of its functioning. With the interactive method, the author (editor) of the text compiles semantic additions using the reference explanatory dictionary of the native language, and translations of words, phrases, taking into account the additions, are carried out using special dictionaries of the source and target languages, consistent with the dictionary.

The basic explanatory dictionary of the source language combines the functions of an explanatory dictionary and a translation dictionary. This dictionary reflects those elements of the source language that are of particular importance when translating into at least one of the target languages included in the system of agreed (translation) dictionaries of this source language. The

meanings are presented as a separate section, following the descriptions of those semantic meanings of the word for which they are common. This makes it possible to take into account the diversity of not only lexical, but also grammatical meanings in the coding process.

Semantic coding of the source text is carried out on the author's computer, using a service program containing a reference explanatory dictionary of the source language and creating semantic additions according to the author's instructions. In the coding process, the author examines the source text sequentially, word by word, and highlights the next word with a special font, according to the author.

From this point of view, the problem arises of determining whether some words belong to a combination, finding boundaries within a word combination, determining the first word, and finally choosing an appropriate value for the context (Зарецкая А., Корпус Пастор Г. и Сегири М., 2018).

The service then calls the entry from the dictionary corresponding to the word the author refers to, after which the author explains the meaning of the word by comparing the source text with certain elements of the article. The utility has some initiative functions, for example, it informs the author about a discrepancy between the use of a word or phrase in the source text and the marked clause of the dictionary entry.

The idea of a parallel corpus has a lot in common with the concept of translation memory. The main difference between them is that a translation memory is a database in which text segments (corresponding sentences) are arranged in such a way that they are not related to the original context, i.e. the original sequence of sentences is lost. The parallel corpus retains the original sequence of sentences. Translation memory is a database containing a set of previously translated texts. One entry in such a database corresponds to a segment or "translation unit", which is usually taken as one sentence. If the translation unit of the source text exactly matches the translation unit stored in the database, it can be automatically substituted into the translation.

The new segment may also differ slightly from the one stored in the database. Such a segment can also be substituted into the translation, but the translator will have to make the necessary changes. In addition to speeding up the process of translating repetitive fragments and changes made to already translated texts (for example, new versions of software products or changes in legislation), translation memory systems also ensure the uniformity of the translation of terminology in the same fragments, which is especially important for technical translation (Зарецкая А., Корпус Пастор Г. и Сегири М., 2018).

The basis for the functioning of any translation memory system is previously translated texts. Many of these texts are constantly updated with new translations, as a result of which the percentage of automatically translated segments is gradually growing. This means that for the most efficient use of translation memory, all texts must contain a sufficient number of similar phrases. This state of affairs takes place in the documentation for various kinds of products. This is due to two factors. Firstly, it is customary to make documentation as simple as possible, concisely and in strict terms. Secondly, with the advent of new versions and modifications of the product supplied to consumers, the content of the documentation changes only slightly. Translation memory in such cases relieves the translator of the need to translate several times identical text fragments included in different documents.

Translation quality assessment methods

You can evaluate the quality of a translation with the help of experts or automatically, without the participation of people. Experts are needed for evaluation by experts. In the 1960s, the American ALPAC Commission concluded that there should be at least four people. There are several methods for peer review. For example, experts can evaluate the translation of each sentence by two parameters: completeness and smoothness. Completeness is responsible for the accuracy of the translation, and smoothness is responsible for the correctness of the phrase from the point of view of a native speaker. For each of these parameters, each expert evaluates translations according to a predetermined scale, for example, from 1 to 4. Another way of expert evaluation is to select the best translation from several translations or to rank available translations. Another approach is related to measuring the time and effort spent by a human editor to correct one or another automatic translation. In any case, the expert approach requires a lot of labor, and only a small number of proposals can be evaluated with its help.

Much more convenient in this regard is the automatic evaluation of the translation. Automatic evaluation involves comparing the translated text with a reference translation. The reference can be a human translation or an edited machine translation text. The closer the result is to the standard, the better the machine translation is. This method is rather crude, but it is useful when evaluating large amounts of text. The automatic evaluation of a translation should be based on a certain metric, that is, a way to quantify the differences between the translation and the standard. The most famous metric is called BLEU, proposed by IBM in 2002. It takes into account how many n-grams match in the translation and in the standard, and then, using a certain formula, displays a translation quality assessment on a scale from 0 to 100.

There are other metrics for assessing the quality of a translation: NIST, MERT, METEOR, TER. You can view their work, and at the same time evaluate the quality of translation of various translators, using the free online system Asiya. When creating machine translations, it is necessary to evaluate the quality after each major change to the system. It is possible, for example, to automatically track which sentences have been translated differently, and then, in each individual example, evaluate the change in the translation: whether the new version has become better or worse. If the percentage of deterioration is large enough, the system change can be considered unsatisfactory.

1.1.3. Types of machine translation

There are several types of machine translation (MT) systems, each employing different techniques and approaches to automatically translate text from one language to another. Here are the main types of machine translation.

RBMT systems analyze text and build its translation based on built-in dictionaries and a set of grammar rules for a given language pair. PROMT and Systran are the well-known examples of RBMT systems. The quality of such translations leaves much to be desired, but they are still used.

Rule-based machine translation (RBMT) is a category of machine translation that relies on explicit linguistic rules and grammatical knowledge to perform translations. RBMT systems are built upon a set of predefined rules that capture the syntactic, morphological, and semantic structures of both the source and target languages. These rules govern the transformation of input sentences from the source language to the target language. RBMT systems typically involve linguistic experts who manually encode linguistic rules and create dictionaries, lexicons, and grammar resources specific to the language pair being translated. The translation process in RBMT involves analyzing the input sentence, applying the relevant linguistic rules, and generating the corresponding translation based on the rule-based transformations.

Advantages of RBMT include the ability to handle complex grammatical structures, precise control over the translation process, and the potential for accurate translations within specific domains or controlled linguistic contexts. RBMT systems also allow for explicit handling of language-specific nuances and constraints. Among the advantages of RBMT are morphological accuracy (words are not confused during translation), reproducibility (always the same result) and the ability to customize the system for the subject area (teach special terms). However, RBMT

systems have limitations, such as the need for extensive manual effort to create and maintain linguistic rules, dictionaries, and grammatical resources. RBMT may struggle with translating idiomatic expressions, handling ambiguous words or phrases, and adapting to variations in language usage. The rule-based nature of RBMT may also make it less flexible and adaptable to new or unseen language patterns. While RBMT has been surpassed by statistical and neural approaches in terms of overall translation quality, it still finds applications in specialized domains where precise control over the translation process is required or when dealing with low-resource languages where large amounts of parallel data are not readily available. (Пацей, Н.В., Шиман, Д.В., Сухорукова, И.Г., 2019).

Statistical machine translation (SMT) is a category of machine translation that relies on statistical models and algorithms to translate text from one language to another. SMT systems are data-driven and learn from large parallel corpora, which are collections of aligned source and target language texts. The translation process in SMT involves the analysis and alignment of bilingual data to learn statistical patterns and relationships between words, phrases, and sentences in the source and target languages. SMT models estimate the probabilities of different translations based on the observed patterns in the training data. During translation, the system selects the most probable translation given the input sentence and the learned statistical probabilities.

Advantages of SMT include its ability to handle a wide range of language pairs and its adaptability to different domains and linguistic contexts. SMT systems can learn from vast amounts of parallel data, making them effective when large bilingual corpora are available. SMT also allows for the integration of various linguistic features, such as language models and word alignments, to improve translation accuracy. However, SMT has certain limitations. Since it primarily relies on statistical patterns, it may struggle with translating rare or unseen phrases or handling out-of-vocabulary words that were not present in the training data. SMT systems may also produce translations that lack fluency and coherence, especially for languages with complex grammar or sentence structures. Additionally, SMT models require substantial computational resources for training and decoding.

While SMT has been a dominant approach to machine translation for many years, it has been largely surpassed by neural machine translation (NMT) in terms of translation quality and fluency. Nonetheless, SMT remains relevant in scenarios where large parallel corpora are available, or when specific linguistic features or domain adaptation are required.

This is where Neural Machine Translation (NMT) comes into play self-learning is typical, first of all, for translation based on neural networks. This type of translation began to appear in the 1990s and is now the main type of machine translation. Neural machine translation (NMT) is a category of machine translation that utilizes artificial neural networks, particularly recurrent neural networks (RNNs) or transformer models, to perform translations. NMT systems have gained significant popularity and have become the state-of-the-art approach to machine translation in recent years. MT models work by processing the entire input sentence as a sequence of words, capturing the complex relationships and dependencies between words and their contextual information. These models learn to encode the source sentence into a fixed-length representation called a "thought vector" or "context vector." The context vector is then decoded to generate the corresponding translation in the target language.

One of the key advantages of NMT is its ability to handle long-range dependencies and capture contextual information effectively. NMT models can learn from large amounts of parallel training data and can capture the nuances of the source language, resulting in more fluent and natural translations. They also have the potential to generalize well to unseen or out-of-domain data. Another advantage of NMT is its end-to-end nature, which means that the translation process is performed in a single step without the need for explicit linguistic rules or intermediate representations. This simplifies the model architecture and allows for more efficient training and decoding.

However, NMT also has some limitations. NMT models require substantial computational resources and training data to achieve good performance. Training an NMT model typically involves extensive parallel corpora and can be computationally intensive. NMT systems may also struggle with handling rare or out-of-vocabulary words and may generate translations that are overly fluent but semantically inaccurate. Despite these limitations, NMT has shown remarkable improvements in translation quality over previous approaches like rule-based and statistical machine translation. Its ability to capture complex linguistic patterns and context makes it a powerful tool in machine translation research and practical applications.

Example-Based Machine Translation (EBMT): EBMT systems rely on a database of previously translated sentences or phrases. When encountering new input, EBMT systems search for similar examples in the database and use them to generate translations. This approach is useful for languages with frequent repetitive patterns or fixed expressions. EBMT can produce accurate

translations for similar sentences, but it may struggle with handling new or complex sentence structures.

Hybrid Machine Translation: Hybrid machine translation systems combine multiple approaches, such as RBMT, SMT, or NMT, to leverage the strengths of each method. By integrating different techniques, hybrid systems aim to overcome the limitations of individual approaches and provide more accurate and fluent translations. For example, an RBMT system may be used for morphological analysis, while an NMT model can handle the generation of fluent and contextually appropriate translations (Marco, J. D., 2022).

Over the past few years, neural networks have surpassed everything that has been invented in translation over the past 20 years. They even learned to agree on genders and cases in different languages. In addition, for the first time, it became possible to directly translate between languages that did not have a single common vocabulary. Previously, statistical translation methods always worked through English. Neural translation does not need this.

Dictionary-based translation is a translation method that further humanizes the article being translated, as the meaning of each word can be determined more precisely. In addition to the Google and Yahoo toolbars provided by the Internet, Dr. Dictionary entries such as Eye can make words translated by the dictionary system more human and normal. Because premium translation software is developed by linguists and translation experts, people may find translated texts more accurate and easier to read than web pages translated using Google or Yahoo toolbars.

In order to make machine-translated text more understandable, the translation process must be performed by a human. Understanding the target language and transcoding meanings by examining machine-translated text are the two most important steps in making translations more human. The interpretation of behavior plays an important role in cognitive processing. In order to decipher the original ideas in the source text as a complete logical whole, the translator must explain and analyze all the possible ideas involved in the context. In fact, this is a step towards performing translations, which requires sufficient linguistic knowledge of grammar, semantics, syntax, idioms in the target/source language. At the same time, for a translation to be acceptable, a professional translator must be familiar with the customs, culture, and linguistic knowledge of the recipients.

Most importantly, after re-transcribing and matching the translations with our eyes, in order to make the translated content more coherent and rational, more details and comments should be added based on the expert's professional knowledge or translator's research to reproduce complex text. ideas that recipients cannot perceive directly. That is, to explain complex source contexts, the

Chinese translation must have more words than the original source content. For example, if there is a one-page article in English with a thousand words, a Chinese translation of one and a half thousand to three thousand words should be provided so that buyers can easily understand the original English (Соланина О.С., 2009).

GOOGLE TRANSLATE

The emergence of Google Translate was originally based on a rule-based machine translation system in 2004. The working principle of rule-based machine translation is based on the translation of the text in the source language into the target language based on morphological, syntactic (syntactic) and word choice (lexical). In the RBMT process, which consists of analysis, transfer and production stages, the data in the source language is transferred to the target language based on rules. In 2006, the Google Translate database was developed and started to benefit from the Statistical Machine Translation model. For a long time, translation service between source and target text in approximately 90 languages has been offered to users with online access. In the Statistical Machine Translation-based model, the translation stages deal with language in a fairly straightforward way. In this model, which adopts sentences as word sequences, sentences are divided based on punctuation marks.

In this model, the distribution of words can become quite skewed. In addition, a method based on meaning is followed in the classification of words such as nouns, verbs and adjectives. However, due to the rich morphological structure specific to some languages, an extensive vocabulary may emerge. In such cases, meaning shifts may occur. Or, in languages with no spaces between words, such as Chinese, the SMT model may have difficulty distinguishing words.

Morphology is the field that studies the morpheme structures of words based on the smallest meaningful unit in a language. It deals with the formation processes of morphemes consisting of affixes and roots of words. During the translation analysis of the source and target text, certain sentences were analyzed in terms of morphology. During these analyses, it was determined that there were some morpheme errors in the target text. When Google Translate SMT-based machine translation is examined, it is seen that while the words in the source text are transferred to the target language, especially some "root" morphemes remain only by making one-to-one translation. Google Translate NMT-based machine translation performed better than SMT in transferring morphological algorithms to the target text. NMT-based machine translation has mostly correctly analyzed the morphemes of words in terms of root and suffixes and transferred them to the target text.

In the last quarter of 2016, Google Translate announced that it converted the algorithm it uses in the translation experience it offers to users to the Neural Machine Translation model. In the previously used translation algorithm, the SMT model, which focuses on sentence-based machine translation, which divides the sentences in the source text into words and phrases, has been said goodbye. In the statement made by Google; Neural Machine Translation would take the sentence input as a source text as a whole and transfer the sentence, which it saw as the translation unit, into the target language accordingly. According to Google authorities, thanks to this revolutionary algorithm, less engineering design would be required compared to the old model, while a better performance would be achieved in terms of equivalence compared to SMT. Compared to the traditional statistical prediction method in machine translation, neural language networks exhibit a more powerful method for conditional distribution of inputs in terms of linguistic elements. It has a robust algorithm compared to its predecessor in identifying data that would seem difficult to predict in traditional SMT.

In 2016, Google included neural translation of nine languages among themselves, and Russian was added in 2017. Google has developed its own system called Google Neural Machine Translation. GNMT improves translation quality by using Example-based machine translation (EBMT). Thus, the system is trained on the basis of analogy, using a database of examples of human translations.

YANDEX TRANSLATOR

Yandex launched its neural network translation in 2017 and singled out hybridity among its main differences. Yandex translates the sentence with two methods at once - statistical and neural network, and then, using a special algorithm, finds the most suitable one. Google uses only the neural network method.

The hybrid method has a number of advantages. For example, neural translation does not always do well with short phrases. A simple statistical translation is usually better at finding the equivalents of set phrases. It turns out that Yandex has moved a little further in this regard.

1.2. Characteristics and Use of the Software

1.2.1. What is Translation Software, and how does it work?

Translation software refers to computer applications specifically designed to assist in the translation process. These software tools incorporate various functionalities and features to support translators in their work, enhance productivity, and improve the quality of translations. Translation software refers to software that supports translators to translate a given text from one language to another. Translation software was created to improve speed and quality through automation and terminology management. (Abdullayeva, F., 2014).

The goals of almost all translation software are the same. This is mainly related to increasing the speed and quality of translation. In this regard, translation programs have some standard functions. Let's assume that you have chosen a cloud version translation software and you are starting to do your first translation with it. What functions can be expected from the tool at this time?

The first step is to open the browser and enter the text to be translated. In the second step, language pairs are selected and any additional documents such as a custom term base can be downloaded. When working on a project, you can assign a translation manager, editor, and proofreader to work on project components comfortably.

Using the translation software's memory, the tool will highlight any phrases or terms that have already been translated and offer a translation into the required language. The translator can access the suggested content and accept it or make necessary corrections. The more you translate, the quality and speed of your translation memory will increase, which will affect the speed of your future translations (Черников, Б.В., 2021).

Once the text is translated, your team should be able to upload the original copy in that format. You can also export the translation directly to a content management system (CMS) or other tools you may use. This is due to existing connectors or integrations in the translation software.

The working mechanism of translation software can vary depending on the specific tool and its underlying technologies. Translation software offers various features and functionalities that support the translation process and enhance the productivity and quality of translations. However, here is a general overview of how translation software works:

Input and Analysis: The translation software takes the source text that needs to be translated as input. It analyzes the text to identify linguistic units, such as sentences or segments, and breaks them down into manageable units for translation.

Translation Memory (TM): Translation memory is a database that stores previously translated segments or sentences along with their corresponding translations. When a new text is being translated, the software searches the TM for matches or similar segments and suggests the corresponding translations. TM helps maintain consistency, improves efficiency, and reduces the need for re-translation of previously translated content.

Terminology Management: Translation software often includes terminology management tools that enable translators to create and maintain term glossaries or dictionaries. These tools help ensure the consistent use of terminology across translations by providing suggestions or warnings when specific terms are encountered.

Machine Translation Integration: Some translation software integrates machine translation (MT) engines. When enabled, the software generates initial translations automatically using the integrated MT system. Translators can then use the MT output as a starting point and refine it according to the desired quality and accuracy.

Translation and Editing: Translators work on translating the text using the software's interface. The software provides a platform where translators can enter the translations for the source text segments. The interface may offer features like translation suggestions, spell-checking, and grammar checking to assist with the translation process.

Quality Assurance (QA) and Proofreading: Translation software often includes QA tools that perform checks on the translated text to identify potential errors or inconsistencies. These tools may flag spelling mistakes, missing translations, formatting issues, or inconsistent terminology. Translators can review and correct these issues during the proofreading stage.

File Format Support: File Format Support: Translation software supports a wide range of file formats, including common document formats like Microsoft Word, Excel, PowerPoint, as well as specialized formats used in localization, such as XML, HTML, and resource files. This allows translators to work directly with the source files without the need for manual conversion or extraction.

Integration with CAT Tools: Computer-assisted translation (CAT) tools are a subset of translation software that offer additional features like segment alignment, concordance search,

fuzzy matching, and advanced translation memory management. These tools further enhance productivity, consistency, and reuse of translations.

Translation memory plays a key role in translation programs. The main function of this memory is to eliminate the need to translate already translated text. When translating text, if the translation software detects the same or similar segment, then the tool will recommend a predefined translation for that piece of text. You can decide whether to use it or not.

Also, if you are editing your research or textbooks, you can only translate new text instead of translating the entire document, saving you time and money. It is mainly considered useful for highly regulated industries related to finance and law.

The improved version of the dictionary is the term base. Here, the parts of the translation program include the database of single or multi-word terms, their definition, usage and translation in one or more languages.

You can use the existing term base of the translation program. You can also upload new ones, especially if the client has specific terminology that they want you to use throughout the project. The term base is considered important. Because term bases help the translator to keep the text consistent throughout.

There are two main versions of translation software available: desktop versions that are installed locally on a computer or workstation, and cloud-based versions that are accessed through a web browser with an internet connection. Over time, tools for translation have become more common in the cloud version. Access to this version via the web is possible from any device, wherever and whenever an Internet connection is available (Nirenburg, S., Somers, H. L., & Wilks, Y., 2019).

Software translation is the transfer of texts between source codes into the target language. During this transfer, the slightest point or comma error is not made in the texts in the source code. Software translation enables the delivery of software and information systems and products to people, businesses and companies. Software translation needs to be done in a way that is highly understandable for humans. In this way, software and mobile applications translated into widely used languages can find users from all over the world.

Translation of the content of the software and the texts in the source codes may not be sufficient. After software translation, it is also necessary to integrate the software into the culture, beliefs and values of the target language. This process is called software localization or software localization. Software localization is as important as software translation. By focusing on both

software translation and localization, developers can create software that not only speaks the language of the users but also seamlessly integrates into their cultural and regional context. This comprehensive approach enhances user satisfaction, increases market acceptance, and ultimately contributes to the success of the software in international markets. While making software localization, attention is paid to the subtleties of the language, the possibilities of expression of the language, and the differences in discourse. Software localization increases the usability of the software. When the software is translated exactly, it adds a value that cannot be reached to its users. Therefore, the translation that will be done by paying attention to the localization steps will make the software reach more people and be more functional.

The language of technology is considered to be English. However, an English app or program's clientele will be limited to those who only speak English in a non-English speaking country. For example, the sales rate of an English application in Poland increases several times when the Polish language option is installed. This is true for any country where the use of English is not very common. If you have a software company that wants to open up to the global market, you should add different language options.

Software localization and software translation are completely different from each other. During software translation, only the translation of codes and texts is not enough. When this is the case, a localization study should be carried out according to the culture of that country for which the translation is being made. For the software to be successful in the target language, the beliefs, values and culture of the language must be adopted. Software localization is just as important as software translation. Immediately after the software translation process, experts who are proficient in that language perform the software localization process and the translation process is completed (Wilks, Y., 2018).

The cost and affordability of software translation and software localization can be difficult to predict. However, companies that invest in software translation and software localization get a great return on their investment. Companies buy software translated into the language used by their employees so that there are no misunderstandings due to the language of the software they use. Software localization is frequently used in operating system software, application software, firmware, web software, and mobile software. It would be more beneficial to work with a professional translation company experienced in software translation and software localization.

Translation software has several advantages. As an example, we can look at the example of a company. So, for a company that wants to sell its products outside the local market, product

advertising should be considered the main thing. You need to translate your content in all of them to serve the different communities that live there.

When you employ multiple languages and a large number of translators to translate content, it does not have a positive effect, on the contrary, it leads to lost work. Using language translation software in this area allows you to store all translated files in a centralized form. This simplifies the process and helps you monitor the progress of your translation projects to ensure timely delivery (Amazing Translation Technology You Should Look Forward to Using, 2023).

Translation projects are rarely undertaken in isolation. Most likely, you have several translators doing translations and editing. But if translators use slightly different terminology to describe the same thing, it will have a negative effect on the work. So, despite your best efforts to hire the best talent and provide them with clear instructions, the lack of a system to keep them in check will result in translators being ineffective (Wilks, Y., 2018).

Using translation software can eliminate this risk by giving translators the same translation memory and term base to work with. So, the next time you come across a technical phrase or term specific to your brand, you can be sure that it will all be translated consistently.

It is possible to encounter certain errors while uploading translation files. This can also manifest itself in the formatting or rendering of the final translation design when sharing translation files. This can lead to inconsistencies between the translated text and the original. This, in turn, can damage your brand reputation.

Based on this content, translation programs act as a one-stop shop, which is valid for all steps. The file can be downloaded and translated from the same tool without changing the given format and design of the document.

Finally, your translation should leave the translation software to work on it and publish it on your website. You should ideally find a translation tool that offers out-of-the-box integrations and comes with a REST API that allows you to plug into your design software or any other tool you may have in your technology. This will save you time. It will also help you avoid problems with formatting and conversion.

Using the paid version of the translation software can have both positive and negative effects on you. This has to do with the smallness and largeness of the text you will be translating. If you're going to use multiple documents for translation over the course of your business's existence, this can have a negative impact on you. So, you may not need a translation program (Kalchbrenner, N. and Blunsom, P., 2017).

However, there may be positive aspects, which is related to the translation into several languages. Buying a translation program will allow you to translate the document you need into several languages. Managing the logistics of such a huge project can easily cost you hundreds of thousands of dollars. To prevent this from happening, you need to simplify your translation operations and invest in advance (Kardimin, K., 2018).

Regardless of the type of translation software, you need to make sure that the tool is secure, fast, and has all the necessary features to support accurate translations.

Let's say you need to note what's new in the product manual, and you want your manuals and user guides to reflect this. This is when translation programs will come to your aid. So, you will be able to translate the instructions into several languages through a translation program. This will prevent you from paying additional costs to translators.

Any business focused on global expansion needs to move fast to stay ahead. Delays in your translation efforts can make you lose ground in the marketplace. This is mainly due to delays in the field of translation. These delays can cause your opponent to become stronger.

At this point, online translation software will come to your aid. This program will speed up the translation process. It will help you market your products in a timely manner and in a language that resonates with your new market.

Translation technologies continue to evolve. The next step was the creation of CAT-programs (computer-aided translation). With the help of such programs, a professional translator collects a translation memory database that can be used when working on new documents. If the program finds matches with previous texts in the new document, it automatically replaces the version in the translation memory, not the machine translation, and there is no need for a professional translator to re-edit the text. The more repetitions there are in the documents, the less work the translator has to do. This is especially true for contracts, licenses, passports, certificates, manuals, etc. This is true for professional translators who regularly translate the same type of documents.

Computer-assisted translation (CAT) refers to the use of specialized software tools and technologies to assist translators in their work. CAT tools are designed to streamline the translation process, increase productivity, and improve the quality and consistency of translations. Computer-assisted translation (CAT) tools offer several ways to enhance the productivity and quality of translation research. Here are some specific examples:

Translation Memory (TM): CAT tools utilize translation memory, which stores previously translated segments. When encountering similar segments in a new translation project, the tool suggests matching or similar translations from the memory. This speeds up the translation process, improves consistency, and ensures accuracy. Example CAT tools with TM functionality: SDL Trados Studio, memoQ, Wordfast.

Terminology Management: CAT tools allow translators to create and manage terminology databases or glossaries. Translators can define specific terms and their preferred translations, ensuring consistent usage throughout the research. This maintains accuracy and improves domain-specific terminology consistency. CAT tools with terminology management: MultiTerm (part of SDL Trados Studio), memoQ, Déjà Vu.

Concordance and Search Functions: CAT tools provide search features that allow translators to search through translation memories and reference materials for specific terms, phrases, or contexts. This helps maintain consistency, find existing translations, and conduct terminology research. CAT tools with search functionalities: OmegaT, Wordfast, Déjà Vu.

Fuzzy Matching and Auto-Suggestions: CAT tools employ fuzzy matching algorithms to identify similar segments in the translation memory, even if they are not exact matches. The tool suggests potential translations based on the fuzzy match, which translators can adapt as needed. This saves time and increases productivity. Example CAT tools with fuzzy matching: SDL Trados Studio, memoQ, OmegaT.

Quality Assurance (QA) Checks: CAT tools include built-in QA features that help identify errors, inconsistencies, or omissions in translations. These checks can include spell-checking, grammar checking, and validation against predefined rules or style guides. QA checks ensure higher quality output. Example CAT tools with QA checks: SDL Trados Studio, memoQ, OmegaT.

Collaboration and Project Management: CAT tools often provide collaboration features for multiple translators and project stakeholders. They allow for shared access to project files, centralized terminology, and translation memories. This streamlines collaboration, improves consistency, and facilitates project management. CAT tools with collaboration features: memoQ, SDL Trados GroupShare, Smartcat.

These examples highlight the capabilities of CAT tools in enhancing productivity and ensuring the quality of translation research. Each tool has its own unique features and strengths, and the choice of CAT tool depends on the specific needs and preferences of the translator and the research project. (Кулямин В.В., 2016).

As for the built-in dictionaries, after registering in the program, a professional translator will have access not only to general language, but also to highly specialized dictionaries (medical, technical, legal, and so on). Thus, even a technical translator with the help of this program will be able to work more efficiently (Kerr, P., 2016).

Here are some examples of famous translation software or CAT tools:

SDL Trados Studio: SDL Trados Studio is one of the most widely used CAT tools in the industry. It offers a comprehensive set of features for translation memory management, terminology management, project management, and quality assurance. SDL Trados Studio supports a wide range of file formats and provides a user-friendly interface for efficient translation workflow.

MemoQ: MemoQ is another popular CAT tool that offers a range of features for translation management and productivity. It includes translation memory, terminology management, collaboration tools, quality assurance checks, and file format support. memoQ also supports integration with machine translation engines for improved efficiency.

Wordfast: Wordfast is a user-friendly CAT tool that provides translation memory and terminology management features. It supports a variety of file formats and offers productivity-enhancing features such as segment filtering, batch processing, and real-time collaboration. Wordfast is known for its simplicity and ease of use.

Across: Across is a comprehensive translation management system that includes CAT tool functionality. It offers features for translation memory management, terminology management, project management, and workflow automation. Across supports collaboration among translators and provides quality assurance checks to ensure translation accuracy.

OmegaT: OmegaT is a free and open-source CAT tool that provides essential features for translation memory management, terminology management, and project organization. It supports various file formats and allows collaboration among translators. OmegaT is known for its simplicity, lightweight nature, and community-driven development.

Déjà Vu: Déjà Vu is a CAT tool that offers a range of features for translation memory management, terminology management, and project management. It includes advanced search and retrieval capabilities, real-time collaboration, and quality assurance checks. Déjà Vu also supports integration with machine translation engines.

Each tool has its own unique features, advantages, and pricing models. Translators and translation agencies often choose the tool that best fits their specific needs, taking into consideration factors such as functionality, ease of use, compatibility, and cost.

Many professional translators who have been working for more than a dozen years are faced with the problem of the lack of accumulated electronic materials, in particular, electronic glossaries and translation memories. This is due to the fact that there were no such technologies before, and translators worked exclusively in text editors. The problem is solved quite quickly - already after the first document translated not in Microsoft Word, but in Smartcat, the translator has a translation memory (TM). Also, if you have bilingual files ready, using additional programs such as Aligner, you can generate a TM, successfully upload it to SmartCat, and make translations faster.

1.2.2. Software quality and standards

Translation software quality and standards play a crucial role in ensuring accurate and reliable translations. Translation software quality and adherence to standards are essential for ensuring accurate and reliable translations. They contribute to consistency, accuracy, productivity, professionalism, and customer satisfaction. By incorporating quality and adhering to relevant standards, translation software can provide translators with reliable tools to achieve high-quality translations consistently.

Translation software quality refers to the degree to which a translation software product or system meets the needs and requirements of users in delivering accurate and high-quality translations. Here are key aspects to consider for translation software quality:

a. Translation Accuracy: The software should produce translations that are faithful to the source text, maintaining the intended meaning and context. Accuracy is crucial to ensure the quality and reliability of translated content.

b. Consistency: The software should maintain consistency in translations by using consistent terminology, style, and grammar throughout a given text and across different texts. Consistency enhances the readability and professionalism of translated content.

c. Linguistic Support: Translation software should support a wide range of languages and linguistic features, including complex sentence structures, idiomatic expressions, and specialized terminology. Adequate linguistic support ensures accurate translations across diverse language pairs.

d. Translation Memory (TM) Management: TM is a core component of translation software. The software should effectively manage TM databases, allowing for efficient reuse of previously translated segments, maintaining consistency, and improving productivity.

e. Terminology Management: Translation software should provide robust functionality for managing terminology, including the ability to create and maintain glossaries, ensuring consistent and accurate use of specialized terms.

f. Integration with Reference Materials: The software should offer integration with relevant reference materials such as dictionaries, style guides, and industry-specific resources. This enables translators to access authoritative information and ensure accuracy and adherence to established guidelines.

Translation Software Standards play an important role in guiding the development, implementation, and evaluation of translation software. These standards ensure consistent quality, interoperability, and adherence to best practices. Here are some key translation software standards to be aware of:

a. TMX (Translation Memory eXchange): TMX is an industry standard for the exchange of translation memory data. It enables interoperability between different translation software tools, allowing for seamless sharing and utilization of translation memory resources.

b. XLIFF (XML Localization Interchange File Format): XLIFF is a standard XML-based format for the exchange of localization and translation-related data. It facilitates the interoperability of translation software by providing a standardized format for the exchange of content and metadata.

c. ISO 17100: ISO 17100 is an international standard that sets requirements for translation services, including the competence of translators, the use of technology, project management, and quality assurance. Compliance with ISO 17100 ensures adherence to industry best practices and quality standards.

d. SAE J2450: SAE J2450 is a standard developed by the Society of Automotive Engineers (SAE) that provides guidelines for evaluating and measuring the quality of machine translation output. It establishes a framework for assessing the reliability and accuracy of machine translation systems.

e. Localization Industry Standards Association (LISA): LISA has developed several standards and best practices for the localization industry, covering various aspects such as translation, terminology, project management, and quality assurance.

Adhering to translation software quality and relevant standards ensures that the software meets established criteria for accuracy, consistency, productivity, and interoperability. By considering these aspects in your dissertation work, you can evaluate the effectiveness of translation software tools in meeting industry standards and supporting the needs of Azerbaijani students in their translation tasks (Kastberg, P., & Andersson, T. B., 2018).

For many enterprises, the main criterion of activity is the high quality of the manufactured product or the service they provide. A low-quality product is not needed by anyone, but also reduces the company's reputation in the market.

A large number of different software are installed on modern computers, and it is desirable that it works well, stable and without errors. In the context of international standards, the following definitions of the concept of "software quality" are found:

Software quality is the degree to which software has a combination of required properties (1061-1998 IEEE Standard for Software Quality Metrics Methodology);

Software quality is a set of properties of a software tool that is determined by its suitability for meeting the requirements given or intended according to the definition.

Software quality is the ability of the software product to satisfy the specified or intended requirements under the given conditions (ISO/IEC 25000:2014).

Software quality is somewhat difficult to define. A traditionally made product is considered to be of good quality if it meets the technical requirements. This definition also applies to software products. However, certain problems may arise here, and they can be expressed as follows (Anthony, P., 2018):

only the properties that are important for them are mentioned in the technical requirements imposed by the consumers on the product. However, designers may have their own requirements related to this;

exact definition and measurement of certain indicators of quality are not known;

creating a complete specification of a software product is very difficult.

The general principles of ensuring the quality of production processes in all areas of the economy are regulated by the ISO 9000 set of standards. The most important standards for software development are the following (Daems, J., Vandepitte, S., Hartsuiker, R. J., & Macken, L., 2017):

ISO 9001:2000 Quality management systems – Requirements. Models for quality assurance during design, development, commercialization, installation and service;

ISO 9004:2000 Quality management systems – Performance improvement management;

ISO/IEC 90003:2004 Guidelines for the use of the ISO 9001 standard in the development, delivery and servicing of software.

The programs created must meet a predetermined quality level. The required quality can be achieved as a result of the application of the following methods (Dorman, S. J., Wolf, K., Polyakov, N., & Healy, J., 2018).

Inspection. Quality assurance is performed as a team and this method is used at all stages of the project;

Formal methods. Application of mathematical methods to confirm the correctness of the program, i.e. that it corresponds to the purpose of the program. Formal methods are used in selected phases of the project;

Testing. This method is implemented at the module (component) and full application level of the program;

Project management techniques. This method manifests itself in the forecasting of the price and creation period of the software product, management of artifacts (versions, documents). In order to ensure compliance with quality standards, special attention should be paid to the management of artifacts generated during the development of programs. Artifacts are released in different versions, and each subsequent version improves upon the previous one. Managing such artifacts is called configuration management.

Damages that wrong software selection can cause to organizations, brand identity and individuals; This results in various costs such as switching cost, dual system cost, customization cost, upgrade cost, third-party product cost, software selection cost, re-implementation and training cost, unknown need cost, time cost, opportunity cost, customer adoption cost. For example, Hershey's efforts to integrate a flawed enterprise resource planning package cost the company $100 million in lost sales, and Hewlett Packard's failure to properly integrate legacy systems in its preferred order tracking software at its North American offices cost the company $160 million (Fitria, T. N., 2018).

The characteristic feature of the software industry is that it changes rapidly and continuously and has many unsuccessful adaptations on a global scale. The costs caused by the software not being at the expected quality level and not meeting customer expectations bring threats to the product and the success of the company that produces the product.

As can be understood from the relevant examples, both public institutions and private organizations need to carry out activities such as recording critical activities, controlling and

managing business processes through software. Software products are products that are used in many sectors and that businesses can use as a competitive tool. Therefore, software companies should develop quality products that will give their customers a competitive advantage and offer quality products. Software that enters and diversifies into all areas of our lives and rapidly advancing software technologies brings with it the question of what quality and software standards should be in software, along with this speed and diversity.

Today, customers expect high quality for products and/or services to meet their complex demands. This situation increases the importance of the concept of quality in software and enables developers to adopt it more. A product that can be considered excellent from a customer perspective can be very bad from a technical infrastructure perspective. From this perspective, software is such a product that it includes many stakeholders, components, and evaluation perspectives. While determining a quality policy, it should be taken into account that the developed product is at a level that will meet the expectations for everyone. Otherwise, if any of the stakeholders is not satisfied, the quality will be incomplete. Quality control will differ according to which stakeholder the quality is addressed to.

Since the first software was produced, the concept expressed by software is in a constant change and development. This rapid change has led to the emergence of various searches to manage the complexity of software development. These searches have brought to mind the question of how to apply some standards in the software development process, and have led to the start of new breakthroughs for this sector-specific approaches (Зарецкая А., Корпус Пастор Г. и Сегири М., 2018).

International standards provide the most advanced technical specifications for products, services and good practices, helping the industry become more efficient and effective. More than 19,500 standards developed with global consensus help to remove barriers to international trade. Standards allow the development of higher quality software products, as they reflect the experience gained in software development. Thus, the repetitions of frequently encountered errors in the software are prevented.

In order to provide quality assurance in software development, standards that reflect the best experience and practice should be followed. These standards also create a reference document system for a continuous improvement environment in the software development process, thus ensuring continuity in the software life cycle. This also creates an assurance for customers who purchase the product.

When software companies are subject to quality and certain standards, they ensure the software development processes and the production of the software at a certain quality and create trust for customers. In addition, it provides a modern working environment in the workplace, thus increasing employee motivation and facilitating the marketing of the software. Together with the standards and the obligations brought by the standards, the company gains better competitive opportunities with minimum cost opportunities and contributes to the continuous development of the company and the improvement of its negative aspects (Gunjan, V. K., Diaz, V. G., Cardona, M., Solanki, V. K., & Sunitha, K. V. N., 2019).

Today, businesses are experiencing a process where the logic of produce and sell is left behind and the competition in the market is more intense. It is no longer easy to export and import products. International quality assurance standards contribute to the opening of certain brands and products to the global market, so that only products with certain standards can find customers in the foreign market. For example, products that do not meet certain conditions and standards (CE-Conformite Europeenne standard) are prohibited from entering European Union countries (Muhammad, I., 2017).

Software products are also affected by these standardization processes. However, since software is a product with different characteristics in terms of its nature and way of production, defining the quality level and standard for this product is quite complicated. Quality in software is a subjective concept that is difficult to describe as a definition, and it is not possible to define a general quality criterion that can be accepted for every software. Therefore, software quality is generally expressed as the degree of sufficiency of the software in responding to user needs and is defined as the most basic measure of success of the software.

But quality as a concept is difficult to define and understand. When we examine the literature, we come across many definitions for defining quality. The International Standards Organization (ISO) defines quality as "a set of features and characteristics of a product or service that can satisfy specific or intended needs," while the Institute of Electrical and Electronics Engineers (IEEE) defines quality as a "component." In fact, both definitions are aimed at meeting the customer's need for a software product.

The software development process can carry risks due to its nature. These risks may be technical or program related. This may prevent the software from meeting expectations. Quality assurance is geared towards meeting these objectives and reducing risks. Examples of organizations and certificates related to software quality assurance are the Software Engineering

Institute, IEEE Standards, the American Quality Society, the Software Quality Society, the Quality Assurance Institute, the American Society for Quality.

Software companies that produce software in accordance with national and international standards give confidence to the sector and create more added value for the country's economy. According to Porter's model, which sees the key factors of industry competitiveness as demand conditions, local factor conditions are; the structure and strategy of local firms and related or supporting industries are important factors for this model. In the model, it is seen that the national software industry takes a central place between national and international factors (Muhammad, I., 2017).

In the model, the demands from the international market, international connections and the element of trust appear as an important dimension of the model. This element of trust can be achieved by producing the produced software with a certain quality and standardizing the product. The other dimension of the success model is the national vision and strategies, which are the supporting elements of the infrastructure of the national software industry.

Especially for developing countries, trained human resources and their retention is an important factor. In addition, elements such as technology, financing, R&D, legal infrastructure, laws and regulations can be expressed as other infrastructure components related to national software. In the light of all this information, when the dynamics of Turkey are evaluated, it can be stated that the software industry is among the sectors most open to development. Below, the success situations and dynamics of the Israel, India and Ireland (IHI) countries in the software sector on four dimensions are presented.

1.2.3. Software base indicators

SOFTWARE (software, software system; English software), a set of programs, databases, files, as well as documents describing them that make up the system, for solving a group of related tasks on one or more interacting computers. The term "software" was first used by Princeton University mathematician J. Tukey in 1958. The word "software" is often used in computer slang.

Software is a set of instructions that allows the user to interact with a computer, its hardware, and perform tasks. Computers are useless without software.

Unlike a program, software usually includes all information. In computer systems, software complements hardware (computing devices and various equipment). Software engineering deals

with the study of characteristics, rules of operation, as well as methods for creating and developing software.

Translation software base indicators refer to the key elements or features that are essential for evaluating the performance and functionality of translation software. These indicators provide a basis for assessing the capabilities and effectiveness of translation software tools. Translation software quality can be assessed using various indicators that measure its performance and effectiveness. Here are some key indicators commonly used to assess translation software:

Translation Accuracy: This indicator measures the degree to which the translated output reflects the correct meaning and intent of the source text. Translation software should produce accurate translations that are faithful to the source content. Accuracy can be evaluated by comparing the translated text with the original text and assessing the level of semantic equivalence and contextual appropriateness. Example: An indicator for translation accuracy could be the percentage of correctly translated segments in a given text.

Consistency: Consistency in translation ensures that the same terms, phrases, and style are consistently applied throughout a text or across multiple texts. Translation software should maintain consistency by using consistent terminology, grammar, and style rules. Consistency is particularly important for maintaining brand identity and ensuring a cohesive reading experience. Example: An indicator for consistency could be the percentage of consistent terminology usage within a translation project (Utiyama, M., 2019).

Productivity and Efficiency: These indicators measure the software's ability to enhance translator productivity and efficiency. Translation software should provide features that streamline the translation process, such as translation memory, glossary management, automated quality assurance checks, and integration with reference materials. Higher productivity and efficiency allow translators to work faster and more effectively. Example: An indicator for productivity could be the average words translated per hour using the translation software.

User Interface and Ease of Use: The user interface and ease of use indicators assess the intuitiveness and user-friendliness of the translation software. A well-designed user interface with clear navigation, accessible features, and a logical workflow contributes to a positive user experience and higher productivity. Example: An indicator for user interface and ease of use could be the average time taken by translators to become proficient in using the translation software.

Integration and Compatibility: This indicator evaluates the software's ability to integrate with other tools and systems, such as translation memory databases, terminology management systems,

and project management platforms. Seamless integration and compatibility enable smoother collaboration, data sharing, and workflow management. Example: An indicator for integration and compatibility could be the number of different file formats supported by the translation software.

Support and Documentation: This indicator assesses the availability and quality of support and documentation provided by the translation software provider. Comprehensive documentation, user guides, tutorials, and responsive customer support contribute to the effective use of the software and troubleshooting assistance. Example: An indicator for support and documentation could be the average response time for resolving technical issues raised by users.

These indicators can be measured using quantitative metrics, user surveys, or qualitative assessments. Evaluation based on these indicators helps determine the strengths and weaknesses of translation software, enabling users to make informed decisions and choose the most suitable software for their translation needs. (Gunjan, V. K., Diaz, V. G., Cardona, M., Solanki, V. K., & Sunitha, K. V. N., 2019):

1.2.4. Quality management in software technology

Quality management in translation software technology refers to the processes, practices, and methodologies implemented to ensure the delivery of accurate, consistent, and high-quality translations. It involves a set of measures to maintain and improve the quality of translation output, meet client requirements, and enhance customer satisfaction. Here is a detailed overview of quality management in translation software technology:

1. Translation Quality Standards: Quality management in translation software technology is guided by established industry standards and frameworks. The most widely recognized standard for translation quality is the ISO 17100:2015 standard, which provides guidelines for the provision of translation services. This standard defines requirements for the qualifications of translators, the use of translation technology, project management, and quality control procedures.

2. Translation Memory Management: Translation software often incorporates translation memory (TM) technology, which stores previously translated segments for reuse in future translations. Effective TM management is crucial for maintaining translation consistency and accuracy. Translation software should provide features to manage, update, and leverage the translation memory effectively.

3. Terminology Management: Consistent use of terminology is essential for high-quality translations. Translation software should include robust terminology management features, allowing translators to create, maintain, and apply terminology databases or glossaries. Terminology management ensures consistent and accurate translation of specific terms or phrases across multiple projects.

4. Quality Assurance Checks: Translation software should have built-in quality assurance (QA) checks to identify errors, inconsistencies, and potential issues in translations. QA checks can include spell checking, grammar checking, punctuation verification, and formatting validation. These checks help ensure the linguistic and technical accuracy of translations.

5. Style and Tone Consistency: Translation software can support style and tone consistency by providing guidelines, style guides, and customizable settings. This ensures that translations maintain the desired style, tone, and voice across different texts and projects, particularly important for maintaining brand identity and consistency.

6. Collaborative Workflow: Translation software should facilitate collaboration and communication among translators, editors, project managers, and clients. Features such as project assignment, progress tracking, version control, and integrated communication tools improve collaboration, enhance efficiency, and ensure smoother workflow management.

7. File Format Support: Translation software should support a wide range of file formats to handle diverse content types, including text documents, spreadsheets, presentations, websites, and multimedia files. Comprehensive file format support enables seamless translation and preserves formatting and structure.

8. Integration with Translation Tools: Translation software often integrates with other translation tools and resources, such as machine translation engines, terminology databases, style guides, and reference materials. Integration with these tools enhances productivity, accelerates the translation process, and improves overall translation quality.

9. Customer Feedback and Satisfaction: Feedback from clients and end-users is essential for quality management in translation software. Translation software can include features for gathering feedback, tracking customer satisfaction metrics, and incorporating user suggestions. Customer feedback helps identify areas for improvement, ensure client satisfaction, and enhance the overall quality of translation output.

By implementing effective quality management practices in translation software technology, organizations can deliver translations that meet high standards of accuracy, consistency, and customer requirements. This not only enhances customer satisfaction but also improves efficiency, reduces rework, and strengthens the organization's reputation in the translation industry.

Quality management implies the possibility of independent control in the software development process. Control elements are acquired during software development. Quality control is organized based on those elements. Therefore, their compliance with the goals and standards of the project is thoroughly checked.

Applying different methods for quality management is not enough. It is important to correctly and systematically apply these methods, standards and rules in the software development process. In practice, the concept of quality management has a more complete meaning.

The quality management process depends on the following three main activities (Anthony, P., 2018):

setting a large number of organizational rules and standards for the purpose of creating quality assurance software;

quality planning, selection of the appropriate subset of rules and standards from this set and adaptation of software development to a specific project;

determining and conducting measures to guarantee the implementation of regulatory rules and standards by all members of the quality control software design team.

Quality assurance activities focus on achieving a certain level of quality during software development. It involves defining or selecting standards that apply to the software development process or finished product. Those standards are part of the software production processes. Therefore, during the implementation of such processes, tools that take into account selected or developed quality standards can be applied.

In the process of quality assurance, as a rule, two types of standards are used: first, a standard for a closely related product; second, a standard on the software development process. The first type of standard applies to the result of the software development process, and the second type, in most cases, involves the execution of certain operations aimed at obtaining a product that complies with the standard.

As a rule of thumb for successful quality management, the quality of the software production process affects the quality of the finished software. This assumption first appeared in the field of industrial production, where the quality of the product is directly related to the quality of the process

of its preparation. Naturally, the required quality level of automated mass production systems automatically ensures high product quality.

In the field of software development, the quality of the process has a special meaning, which is related to the difficulty of evaluating certain properties of the software. Quality improvement in this field is carried out in the direction of studying quality products and their processing processes, summarizing research results and applying them to other projects.

In industry, the relationship between the production process and product quality lends itself well to standardization and management. So, the tested product can be put into production immediately. Software-related processes are organized somewhat differently. In fact, since software is a creative process, it is developed, not developed. Besides, the quality of the software can be affected by external factors (newness of the project, sudden shortening of the development period of the software product in order to put it on the market).

Despite all the challenges, the software development process makes a lot of sense for developing quality software products. Therefore, quality management includes the following functions:

defining standards for the software development process;

monitoring the processing process to meet the standards;

preparation of reports on the development process.

There are some difficulties in ensuring quality based on standardization during software development. This is usually not due to a lack of compatibility with the specific type of software product being developed.

Standardized and universal indicators for software quality control do not yet exist. The selection of indicators mainly depends on the software product being developed and the knowledge and experience of the software developers.

It follows that each project has specific characteristics and requires different methods to improve its quality. However, methods that have proven themselves so far may lose their usefulness tomorrow. Besides, it is not enough to use different methods of quality management. Their deliberate and systematic application is required and should become an integral part of software development. Using standards in quality assessment and management is critical to producing a competitive software product.

ISO 9001 and ISO 9004 are quality management system standards that complement each other, but they can also be used independently.

ISO 9001 specifies requirements for a quality management system that can be used for internal use by organizations and for certification or contracting purposes. The standard focuses on the effectiveness of the quality management system in meeting customer requirements and relevant statutory and other regulatory requirements.

At the time of the publication of ISO 9001:2008, ISO 9004 was under revision. The new version of ISO 9004 will provide management guidance for achieving sustained success for any organization in a complex, demanding and ever-changing environment. ISO 9004 provides a broader view of quality management than ISO 9001; it aims to meet the needs and expectations of all interested parties through the systematic and continuous improvement of the organization's performance. However, this standard is not intended for the purposes of certification, contracting, and compliance with mandatory requirements.

Due consideration was given to the provisions of ISO 14001:2004 in the preparation of this International Standard in order to increase the interoperability of the two standards for the benefit of the user community. The compatibility of ISO 9001:2008 and ISO 14001:2004 is shown in Annex A.

Other management systems, such as environmental management, occupational health and safety management, financial management, and risk management, are not covered by this International Standard. However, under certain conditions, the standard allows an organisation to alter or combine its quality management system with other management systems. An organisation can modify its existing management system(s) to create a quality management system that satisfies the requirements of this International Standard.

This International Standard intends to use a "process approach" to the creation, implementation, and improvement of the efficacy of a quality management system in order to promote customer satisfaction by meeting customer needs.

To be effective, a company must identify and manage a large number of interconnected activities. A process is a resource-intensive activity that is managed to convert inputs into outputs. Frequently, the output of one process becomes the input of the next.

The "process approach" can be defined as the implementation in an organization of a system of processes, including their formulation and interaction, as well as process management to achieve the intended outcome (Макконнел, С., 2019).

The process approach has the advantage of providing continuity of control at the intersections of individual processes in their systems, as well as their combinations and interactions.

When applied to a quality management system, this approach emphasises the importance of: a) understanding and meeting criteria; b) evaluating processes in terms of their added value; c) achieving the expected results of the processes and ensuring their effectiveness; and d) continuous process improvement based on objective measurement.

This International Standard specifies requirements for a company's quality management system when it: a) must always demonstrate its ability to provide products that meet customer and applicable regulatory requirements; and b) aims to increase customer satisfaction and ensure compliance with customer and related legal requirements through effective quality management system implementation, including continuous improvement processes.

This International Standard's standards are broad and designed to apply to all organisations, regardless of kind, size, or product produced.

If any of the requirements of this International Standard are not satisfied, the organisation shall manage the quality management system processes in line with the standards of this International Standard.

If an organisation intends to outsource any process that affects product conformance, the organisation must ensure that the process is managed internally. The quality management system should describe the type and level of control over outsourced processes.

The documentation for the quality management system should include: a) documented quality policy and objective statements; b) quality manual; c) documented procedures and records required by this International Standard; and d) documents, including records, determined by the organisation as necessary for effective process planning, implementation, and control.

The organization shall develop and maintain a quality manual containing:

a) the scope of the quality management system, including details and justification for any exceptions;

b) documented procedures developed for the quality management system, or reference to them;

c) a description of the interaction between the processes of the quality management system.

The processes of evaluating the quality of a software product as a result of some activity will be considered in the form of standardized methods for measuring the characteristics (metrics) of quality. In this process, the PS is the object of evaluation, and the team of experts is the subject of evaluation.

Note that in the process under consideration, the object of evaluation is software development. The evaluation result is presented in binary form. This process diagram does not present a hierarchy of quality characteristics, the evaluation is reduced to the evaluation of metrics. Note that any multilevel structure can be linearized by transforming it into a one-dimensional sequence. So, according to GOST 28195-89, the designation of evaluation elements is encoded with five characters:

Symbol 1 indicates that the element belongs to the factor.

The 2nd character indicates the number of the criterion.

The 3rd character indicates the metric number.

The characters 4 and 5 specify the number of the row element of the evaluation element in the metric.

The problem of measuring and evaluating quality is complex and is usually solved by expert methods. At the same time, in the latest versions of standards in the field of quality management of PS, there is a clear trend towards quantitative assessment and measurement of quality. This is reflected mainly in the wording of the characteristics and sub-characteristics of quality, expressed as a degree of conformity. This trend served as the basis for the formalization of the processes of measuring and evaluating the quality of the PS, leading to the possibility of automating this activity. An example is the work of (V.V. Burakova Kalchbrenner, N. and Blunsom, P., 2017), which proposes a mathematically substantiated method for assessing quality based on category theory and a methodology for assessing the quality of PS by a set of metrics.

The standardization of the processes for assessing the quality of the PS is as important as the unification of the assessment methods and the quality model. There are several standardized quality assessment processes in the software quality management processes.

Quality management processes examine how well a product will meet customer and stakeholder needs (Anthony, P., 2018).

- requirements for the quality level for each factor are determined by the base value of the quality indicator;

- the required level of quality is provided by the process and in the production process;

- measurement, evaluation and control of the quality level is carried out at all stages of the life cycle;

- quality management is a continuous, informational and purposeful process of influencing programs and documentation, as well as teams of software developers in order to ensure the required quality under changing external and internal conditions by making managerial decisions.

General issues of quality management based on international standards are considered in the papers. Following the ISO 12207 standard, here are the main standardized SQM processes focused on evaluating the PS as a development result (Anthony, P., 2018):

1. The process of ensuring and confirming quality, including the processes:

1.2. Quality planning. This process is focused on creating conditions for the development of a product whose characteristics satisfy the requirements, and reducing the possible risks of quality degradation.

1.3. Verification process. The process of determining whether software is fit for purpose.

1.4. Validation process. The process of confirming the functional suitability of software.

2. Joint review process.

3. Audit process.

Based on standardized quality characteristics, it is possible to automate the calculation of quality indicators, which can then be analyzed and used in quality management. The calculated partial indicators may contain deviations of the real quality characteristic from the standard. To calculate deviations, the functions of difference, division, calculation of absolute and standard deviations are used. As a result, a deviation vector is formed, according to which, using the aggregation function, quality can be summarized. In mathematics, there are several classes of functions that make it possible to obtain an aggregation of particular quality indicators. These functions include (Wilks, Y., 2018):

1. A weighted sum function, which implements the aggregation of quality indicators based on a linear additive convolution function. This type of aggregation can be interpreted as a scalar product of two vectors: a vector of partial quality indicators in a certain scale and a vector of weights (priorities). Weight vectors can be determined using regression analysis if there is data on the values of particular and generalized quality indicators for a certain series of objects. Other ways to determine the weights for the convolution function can be based on subjective probabilities, heuristic algorithms, and expert judgment.

2. A threshold function that displays a set of values of quality indicators in several predetermined values. Such a function can be set by a system of clear or fuzzy rules "If-Then".

3. A logical union function for indicators of an alternative type based on the logical operations of multiplication, summation and negation.

4. The function of generalized logical folding using the maximum and minimum functions.

As a result of evaluating the correspondence between the structural model of the prototype (or standard), a matrix of evaluations is obtained. In this case, it is advisable to calculate the integral assessment of the object of assessment, based on the methods for choosing the optimal solution. These methods include methods based on the criteria of Wald, Bayes-Laplace, Savage, Hurwitz, etc.

High demands are placed on the quality of the products made in the conditions of the developed competition in the market of computer programs. There are different definitions of the concept of "quality" and ideas about it change over time. It depends on the degree of awareness of the object, the technical means of measuring the characteristics of the object and other factors. For many enterprises, the main criterion of activity is the high quality of the manufactured product or the service they provide.

A low-quality product is not needed by anyone, it also reduces the company's reputation in the market. A large number of different software is installed on modern computers, and it is desirable that it works well, stable and without errors. In the context of international standards, the following definitions of "software quality" are found (Gunjan, V. K., Diaz, V. G., Cardona, M., Solanki, V. K., & Sunitha, K. V. N., 2019).

Modern standards specify the concept of quality by including a set of characteristics that affect the satisfaction of the requirements set by users. The set of features that make up the quality of PT that satisfies the user depends on the conditions and operating characteristics of that software. Therefore, when describing the quality of the software, criteria should be established for selecting its necessary properties.

CHAPTER II. METHODOLOGY

2.1. Conducting a survey

This study aims to investigate the efficiency of using translation software in modern times, examine the types of translation software commonly used in the field of translation, evaluate the features and functionalities of translation software and their effectiveness in supporting the translation process, explore the attitudes of Azerbaijani translation students towards the use of software in translation. To achieve these objectives, an empirical and exploratory, and comparative study employing a qualitative methodological approach incorporating qualitative data collection and analysis methods has been adopted. This chapter outlines the research design and methods used to investigate the attitudes of Azerbaijani translation students towards the use of software in translation.

The methodology chapter provides a comprehensive explanation of the data collection, preparing the data for analysis and analysis methods used to address the research questions outlined in the introduction. In order to confirm the issues investigated in the research work, the survey method was chosen as a method in the dissertation. In the context of the study, document analysis and qualitative research method via internet were used as data collection methods.

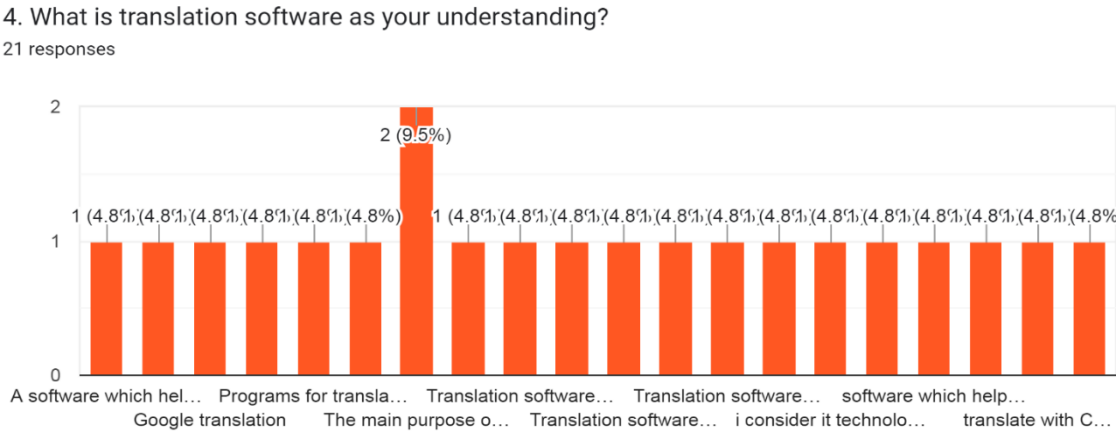
In order to tackle the research questions posed in this study, several data collection instruments were employed to acquire pertinent data. These instruments were thoughtfully chosen and devised to ascertain the validity, reliability, and relevance of the collected data in relation to the research questions. This survey aims to identify the attitudes of Azerbaijani students towards the use of translation software in their translation tasks, a translation task was conducted with 50 Azerbaijani-speaking “Translation Studies” students. The students were selected randomly. Participants were asked to answer a set of questions. Questions were compiled in the form of a Google form. The results obtained from the survey will be statistically analyzed and calculated in the SPSS program, and the results will be added to the thesis.

CHAPTER III. DISCUSSION AND RESULTS

The survey was prepared in the form of a google questionnaire and conducted with 50 individuals of different age groups, belonging to different genders and at the same time studying (completed) at different levels of education. The purpose of conducting this survey is to analyze the extent to which people are familiar with translation software tools, and at the same time, to what extent they use these tools.

One of the questions addressed to the respondents was focused on how much they know about translation technologies. The answers to this question are reflected in the table below.

Figure 3.1. What is translation software?



Despite the fact that 50 respondents participated in the survey, only 21 of them answered this question.

Based on the results obtained from the survey, a general average statistical calculation of the responses was made using the SPSS program. Based on these answers, the Case Processing Summary results are reflected in the table below.

Figure 3.2. Case Processing Summary

		N	%
Cases	Valid	50	100.0
	Excluded[a]	0	.0

	Total	50	100.0

Reliability Statistics were conducted based on the respondents' answer options. The results of the program are reflected in the table below.

Figure 3.3. Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
2.700E-7	.728	9

According to Summary Item Statistics, the variety of responses to the survey, as well as the average statistical indicators of the minimum and maximum responses are reflected.

Figure 3.4. Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	30523.233	1.280	274693.820	274692.540	214604.547	8383960602.278	9
Item Variances	340550903654.833	.328	306495813 2886.355	3064958132886.026	9339735603944.738	1043774261815637 3000000 0.000	9
Inter-Item Correlations	.230	-.186	.684	.870	-3.672	.061	9

ANOVA test effectively measures how significant the interaction is between variables; they *analyze* the *variance*. These tests start by creating a null hypothesis (H_o), which states that there is no significant difference between the variables being measured. The results of the test prepared with reference to the survey are reflected in the following table:

Figure 3.5. ANOVA

		Sum of Squares	Df	Mean Square	F	Sig
Between People		1668699828 4247.160	49	3405509853 92.799		
Within People	Between Items	3353584240 911.080	8	4191980301 13.885	1.231	.279
	Residual	1334959502 27534.220	392	3405508934 37.587		
	Total	1368495344 68445.300	400	3421238361 71.113		
Total		1535365327 52692.470	449	3419521887 58.781		

Grand Mean = 30523.2333

Curve Estimation.

TSET NEWVAR=NONE.

CURVEFIT

VARIABLES=gender WITH Are_you_using_CAT_software_as_a_translator

/CONSTANT

/MODEL=LINEAR LGSTIC

/PLOT FIT

/ID=education.

Figure 3.6. ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.680	1	.680	.694	.409[b]
	Residual	47.000	48	.979		
	Total	47.680	49			

a. Dependent Variable: do_you_use_translation_software

b. Predictors: (Constant), education

Figure 3.7. Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.119[a]	.014	-.006	.98953

a. Predictors: (Constant), education

At the same time, as a result of the survey, it became clear to us that the majority of Azerbaijani students are not very familiar with translation tools. A Google translate option has also been added to the answers for confusing questions. Unfortunately, many students have confused this program with programs for translators. As a result, google translate does not provide us with a completely accurate translation service.

It can be concluded that:

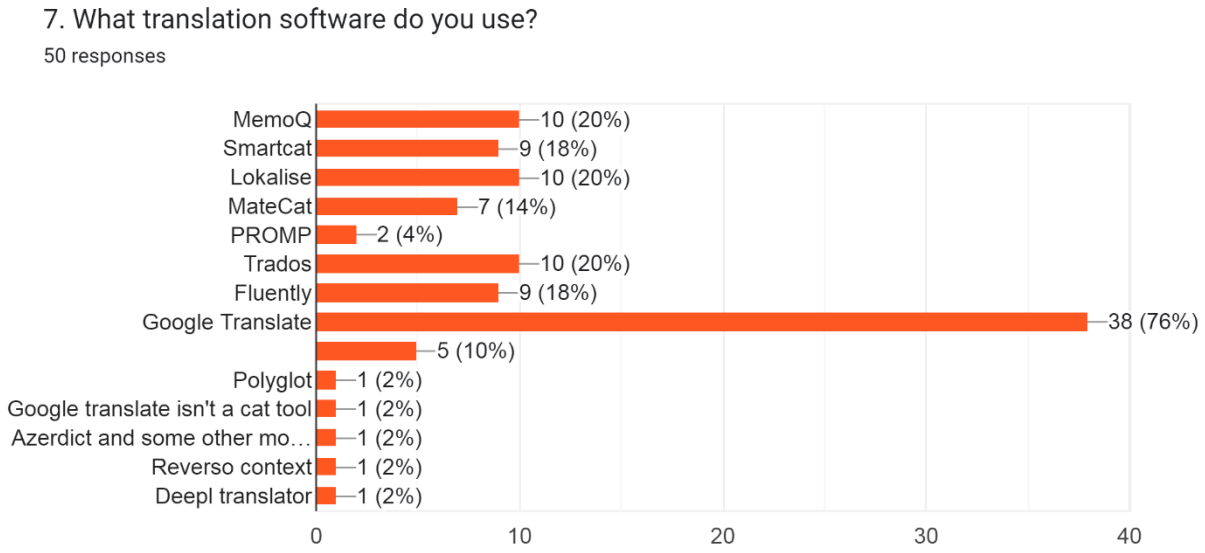
1) Uninformed translators who choose only Google Translate among the options;

2) Moderately literate translators who make other choices in addition to Google Translate;

3) Only those who choose Translation Software are translators with real knowledge.

Now let's take a look at the chart showing these program options:

Figure 3.8. What translation software do you use?



As can be seen from the picture, the percentage of respondents who choose Google Translate is 76%. This is actually not a encouraging result.

The table below shows the coefficients of the survey results. Here are indicators of data such as standard and non-standard coefficients, standard error, beta, t coefficient, sigma.

Figure 3.9. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	2.250	.420		5.357	.000
	Education	-.250	.300	-.119	-.833	.409

a. Dependent Variable: do_you_use_translation_software

The idea that people will speed up their work in almost every field has increased the number of studies on technology. Many countries are trying to encourage the use of technology by making large investments to apply it in education and in various fields, especially due to the widespread use of information and communication technologies. However, in today's age of technology, people

translate from the foreign languages they have learned into their own or foreign languages, and in this process, they sometimes apply to printed dictionaries and sometimes to web-based dictionaries or online translation programs to find the equivalent of the words in the text in the source language. Machine translation is the transfer of a text or word in the source language to the target language, usually through a technological device or a program.

Machine translation, which can be met with different concepts such as electronic, mechanical, automatic translation or computer translation or computer-assisted translation, is the translation from one language to another language without human intervention during the translation process. In this type of translation, the application or online site that will translate creates a new text by transferring the source text to the target language. In this type of translation, during the transfer from the source language to the target language, the translation program is expected to use the appropriate term by scanning all dictionaries and word banks in the background and making sense of the place where special terms are used.

There are various studies on the most frequently used translation programs. Google has listed the positive and negative aspects of this online program, taking into account the opinions of the participants in its study in which it received opinions about the online program. The researchers focus on the use of translation tools in foreign language teaching and present examples of activities that can be done in the classroom environment within the scope of Google translation. They conducted a long-term study and obtained reports from translation and interpreting students during a part of their education period and revealed the results for machine translation from the perspective of translator candidates.

With the information age, the need for translation and translators has started to increase depending on the development of increasing relations between states and nations. Accordingly, it has become very difficult for people to meet all the needs in the field of translation against the need that has arisen in the field of translation. There upon, researchers started to try text translations with the help of electronic and technological devices. Warren Weaver, a scientist in the executive position of the Rockefeller organization, which has studies on the development of the computer in the USA, is accepted as the person who reveals the necessity for the use of computers in translation. In his paper titled 'translation', Weaver expressed the following suggestions for machine translation;

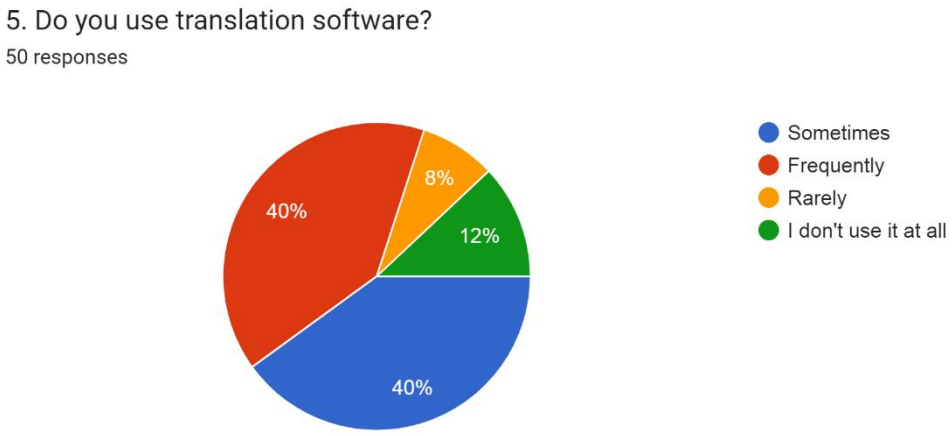
- The problem of multiple meanings can be resolved by examining primary contexts,
- Logical features common to all languages can be found,

- Encryption methods related to basic statistical features of communication can be applied in machine translation,

- Linguistic universals can be found.

We asked the respondents about the ethics of using the translation software. The main purpose of this question was to determine how often they applied for these programs. The percentages of the answers are shown below.

Figure 3.10. Do you use translation software?



Two of the questions in the survey were designed to elicit information about SDL Trados and CAT programs. The general results of the answers to these two questions are shown in the figure below.

Figure 3.11. CAT software

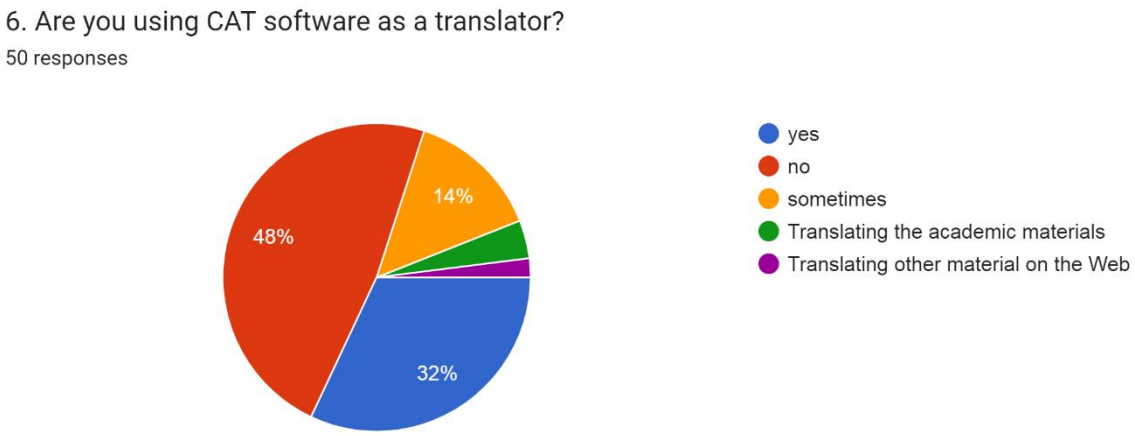
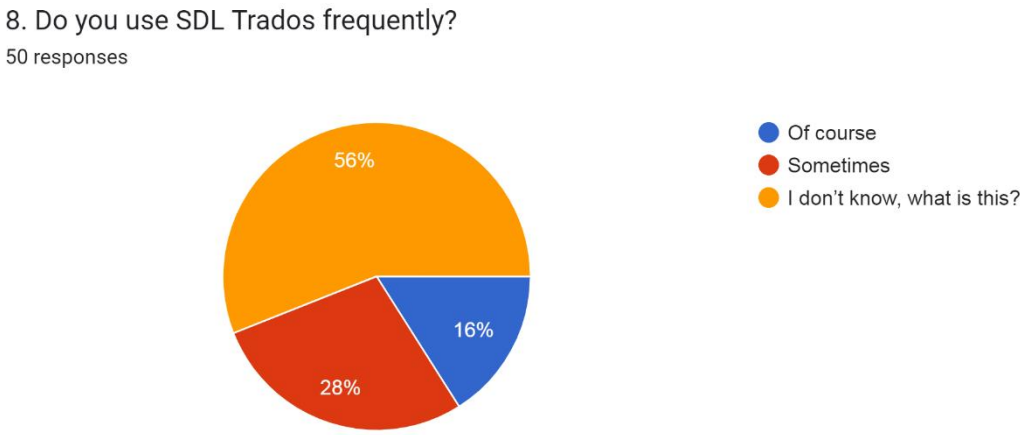


Figure 3.12. SDL Trados



The results show that 48% of respondents do not use CAT. However, another boring point is that 68% of respondents do not know what SDL Trados is in general. This proves to us once again that the level of awareness of translators in this field in our country is not high enough. This, in turn, shows us the importance of providing more information.

One of the most important reasons for the emergence of machine translation is the fact that human power will not be able to access the countless information and resources written in many languages. In addition, the fact that there are more than seven thousand languages with their dialects in the world and the increase in information sharing with the age of technology has brought with it the need for machine translation.

It is useful to take a number of measures in the direction of the development of this field in our country. The fact that there are not enough users of the mentioned programs, which are gaining relevance in the world, in our country prevents us from development.

In order to reduce ignorance and enhance the knowledge of Azerbaijani translation students about translation programs, several solutions can be implemented. Here are some potential approaches:

1. Translation Software Courses: Specific courses or modules in the translation curriculum that focus on the effective use of translation software. These courses can provide students with hands-on training, practical exercises, and real-life translation projects using different software tools.

2. Workshops and Training Sessions on translation software for the students: These sessions can be organized by inviting industry professionals or experienced translators who are proficient in using various translation tools. They can share their expertise, demonstrate the software features, and provide tips and tricks for efficient utilization.

3. Access to Translation Software: The translation students need to have easy access to translation software during their studies. Collaborate with software providers or academic institutions to offer discounted or free licenses for the software, allowing students to practice and become familiar with the tools without financial barriers.

4. Online Resources and Tutorials: Online resources, tutorials, and instructional materials that provide step-by-step guidance on using translation software. These resources can be made available on the university's website or learning management system, allowing students to access them at their convenience and refer to them whenever needed.

5. Practical Assignments: Translation assignments or projects in the curriculum that specifically require the use of translation software. This will encourage students to explore different software options, experiment with their features, and gain hands-on experience.

6. Peer Collaboration and Mentorship: Encourage collaboration among students by pairing them up or forming study groups where they can share their knowledge and experiences with different translation software. This peer collaboration can facilitate learning and problem-solving, as well as promote a supportive environment for discussing challenges and finding solutions together.

7. Industry Partnerships: Partnerships or collaborations with translation agencies, localization companies, or other industry professionals who actively use translation software. This can create

opportunities for internships, guest lectures, or industry visits, allowing students to observe and learn firsthand how these tools are utilized in professional translation settings.

8. Continuous Professional Development: Students need to engage in continuous professional development even after graduation. Inform them about relevant workshops, conferences, webinars, or online courses that focus on translation software and encourage them to participate to enhance their knowledge and skills in this area.

By implementing these solutions, Azerbaijani translation students can gain more exposure to translation software, develop proficiency in their use, and improve their attitudes towards utilizing these tools effectively in their future careers.

CONCLUSION

In conclusion, the thesis "The Use of Softwares in Translation and Azerbaijani Students' Attitudes Towards Their Use" sheds light on the significance of translation technology, specifically translation software and machine translation, and explores the attitudes of Azerbaijani students towards their utilization. Throughout the study, it has become evident that translation technology plays a pivotal role in the field of translation, revolutionizing the way translations are conducted and improving the overall efficiency and accuracy of the process.

The emergence of translation software and machine translation has presented translators with powerful tools that can assist them in various aspects of their work, such as terminology management, translation memory, and quality assurance. These technologies have the potential to significantly enhance productivity, streamline workflow, and facilitate the handling of large volumes of texts. Moreover, they provide translators with valuable resources, enabling them to access vast databases, linguistic references, and specialized glossaries, thereby ensuring greater precision and consistency in their translations.

When the idea of developing machine translations first emerged, the main goal was to achieve instant translation without the human factor. Regarding the 1. Research Question of the study, Machine translation technology, compared to other translation software tools, offers both advantages and limitations in terms of accuracy, efficiency, and overall quality of translations. Machine translation technology has improved significantly in recent years, especially with the advancements in neural machine translation. However, it still lags behind human translation in terms of accuracy. Machine translation systems often struggle with context-specific nuances, idiomatic expressions, and complex grammar structures. On the other hand, translation software tools, such as computer-assisted translation (CAT) tools, rely on human translators and can achieve higher accuracy levels due to the involvement of linguistic expertise. Machine translation technology excels in terms of efficiency, particularly when dealing with large volumes of content. It can automatically translate vast amounts of text in a relatively short period.

According to 2. Research Question of the study it's important to note that machine translation can be a valuable tool when used appropriately, especially for quick reference or getting the gist of a text. However, it is not a substitute for professional human translation, particularly for content that requires high accuracy, cultural sensitivity, or creative adaptation. A combination of machine translation and human expertise, such as in computer-assisted translation (CAT) tools, often yields the best results in terms of translation quality and efficiency.

It's important to note that machine translation can be a valuable tool when used appropriately, especially for quick reference or getting the gist of a text. However, it is not a substitute for professional human translation, particularly for content that requires high accuracy, cultural sensitivity, or creative adaptation.

Concerning 3. Research Question, Translation Software offers a range of key features and functionalities such as Translation Memory (TM), Terminology Management, Machine Translation Integration, Collaboration and Workflow Management, File Format Support, Integration with Language Resources, Quality Assurance Checks, Reporting and Analytics that support the translation process. Overall, translation software combines these key features and functionalities to streamline the translation process, improve consistency, enhance productivity, and ensure quality in translations. The software acts as a comprehensive toolset that supports translators in managing projects efficiently, maintaining consistency, and delivering accurate translations within the desired timelines.

In response to the 4. Research Question, Computer-assisted translation (CAT) tools play a significant role. CAT tools enhance the productivity and quality of translation research by leveraging translation memory, facilitating terminology management, supporting collaboration and project management, ensuring quality assurance, integrating with machine translation, and providing reporting and analysis capabilities. These tools streamline the translation process, improve consistency, save time, and enable researchers to deliver high-quality translations for their research work.

The survey conducted as part of this research project revealed that the majority of Azerbaijani translation students have limited information about translation programs and are generally unfamiliar with their functionalities. This finding highlights a significant gap in their understanding of the potential benefits and limitations of using such software in their translation practice. The implications of this lack of awareness are significant. In an increasingly digital and technology-driven world, translation software has the potential to enhance translation efficiency, accuracy, and productivity. By leveraging machine translation and other software tools, translators can automate certain tasks, access vast language resources, and improve their overall performance. However, without a proper understanding of these tools, Azerbaijani translation students may be missing out on valuable opportunities for professional growth and advancement.

The importance of translation technology cannot be overstated. As the world becomes increasingly interconnected, with cross-cultural communication becoming more prevalent than

ever before, the demand for translation services continues to rise. Translation technology plays a vital role in meeting this demand by enabling translators to work faster and more accurately. It empowers them to overcome challenges such as tight deadlines, complex terminologies, and the need for consistent translations.

However, it is crucial to note that translation technology should not be seen as a replacement for human translators, but rather as a valuable tool that complements their skills and expertise. While software can assist in various aspects of translation, it is the human translator who brings cultural nuances, contextual understanding, and creativity to the task, ensuring that the final output captures the intended meaning and resonates with the target audience. The use of translation technology, including translation software and machine translation, holds immense importance in the field of translation.

In conclusion, the study emphasizes the importance of raising awareness and providing comprehensive training on translation technology and software for Azerbaijani translation students. By equipping them with the necessary knowledge and skills, we can empower these students to embrace and leverage the benefits of translation software, ultimately improving their professional prospects and contributing to the advancement of the translation industry as a whole. A number of solutions have been given to reduce the ignorance and enhance the knowledge of Azerbaijani translation students about translation software. Throughout the study, it has become evident that translation technology plays a pivotal role in the field of translation, revolutionizing the way translations are conducted and improving the overall efficiency and accuracy of the process.

REFERENCES

Azerbaijani

1. Abdullayeva, F. (2013), Peşəkar tərcümənin əsasları, Bakı, səh. 218.
2. Abdullayeva, F. (2014), Tərcümənin bəzi məsələləri haqqında, səh.12-17.

English

3. Alcina, A. (2016), Translation technologies: scope, tools and resources, Spain, 39 p.
4. Anthony, P. (2018), Exploring Translation Theories, Routledge, 54 p.
5. Daems, J., Vandepitte, S., Hartsuiker, R. J., & Macken, L. (2017). Identifying the Machine Translation Error Types with the Greatest Impact on Post-editing Effort. Frontiers in Psychology, 8 p.
6. Dorman, S. J., Wolf, K., Polyakov, N., & Healy, J. (2018). Sams Teach Yourself Windows Phone 7 Application Development in 24 Hours. Sams Publishing, 5 p.
7. Fitria, T. N. (2018). Translation Technique of English Abstract Translation in Journal Edunomika in 2018. English and Literature Journal, 5(2), 145–160.
8. Fitria, T. N. (2020). Translation Technique of English to Indonesian Subtitle in "Crazy Rich Asian" Movie. ELS Journal on Interdisciplinary Studies in Humanities, 3(1), 51–65 p.
9. Gunjan, V. K., Diaz, V. G., Cardona, M., Solanki, V. K., & Sunitha, K. V. N. (2019). ICICCT2019 – System Reliability, Quality Control, Safety, Maintenance and Management: Applications to Electrical, Electronics and Computer Science and Engineering. Springer, 3 p.
10. Hum, M. (2017), Translation Theory and Practice, 183 p.
11. Kalchbrenner, N. and Blunsom, P. (2017), Recurrent continuous translation models. In EMNLP, volume 3, 413 p.
12. Kardimin, K. (2018). Ragam Penerjemahan. Mukaddimah: Jurnal Studi Islam, 2(1), 187–202.
13. Kastberg, P., & Andersson, T. B. (2018). Machine Translation Tools—Tools of the Translator's Trade. Communication & Language at Work, 1(1), 34–45 p.
14. Kastberg, P., & Andersson, T. B. (2019). Machine Translation Tools—Tools of the Translator's Trade. Communication & Language at Work, 1(1), 34–45 p.
15. Kerr, P. (2016). Translation and Own-language Activities. Cambridge University Press, 14 p.
16. Muhammad, I. (2017), Machine Translation, 4 p.

17. Nirenburg, S., Somers, H. L., & Wilks, Y. (2019). Readings in Machine Translation. MITPress, 7 p.

18. Nirenburg, S., Somers, H. L., & Wilks, Y. (2019). Readings in Machine Translation. MITPress, 4 p.

19. Nzuanke, S. (2018), University of Calabar, Technology and translation: areas of convergence and divergence between machine translation and computer- assisted translation, 21 p.

20. Orujova, I., (2018), "Introduction to Translation", 194 p.

21. Rivera-Trigueros, I. (2021). Machine translation systems and quality assessment: A systematic review. Language Resources and Evaluation, 1–27 p.

22. Utiyama, M. (2019). Learning Machine Translation. MIT Press, 13 p.

23. Wilks, Y. (2018). Machine Translation: Its Scope andLimits. Springer Science, 3 p.

Russian

24. Брауде, Э. (2018), Технология разработки программного обеспечения, СПб.: Питер, 655 с.

25. Воронович, В.В. (2017), Машинный перевод, Конспект лекций, Минск, с 39.

26. Ехлаков, Ю.П. (2020), Введение в программную инженерию, Томск: Эль Контент, 148 с.

27. Зарецкая А., Корпас-Пастор Г. и Сегири-Домингес М. (2016). Шаблон оценки качества машинного перевода. Журнал переводов, 19(1).

28. Зарецкая А., Корпус Пастор Г. и Сегири М. (2018). Взгляд пользователя на инструменты перевода: результаты опроса пользователей. стр. 37–36.

29. Кулямин В.В. (2016), Технологии программирования, Компонентный подход. М.: Бином. Лаборатория знаний, 463 с.

30. Макконнел, С. (2019), Совершенный код, Мастер-класс. М.: Русская редакция, 896 с.

31. Пацей, Н.В., Шиман, Д.В., Сухорукова, И.Г. (2019), Технология разработки программного обеспечения, Минск, с. 125.

32. Савин, К.Н., Сажнева О.А. (2020), Система менеджмента качества на предприятиях, разрабатывающих it-технологии, ISSN 0136-5835. Вестник ТГТУ. 2011. Том 17. № 3. Transactions TSTU.

33. Черников, Б.В. (2021), Управление качеством программного обеспечения, М.: ИНФРА-М, 238 с.

Internet resources

34. Alcina, Amparo. "TRANSLATION TECHNOLOGIES: SCOPE, TOOLS AND RESOURCES" May. 2008. Crossref, https://doi.org/10.1075/target.20.1.05alc

35. Amazing Translation Technology You Should Look Forward to Using. (n.d.). Tomedes, from https://www.tomedes.com/translator-hub/translation-technology (Accessed 15 February, 2023)

36. Dalibor D., What Is Translation Software, and What Makes the Best One? Phrase. (2022, September 21), from https://phrase.com/blog/posts/translation-software/ (Accessed 10 January, 2023)

37. İsrafilova E., "Proqram Təminatının Keyfiyyət Göstəricilərinin İdarə Edilməsi", 17 May 2017, from https://ict.az/uploads/konfrans/soft_eng/26.pdf (Accessed 16 March, 2023)

38. Marco, J. D., The Role of Technology in the Translation Industry. Terra Translations, (2022, July 19), from https://terratranslations.com/2022/07/19/technology-translation-industry/ (Accessed 24 March, 2023)

39. Nebojsa, D. (2020, January 1). [PDF] Software Quality Standards | Semantic Scholar. [PDF] Software quality standards | Semantic Scholar, from https://www.semanticscholar.org/paper/Software-quality-standards-Nebojsa/62954ad28f9dfa093fdb7774f6f9e365043c83b7 (Accessed 15 February, 2023)

40. What Is Machine Translation? - Machine Translation Explained - AWS. (n.d.). Amazon Web Services, Inc., from https://aws.amazon.com/what-is/machine-translation/ (Accessed 24 March, 2023)

41. Афанасьева Т. В., Афанасьев А. Н., "Основы Управления Качеством Программных Средств", 20 Sep. 2017, from http://lib.ulstu.ru/venec/disk/2017/232.pdf (Accessed 24 February, 2023)

42. Воронович В.В. "Машинный Перевод" (2013), from https://fsc.bsu.by/wp-content/uploads/2015/12/ Mashinny-j-perevod-konspekt-lektsij.pdf (Accessed 20 February, 2023)

43. Константинович Л. Л. "Технология Перевода" (2005, July), from https://portal.tpu.ru/SHARED/p/PLOTNIKOVAAA/Stud/Tab/Latyshev_Tekhnologia_perevoda.pdf (Accessed 10 January, 2023)

44. Критерии Качества Программного Средства. Определение Качества ПО В Стандарте ISO 9126. Многоуровневая Модель Качества ПО. Оце | Fkn+Antitotal. (n.d.). 1. Критерии качества программного средства. Определение качества ПО в стандарте ISO 9126. Многоуровневая модель качества ПО. Оце | fkn+antitotal., from http://fkn.ktu10.com/?q=node/741 (Accessed 24 March, 2023)

45. Митренина О. В. "Машинный Перевод", (2017) from http://mathling.phil.spbu.ru/sites/default/files/machine_translation.pdf (Accessed 16 March, 2023)

46. Моисеева. (n.d.). Программное Обеспечение Системы Менеджмента Качества. Молодой ученый, (2017) from https://moluch.ru/archive/144/40269/ (Accessed 24 March, 2023)

47. ОЦЕНКА КАЧЕСТВА ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ ДЛЯ СОЗДАНИЯ СИСТЕМ ТЕСТИРОВАНИЯ - Фундаментальные Исследования (Научный Журнал). (n.d.). ОЦЕНКА КАЧЕСТВА ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ ДЛЯ СОЗДАНИЯ СИСТЕМ ТЕСТИРОВАНИЯ - Фундаментальные исследования (научный журнал), from http://www.fundamental-research.ru/ru/article/view?id=31642 (Accessed 11 January, 2023)

48. Пацей Н. В., Шиман Д. В., Сухорукова И. Г., "ТЕХНОЛОГИЯ РАЗРАБОТКИ ПРОГРАММНОГО ОБЕСПЕЧЕНИЯ", (2011, August 11), from https://elib.belstu.by/bitstream/123456789/3121/1/pacei_texnologiya-razrabotki programmnogo-obespecheniya.-2011.pdf (Accessed 10 January, 2023)

49. Соланина О.С., "МАШИННЫЙ ПЕРЕВОД МЕТОДИЧЕСКИЕ УКАЗАНИЯ", Sep. 15, 2009,from http://elibrary.asu.ru/xmlui/bitstream/handle/asu/5653/book.pdf?sequence=1&isAllowed=y (Accessed 24 February , 2023)

50. ТЕХНОЛОГИИ И ТЕХНИКА. (n.d.), https://old.bigenc.ru/section/technology_and_technique (Accessed 10 January, 2023)