ATILIM UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF TRANSLATION AND INTERPRETATION
TRANSLATION STUDIES MASTER'S PROGRAMME

A COMPARATIVE STUDY ON THE PERFORMANCE OF GOOGLE TRANSLATE BETWEEN THE TRANSLATION OF DIFFERENT TEXT TYPES IN THE LIGHT OF THE MULTIDIMENSIONAL QUALITY METRICS

Master's Thesis

Gülnaz GÖZEN

Ankara-2022

GCPS

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Thesis Advisor
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Ankara-2022

ACCEPTANCE AND APPROVAL

This is to certify that this thesis titled "A Comparative Study on the Performance of Google Translate between the Translation of Different Text Types in the Light of the Multidimensional Quality Metrics" and prepared by Gülnaz GÖZEN meets with the committee's approval unanimously/by a majority vote as Master's Thesis in the field of Translation Studies following the successful defense of the thesis conducted in 31/01/2022.

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ETHICAL STATEMENT

I accept and acknowledge that I have prepared this thesis study, prepared in line with the Thesis Writing Guidelines of Atılım University Graduate School of Social Sciences;

- within the framework of academic and ethical rules;
- presented the information, documents, evaluations, and results in a way that meets the rules of scientific ethics and morality,
- I have referenced each work from which I have benefited while preparing my thesis, and that
- I hereby present a unique study.

I hereby also understand that I shall accept any loss of rights against my behalf in cases otherwise.

Gülnaz GÖZEN

ÖZ

GÖZEN, Gülnaz. Multidimensional Quality Metrics Işığında Farklı Metin Türlerinin Çevirisi Arasında Google Translate'in Performansı Üzerine Karşılaştırmalı Bir Çalışma, Yüksek Lisans Tezi, Ankara, 2022.

Bilgisayar bilimleri, hesaplamalı dilbilim ve terminoloji çalışmaları gibi diğer alanlardaki hızlı ilerlemeyle birlikte çeviri teknolojisi, çeviri pratiğinde yeni bir aşamaya girmiş ve çeviribilim alanında önemli bir konum kazanmıştır. Makine çevirisi, çeviri şirketleri, uluslararası şirketler, profesyonel çevirmenler ve diğer kullanıcılar tarafından kullanılır. Google translate, dünyada yaygın olarak kullanılan ve teknik metinlerin çevirisinde iyi sonuçlar veren bilgisayar çevirilerinden biridir. Bu çalışma karşılaştırmalı, betimsel ve aynı zamanda 2018 yılında, Betül KOÇER tarafından yapılmış olan *İnşaat Alanındaki İngilizceden Türkçeye Çevrilmiş TSE Standartlarının Çeviri Kalitesinin Değerlendirilmesi: Skopos Kuramı Işığı Altında Komisyonun Etkisinin İncelenmesi* başlıklı tezinin bir replika çalışmasıdır. Bu tez, Multidimensional Quality Metrics (MQM) ışığında Türkçeden İngilizceye çevrilmiş teknik metinlerle edebi metinlerin çevirisi arasındaki Google çeviri performansını karşılaştırmayı hedeflemektedir. Bu amaçla teknik metinlerin çevirilerinin değerlendirilmesi için fen, sosyal bilimler, ekonomi ve mühendislik alanlarından dört örnek, edebi metinlerin değerlendirilmesi için ise rastgele bir şiir ve öykü seçilmiştir. Bu örnekler çeviri kalitesi değerlendirmesinin bir çerçevesi olan Multidimensional Quality Metrics'e göre incelenmiştir. Tespit edilen çeviri hataları MQM tarafından sunulan karar ağacına göre kategorilere ayrılmış ve ağırlıkları önem derecelerine göre belirlenmiştir. Daha sonra her örneğin çeviri kalite puanı MQM formülüne göre yüzde olarak hesaplanmıştır. Elde edilen puanlar sırasıyla mühendislik örnekleminde %92, sosyal bilimler örnekleminde %95, fen örnekleminde %92, ekonomi örnekleminde %94, öykü örnekleminde %75 ve şiir örnekleminde %7'dir. Sonuç olarak çeviri kalite puanları, Google çevirinin teknik metinlerin çevirisinde ve bir bakıma öykü çevirisinde iyi bir performans sergilediğini ancak şiir çevirisinde başarısız olduğunu göstermektedir.

Anahtar Sözcükler: Bilgisayar Çevirisi, Google Nöral Bilgisayar Çevirisi, Makine Çevirisi Sonrası Düzeltme, Multidimensional Quality Metrics, Hata Analizi

ABSTRACT

GÖZEN, Gülnaz. A Comparative Study on the Performance of Google Translate between the Translation of Different Text Types in the Light of the Multidimensional Quality Metrics, Graduate Thesis, Ankara, 2022.

With the rapid advance in computer science and other fields such as computational linguistics and terminology studies, translation technology entered a new phase in translation practice and gained an important status in the field of translation studies. Machine translation is used by translation companies, international corporations, professional translators, and other users. Google translate is one of those machine translations which is widely used in the world and provides good results in the translation of technical texts. The present study is a comparative, descriptive, and replication study of a thesis conducted by Betül KOÇER cited as *Translation Quality Assessment of TSE Standards in the Field of Construction Translated from English into Turkish: Examining the Effect of Commission in the Light of Skopos Theory* in 2018. This thesis compares the performance of Google neural machine translation between the translation of technical texts and literary texts translated from Turkish into English in the light of the Multidimensional Quality Metrics (MQM). In this regard, for the evaluation of the translation of technical texts, four samples in the fields of science, social science, economy, and engineering and for the evaluation of literary texts one poem and short story have been selected randomly in order to be examined according to the Multidimensional Quality Metrics, which is a framework of translation quality assessment. Detected translation errors were categorized in accordance with the decision tree presented by MQM and their weights were determined according to their severities. Afterward, the translation quality score of each sample was calculated in percentages according to the formula of MQM. Obtained scores were respectively 92% for the engineering sample, 95% for the social science sample, 92% for the science sample, 94% for the economy sample, 75% for the short story sample, and 7% for the poem sample. As a result, translation quality scores show that Google neural machine translation displayed a good performance in the translation of technical texts and in some way in the translation of the short stories, however, it failed in the translation of poems.

Keywords: Machine Translation, Google Neural Machine Translation, Post-editing, Multidimensional Quality Metrics, Error Analysis

ACKNOWLEDGMENTS

This thesis would not have been possible without the support of many people.

I am deeply grateful to my supervisor Prof. Dr. Nüzhet Berrin AKSOY for her advice, guidance, support and, patience in reading my numerous revisions and editing my thesis meticulously.

I would like to extend my gratitude to my committee members, Prof. Dr. Aslı Özlem TARAKÇIOĞLU and Dr. Gökçen HASTÜRKOĞLU for guiding me with their thoughtful and detailed feedback.

I would like to offer my special thanks to Ress. Assist. Betül KOÇER GÜLDAL for guiding me very patiently and sharing her valuable experiences in the field of Multidimensional Quality Metrics since her Master's thesis was the first thesis conducted in this field in Turkey and to Ress. Assist. Nazan İŞİ for giving me numerous pieces of advice concerning my thesis.

I would like to thank Özge ÖZMEN ÖZTÜRK for offering me materials in the field of translation quality assessment.

Lastly, I would like to thank my beloved husband İlhan GÖZEN, who has always encouraged me with his determination and unconditional love and, my father Sirous EFTEKHARI who is an ingenious translator. Consulting with him during this process was one of the best experiences that I have ever had and, my precious mother Shahla EFTEKHARI for being by my side whenever I needed her.

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ALPAC : Automatic Language Processing Advisory Committee

ANN : Artificial Neural Network

APE : Automatic Post-editing

CAT : Computer-aided Translation

FAHQT : Fully Automatic High-quality Translation

GNMT : Google Neural Machine Translation

HAMT : Human Aided Machine Translation

HPE : Human Post-editing

MAHT : Machine Aided Human Translation

MQM : Multidimensional Quality Metrics

MT : Machine Translation

NMT : Neural Machine Translation

NWU : The National Writer's Union

PEMT : Post-editing Machine Translation

RNN : Recurrent Neural Network

SL : Source Language

SMT : Statistical Machine Translation

ST : Source Text

TL : Target Language

TQA : Translation Quality Assessment

TT : Target Text

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INTRODUCTION

The subject of the thesis

This thesis compares the quality of the Google neural machine translation between the translation of technical texts and literary texts translated from Turkish into English in the light of The Multidimensional Quality Metrics (MQM) Framework which is a new framework that appeared in 2012 for assessing the quality of translations. This framework is applicable for both human translation and machine translation.

The methodology of the thesis

This thesis is a comparative, descriptive, and replication study of a thesis conducted by Betül KOÇER in 2018 cited as *Translation Quality Assessment of TSE Standards in the Field of Construction Translated from English into Turkish: Examining the Effect of Commission in the Light of Skopos Theory*.

A replication study "is a study that is an independent repetition of an earlier, published study, using sufficiently similar methods (along the appropriate dimensions) and conducted under sufficiently similar circumstances" (R4DN, 2020, para. 1).

Initially, technical text samples and literary text samples are selected randomly. Then the translation of each sample has been analyzed in detail in a chart format according to the Multidimensional Quality Metrics framework. Each text has been analyzed in its own discipline.

Respectively, columns represent the source text, the human translation of the source text in English, and the translation by the Google neural machine translation.

Detected errors have been classified according to the decision tree presented by the MQM framework under the accuracy and fluency error categories. Afterward, the severity level of each error which is minor, major, and critical errors has been set. After determining the severities and weights of each error, findings have been put in the scoring formula of the MQM framework.

At last, obtained translation quality scores have been analyzed and discussed in detail in the discussion part of the study.

Research questions

1. To what extend can Google translate be used in the translation of literary texts?
2. To what extend can Google translate be used in the translation of technical texts?
3. Under which error category of MQM do translation errors in Google translate of technical texts fall?
4. Under which error category of MQM do translation errors in Google translate of literary texts fall?
5. Which text type is more suitable for being translated by Google translate?

Assumptions

This study assumes that machine translation can produce an accurate translation in technical texts since it is able of finding word-for-word equivalence for the linguistic elements in a text.

Hypothesis

Machine translation (Google neural machine translation) is unable to transfer the soul of a text. Machine translation is not programmed to understand this nuance since literary texts consist of artistic, stylistic, and fictional features. Machine translation fails to produce these elements of a literary text which are actually the soul of the literary text.

Limitations

This thesis will compare the quality of the Google neural machine translation between the translation of technical texts and literary texts translated from Turkish into English by using the Multidimensional Quality Metrics. In this regard, for the evaluation of the translation of technical texts, the study is limited to the texts chosen randomly in the fields of science, economy, social sciences, and engineering and for the literary texts, the thesis is limited to a short story and a poem chosen randomly as well. This may be a limitation since the short story and the poem chosen do not represent the aggravation of literary texts. There may be further studies to investigate a large number of literary texts belonging to different genres.

Literature review

Translation Quality Assessment has been a topic of debate in translation studies since translation studies began to be a separate discipline however, the lack of a standard method or model for evaluating translation quality assessment has been a matter of concern among scholars. In 2012, the Multidimensional Quality Metrics project started to fill this gap (Lommel, 2018).

The article conducted by Betül KOÇER GÜLDAL and Elena ANTONOVA ÜNLÜ was the first article published in 2019 in the field of Multidimensional Quality Metrics in Turkey. Their article was cited as *Translation Quality Assessment of TSE Standards Translated from English into Turkish: Examining the Effect of Commission in the Light of the Skopos Theory.* In this article, they aimed to analyze the quality of the translation of standards translated from English into Turkish before 2016 and after 2016 in order to specify any improvement in the translation quality of standards with the introduction of a translation commission.

The first thesis in Turkey that had utilized the Multidimensional Quality Metrics as a model for assessing the translation of technical specifications i.e standards was conducted by Betül KOÇER in 2018. The thesis was entitled as *Translation Quality Assessment of TSE Standards in the Field of Construction Translated from English into Turkish: Examining the Effect of Commission in the Light of Skopos Theory.*

In 2015, The Journal of Specialised Translation published an article named *The Multidimensional Quality Metrics (MQM) Framework: a new framework for translation quality assessment* prepared by Valerie Mariana, Troy Cox, and Alan Melby. The aim of this article was to grade student's translation by using the Multidimensional Quality Metrics Framework. In this respect, the translations of students were judged based on the American Translator Association's translator certification exam grading system, (ATA) framework.

There is also a thesis prepared by Tyler A. SNOW in 2015 cited as *Establishing the Viability of the Multidimensional Quality Metrics Framework.* This study aimed to analyze the viability of the Multidimensional Quality Metrics in order to specify whether this model (MQM) is ready to be utilized as a translation quality assessment model or not.

Another study which is prepared by Arle Lommel, Aljoscha Burchardt, Maja Popovic, Kim Harris, Eleftherios, and Hans Uszkoreit in 2014 is *Using a new Analytic*

Measure for the Annotation and Analysis of MT Errors on Real Data. This study analyzes the performance of the machine translation system focusing on “nearly acceptable” translations by using Multidimensional Quality Metrics.

SECTION 1: THEORETICAL BACKGROUND

The following chapter conducts a theoretical background on machine translation, Google translate, post-editing, text types by Reiss along with their functional characteristics, technical and literary texts and their translation, the shortcomings of translation quality assessment, and the Multidimensional Quality Metrics.

1.1. A General Review of Machine Translation

Machine translation (MT) can be described as an automatic translation of texts from one language to another language with the aid of a computer system with or without human involvement (Sun, 2005). People always dreamed of a machine that allows them to communicate with people who do not speak their language. Machine translation can be beneficial since human translation is slow and expensive, however, not every text type can be translated with machine translation.

Computer programs do not produce accurate translations for literary texts. The nuances and subtleties of poetry are beyond the comprehension of the computational system. However, the translations of technical manuals, scientific documents, commercial prospectuses, administrative memoranda, and medical reports are more suitable for the Machine Translation system to translate (Hutchins, 1995).

Machine translation is not an absolute area in order to achieve perfect translations, however, it can help in saving time, workforce, and money in the fields mentioned above.

1.1.1. Basic features of machine translation (MT)

The term 'machine translation' (MT) is a term that refers to computerized systems which produce translations with or without human assistance. It does not include computer-based translation resources that assist translators by offering online dictionaries, remote vocabulary databanks, text transmission and reception, and so on. The distinction between machine-aided human translation (MAHT) and human-aided machine translation (HAMT) is often unclear, therefore the term computer-aided translation (CAT) can be used to refer to both, but the significance of machine translation is the automation of the entire translation process (Hutchins, 1995). While the aim of machine translation is to achieve a high-quality translation, the product is

often revised by human translators (post-edited). In this regard, the performance of machine translation is similar to the performance of most human translators, which is usually revised by a second translator before being distributed. Nonetheless, the types of errors made by machine translation vary from those produced by human translators. While post-editing is common, machine translation production can be left unedited or only lightly revised in certain cases, such as when it is intended only for specialists familiar with the text topic. Output may also be used as a 'pre-translation,' or a rough draft for a human translator (Hutchins, 1995).

1.1.2. Historical background of machine translation (MT)

The use of mechanical dictionaries to solve language differences and the translation of a text with a natural language through a machine was first proposed in the seventeenth century. This subject gained reality in the late twentieth (Hutchins, 1995).

According to Bell (1991), translating from one language into another language is both an art and science. The history of machine translation (MT) is as old as computer science which started in the days of the Cold War. Its existence dates back to the 1940s and due to the growth of the web, it flourished in recent days. War and commerce were the two driving forces of the machine translation process. (Bhattacharyya, 2015).

Machine translation (MT), has made significant progress in a couple of countries from the time the first computer was invented in 1946. In 1947, just one year after the appearance of the computer, Warren Weaver the President of the Rockefeller Foundation, and Andrew D. Booth of Birkbeck College in London University who was a British crystallographer proposed for the first time to use the computer for translation (Chan, 2015).

In this regard, they looked into mechanizing a bilingual dictionary and started working with Richard H.Richens (Cambridge), who had been independently producing punched cards to do word-for-word translations of scientific abstracts on his own (Hutchins, 1995).

Weaver (1949), expressed his thoughts on mechanical translation in a letter to Norbert Wiener, a pioneer in the mathematical theory of communication as follows:

> I have wondered if it were unthinkable to design a computer which would translate. Even if it would translate only scientific material, and even if it did produce an inelegant (but intelligible) result, it would seem to me worthwhile. Also knowing nothing official about, but having guessed and inferred considerable about, powerful new mechanized methods in cryptography—methods which I believe succeed even when one does not know what language has been coded—one naturally wonders if the problem of translation could conceivably be treated as a problem in cryptography. When I look at an article in Russian, I say: ‘‘this is really written in English, but it has been coded in some strange symbols. I will now proceed to decode. ’’(p.4).

According to Weaver, every document contains a language-neutral message, and MT could simply be the method of deciphering the encoded message. Not all agreed on such a simple understanding of translation.

Norbert Wiener, the American mathematician who developed the field of cybernetics (and who had the opportunity to study some Chinese, a language different from English, while serving as a visiting professor at Tsinghua University in the mid-1930s) (Sun,2005) and as a linguist, he was well conscious of the gap that existed between languages, therefore in a letter dated on April 30, 1947, he responded to Weaver as “I frankly am afraid the boundaries of words in different languages are too vague, and the emotional and international connotations are too extensive to make any quasi-mechanical translation scheme very hopeful” (Weaver 1949, p.5).

On 15 July 1949, Weaver (1949) wrote a memorandum to 200 of his friends who may be interested in “mechanical translation” as follows:

> Think, by analogy, of individuals living in a series of tall closed towers, all erected over a common foundation. When they try to communicate with one another, they shout back and forth, each from his own closed tower. It is difficult to make the sound penetrate even the nearest towers, and communication proceeds very poorly indeed. But, when an individual goes down his tower, he finds himself in a great open basement, common to all the towers. Here he establishes easy and useful communication with the persons who have also descended from their towers. Perhaps the way is to descend, from each language, down to the common base of human communication—the real but as yet undiscovered universal language—and then re-emerge by whatever particular route is convenient (p. 11).

In his memorandum, he discussed the possibilities and proposed several approaches, including the use of wartime cryptography techniques, statistical methods, Shannon's information theory, and research into the basic logic and universal features of the language, which he called "the common base of human communication.” (Weaver, 1949).

The memorandum was a success; it established machine translation as a technical endeavor in the United States and, as a result, in other countries. After a few years, research on machine translation had begun at the University of Washington, the University of California, and the Massachusetts Institute of Technology.

In 1951 the first full-time researcher in MT was Yehoshua Bar-Hillel. He organized the first MT conference a year later, at which the details of future studies already became apparent. Optimism was strong in the 1950s; advances in computers and formal linguistics, especially in the field of syntax, seemed to offer significant improvements in quality (Hutchins, 1995). There was even an example of Delavenay (1960) who said "Will machine translate poetry? To this there is only one possible reply – why not?" (p.109). Many people predicted that breakthroughs would happen soon and that fully automatic systems would be operational in a few years. Computer engineers and mathematicians were among the first to develop MT programs, to achieve fully automatic high-quality translation (FAHQT) of general texts (Sun, 2005).

However, Bar-Hillel (1960) criticized the prevalent presumption that the aim of MT study should be the development of fully automatic high-quality translation (FAHQT) systems that produce results that are indistinguishable from those of human translators in a study of MT. Moreover, as the complexity of the linguistic issues became more apparent, disillusion increased.

Bar-Hillel, (1959) stated that it was not only unrealistic but also impossible in theory, considering the existing state of linguistic knowledge and computer systems.

At that moment, his point had influenced other scholars. Many scholars had already run into similar semantic barriers to which they found no simple solutions. Spread optimism had been criticized because of convincing both the MT community and the public to make them believe that the operational systems would be available on the market in a few years. In 1962 the Association for Machine Translation and Computational Linguistics was established as a sign of scientific maturity. Despite Bar-Hillel's critiques, the MT researchers remained positive about the future (Bhattacharyya, 2015).

In 1964, the government of the United States demanded the National Academy of Sciences to form a committee comprising seven experts to evaluate MT and advise funding agencies for the future of MT research and funding (Warwick, 1987).

The committee was established in 1966 and was named as Automatic Language Processing Advisory Committee. In 1966, the committee revealed the ALPAC report which concluded that MT was slower, less accurate, and more expensive than human translation and that "there is no immediate or predictable prospect of useful machine translation (ALPAC, 1966, p.32).

According to the report, there was no need for investing in MT research. Instead, it proposed the development of machine aid for translators (CAT), like automatic dictionaries, and continued supporting just basic research in computational linguistic (ALPAC, 1966).

To conclude, the ALPAC report was known as the "dark age" in MT research and for over a decade, ALPAC report consequences effectively put an end to MT studies in the United States, Britain, and Russia, and MT was widely regarded as a total failure, however, in Europe, research in MT continued (Chan, 2015).

1.1.3. The birth of MT

According to Hutchins (1995), the primary focus of activity in the United States has been on English translations of Russian scientific and technical materials however, the requirements in Canada and Europe were very different in this regard, the need for MT science moved from the United States to Canada and Europe.

In 1970, work on a syntactic transfer system for English-French translation started in Montreal, however, the period of linguistical domination of MT came to an end around 1990. Since 1976, several big MT projects had been conducted, but due to restrictions in funds and linguistic approaches, most of them ended. In the early 1990s, the MT field was in its poorest situation. However, projects such as the Eurotra project (sponsored by the European Commission, Maegaard & Perschke, 1991) and the Rosetta project (sponsored by Philips, Rosetta, 1994), emphasized the fact that they were not an absolute failure in the MT field. Even though all the technologies in the market were old without any potential to improve, a completely new and strong design could save the MT industry (Hacken, 2017).

Systran 7 system, which was the 2014 version of a well-established MT system, solved the problems mentioned above. It contains a hybrid system, which combines rule-based linguistic processing with corpus-based statistical processing and is used as a package with a high volume of translations that have a sufficient degree of similarity (Sklavounou, 2014).

1.1.3.1. Statistical machine translation (SMT)

According to Alsohybe, (2017) statistical machine translation (SMT) "is a term that refers to a group of MT systems that are developed using the machine learning methods" (p. 5). Statistical machine translation systems were invented less than three decades ago for the first time (Lopez, 2007). The use of statistical techniques in the field of machine translation had improved dramatically the quality of research systems in recent years (Och & Ney, 2004).

The statistical machine translation is different from rule-based systems which are called classic MT systems. The function of rule-based MT systems was based on grammar and dictionaries, which have been around for thousands of years, however, the statistical machine translations system is based on bilingual corpora (Melby, 2006).

The statistical machine translation breaks sentences into phrases in order to translate pieces, then try to stitch those translations back together.

This means that the statistical machine translation system is not only a one-to-one mapping of the source language words to target language words and is not just a word-for-word dictionary. Instead, the context of the source text is taken into consideration by matching the chunks of the source text with the chunks of the target text as possible. This matching is done by using statistical methods which are very effective in automatic speech recognition (Melby, 2006).

One of the major problems of statistical machine translation is its shortcomings concerning grammatical correctness and certain typological contrasts which are hard to translate by the statistical machine translation (Melby, Fields & Housley, 2014 cited in O'Brien, Balling, Carl, Simard & Specia, 2014).

1.1.3.2. Neural machine translation (NMT)

The neural machine translation is a new approach to the statistical machine translation, which has demonstrated a great potential in the quality of translations

compared to the dominant approach which was the statistical machine translation (Toral & Way, 2018 cited in Moorkens, Castilho, Gaspari & Doherty, 2018).

The neural machine translation was firstly proposed by Kalchbrenner and Blunsom (2013), Sutskever et al. (2014), and Cho et al. (2014) (Bahdanau, Cho & Bengio, 2014).

Bahdanau et al. (2014), defined the neural machine translation as follows:

> Unlike the traditional phrase-based translation system, which consists of many small sub-components that are tuned separately, neural machine translation attempts to build and train a single, large neural network that reads a sentence and outputs a correct translation (p.1).

By using neural networks, the neural machine translation predicts the translation of the whole sentence which allows it to take into account the context in which each word and phrase is used.

The function of the neural machine translation is described by Alsohybe, (2017) as follows:

> Instead of training the different MT components independently, NMT model uses the Artificial Neural Network (ANN) to learn the model jointly to maximize the translation performance through two steps recurrent neural network (RNN) of both the encoder and decoder (p.8).

In one of their studies, Dowmunt, Dwojak & Hoang (2016), stated the fact that neural machine translation demonstrates higher results compared to statistical machine translation since the neural machine translation removes the ambiguity in the final output.

According to Toral & Way (2018) the neural machine translation, besides its generally great performance is at the core of interest for literary translation due to the following two findings:

- Its performance seems to be especially promising for lexically-rich texts (Bentivogly et al., 2016), which is the case with literary texts.

- There are claims that NMT "can, rather than do a literal translation, find the cultural equivalent in another language" (cited in Moorkens et al., 2018a, p.264).

1.2. Google Translate the New MT Generation

Google is one of the most popular used search engines in the world. This search engine is first developed in 1996 by Larry Page and Sergey Brin.Google was created

to offer a variety of services, including a search engine for web addresses, the world's information, images, videos, books, research results, and Google Translate, a machine that translates text (Ulfah, 2015).

In 2001 google translate offered a service that was able to translate eight languages to English and vice versa. In those days, (MT) was used with the latest technology commercial machine, however, as the quality of the translation was poor it could not improve much. At that time the system was not seen as a practical service because it was too slow. For instance, 1000 machines translated 1000 sentences in 40 hours. To overcome that problem, researchers concentrated on speed, and one year later the system was able to translate a sentence in under a second with a good quality. Chinese and Arabic were the first languages that were launched in early 2006 (Och, 2012).

On April 28, 2006, the Statistical MT approach was announced and in six years then all the focuses were on the quality of the translation and language coverage. By the end of 2008 Google has introduced "Google Translate" to the public as a work of Google Inc development (Ulfah, 2015).

Now, Google translate can translate more that 100 languages and covers more than 99 percent of the online population. According to Google, 200 million active users use Google Translate the online and free translation application every month. The users of Google Translate are global and more than 92 percent of them are from outside of United States and in a single day, Google Translate is able to translate the same amount of text in one million books, to say it in a clear way, Google Translate can produce the amount of work that all the professional human translators in the world can produce in one year in just one day (Och, 2012).

At a rough estimate, Google translate was able to translate around 75 billion words per day in 2012. However, at the Google I/O event in May 2016, Google stated that the average daily translation amount is about 143 billion words a day across 100 language combinations. This means that Google’s translation volume has doubled in 4 years (Moorkens et al., 2018a). The figure below demonstrates the daily translation usage in Google translate in May 2016.

Figure 1: Daily Translation Usage in Google Translate in May 2016 (Adapted from Morkeens et al., 2018a, p. 162)

When looking at the performance of Google Machine Translation one can say that obviously there will be no need for human translators, and their position will fade away in time. However, in order to clarify the aim of the invention of the Google Translate Och (2012) expressed his thoughts as follows:

> By this estimate, most of the translation on the planet is now done by Google Translate. Of course, for nuanced or mission-critical translations, nothing beats a human translator—and we believe that as machine translation encourages people to speak their own languages more and carry on more global conversations, translation experts will be more crucial than ever (para. 7).

1.2.1. Statistical and neural Google translate

On April 28th, 2006 the Google translate launched the statistical machine translation (Kartika, 2017) which according to Linna (2013) it used the following process:

> When GT [Google Translate] generates a translation, it searches for patterns from hundreds of millions of documents to help make a decision on the best available translation. By identifying patterns in documents that have already been translated by human translators GT can make quick decisions as to what a suitable translation could be (p.22).

After ten years in November 2016, Google declared that Google translate would switch to a neural machine translation engine under the name of Google Neural Machine Translation (GNMT). GNMT was first able to translate in eight languages, to and from English and Turkish, Chinese, French, German, Japanese, Korean, Portuguese, and Spanish (Kartika, 2017).

Kartika (2017) defines the function of the Google Neural Machine Translation as follows:

> Google Neural Machine Translation (GNMT) translates whole sentences at a time, rather than just piece by piece. It uses this broader context to help it figure out the most relevant translation, which it then rearranges and adjusts to be more like a human speaking with proper grammar (p. 10).

1.3. Post-editing of MT Output

With the advance in global communication and commerce, the importance of translation increased dramatically, and as technology becomes more complex day by day exponentially more content has to be translated quickly, cheaply and at the same time with high quality. Therefore, it is a crucial task to understand how to make a translation process quick, accurate, and effective with software tools. For this reason, the role of machine translation and post-editing of MT output gained importance significantly (Melby et al., 2014 cited in O'Brien et al., 2014).

Although, the post-editing concept dates back to 1985 and is defined by Wagner (1985) as "post-editing entails the correction of a pre-translated text rather than translation from scratch" (p.1) it is still a new task in the field of translation studies.

O'Brien (2011), defines post-editing as "the correction of raw machine-translated output by a human translator according to specific guidelines and quality criteria" (p.1). However, in the book named *Post-editing of Machine Translation: Processes and Applications* published in 2014, O'Brien (2014) gave a broader definition for the term post-editing as follows:

> In translation, the term *post-editing* refers to the act of correcting a translation proposal (from a single word or character to a complete document). If this proposal comes from an MT system, we talk of *post-editing MT* (PEMT); if it comes from human translation, we talk of *human post-editing* (HPE). In general, post-editing itself is performed by (human) translators but it can also be performed automatically: we then talk of *automatic post-editing* (APE) (p.26).

In some cases, human translators may feel threatened by machine translations and refuse to use them in their daily life and worried about the fact that machine translations will ignore and disregard their professions in a globaliszd world however, they have to accept the fact that the performance of machine translations is increasing day by day and they are getting integrated with human translators and they are becoming a part of their professions in order to facilitate their work (Lumeras & Way,

2017). However, it is well known that the final output of machine translations is not ready to be used and they need to be post-edited by human translators.

In this respect when it comes to post-editing, studies showed that the translators to be much faster when post-editing the translation by machine translations compared to translating from scratch, and translators consistently reported that they were slower before (O'Brien, 2014).

Also, in a study conducted by Arenas cited in O'Brien et al. (2014), it was observed that, by post-editing, the final output contained a high quality. According to Plitt and Masselot (2010) it is also proven that in the post-edited literature translation by machine translation, the final result contains high quality to those produced without post-editing.

In this context, O'Brien (2007) stated that recent researches from the industry revealed that by using machine translation and post-editing, it is possible to increase creativity, productivity.

From all of these reports, it can be inferred that post-editing plays a crucial role in the quality of a translation by machine translation regardless of its type (text type) and at the same time it can help translators in saving time and energy and to be more creative and productive.

1.4. Text Typology by Reiss

Classifying texts into types and the usability of such classification for practicing translators has always been a matter of debate in the field of translation studies.

According to Hatim and Munday (2004), the concept of text type is a broad subject and can comprise a large variety of text-form variants.

Another problem which is mentioned by Htim and Munday (2004) concerning text types is the issue of hybridization which conveys the fact that "a particular text can and often does consist of different 'types'" (p.286). However, text typologies along with their purpose and the text function are still seen as a valuable and crucial tool for translators in order to determine the accurate and precise equivalent for a translation (Hatim & Munday, 2004).

Determining the type of text is the first and the most significant step of the translation process. Text types are described as universal phenomena since they convey three basic communicative styles which are common to all cultural communities. Before writing a text, an author should take these phenomena into consideration and choose one of them (Vermeer & Reiss, 2013).

These three basic communicative types were first introduced by the German psychologist and linguist Karl Bühler under the name of the organon model in 1934. These communicative types were informative function, expressive function, and appellative function. Reiss borrowed these functions and linked them to their language 'dimensions' and to the text types or communicative situations in which they were used (Munday, 2016).

The main intention of Reiss was to offer guidelines for practicing translators and to set a correlation between text types and translation methods adopted by translators (Puchala, 2011). These text types are listed by Reiss as informative, expressive, operative, and audio-medial texts. Below short explanations of these text types will be given.

According to Munday (2016), in informative text types by Reiss "the language dimension used to transmit the information is logical or referential, the content or topic is the main focus of the communication" (p.115). In this type of text, the focus is on the plain communication of facts, information, knowledge, and opinions (Munday, 2016). The description of Reiss (1977/1989) justifies the previous statement by emphasizing the fact that the informative type is "purely phatic communication, where the actual information value is zero and the message is the communication process itself" (p.108).

In this regard, Hatim and Munday (2004), stated that "translators of informative texts should aim primarily for 'semantic equivalence', and only then for connotative meaning and aesthetic values" (p.284).

In expressive text types, the aesthetic component of the text is more dominant than the informative aspect. The stylistic features used by the author, have an impact on the meaning of the text and produce an aesthetic effect on the receiver (Nord, 1997). Therefore, according to Hatim and Munday (2004) in the translation of such texts "the

main concern of the translator should be to preserve aesthetic effect alongside relevant aspects of semantic content" (p. 284).

When it comes to the operative text type, Nord (1997) expressed her thoughs as follows:

> In operative texts both content and form are subordinate to the extralinguistic effect that the text is designed to achieve. The translating of operative texts into operative texts should be guided by the overall aim of bringing about the same reaction in the audience, although this might involve changing the content and/or stylistic features of the original (p. 38).

In general, the aim of this type is to appeal to the reader or the receiver of the text to act in a certain way. For instance, if the text is an advertisement, its goal is to push the receiver of the message to buy a certain product or if the text is a political speech its aim is to force the receiver of the message to agree to an argument (Munday, 2016).

The audio-medial text type is defined by Munday (2016) as "films and visual and spoken advertisements which supplement the other three functions with visual images, music, etc." (p.116).

The table below summarises the characteristics of these text types along with their translation methods (Munday, 2016).

Table 1: Functional Characteristics of Text Types and Links to Translation Method

Text type:	Informative	Expressive	Operative
Language function:	Informative (representing objects and facts)	Expressive (expressing sender's attitude)	Appellative (making an appeal to text receiver)
Language dimension:	Logical	Aesthetic	Dialogic
Text focus:	Content-focused	Form-focused	Appellative-focused
TT should	Transmit referential content	Transmit aesthetic form	Elicit desired response
Translation method:	'Plain prose', explicitation as required	'Identifying' method, adopt perspective of ST author	'Adaptive', equivalent effect

Translated and adapted from Reiss 1971/2000 cited in Munday, 2016, (p. 115)

1.5. Technical Texts and their Translation

Technical writing is a broad term that consists of a large number of documents in science, engineering, and skilled trades. According to Budinski (2001), technical writings are grouped into four categories which are presented as follows:

1. Reports and communications in day-to-day business
2. Technical papers, magazine articles, books and theses for purposes of education, teaching, and the sharing of information and knowledge
3. Patents

4. Operational manuals, instructions, or procedures (p.1).

White (1996), defines technical writing as: “communicating... specialised information in any field (particularly industry), read by technicians, technical managers, owner-operators of machines, and scientific researchers to perform a certain task” (p. 4).

According to The National Writers’ Union (NWU) (1998) in the United States, there are at least three different types of writing under the name of “technical writing”. These are technology education, traditional technical writing, and technology marketing. Technology education is defined as writing for non-technical audiences about technology. Traditional technical writing involves writing for technical audiences and technology marketing is writing promotional materials, sales, and corporate communications materials for technology companies.

Technical texts contain a degree of formality and generally tend to focus on a specific subject with the aim to make something happen or share useful information or knowledge (Budinski, 2001). According to Budinski (2001), technical texts “1. pertains to a technical subject, 2. has a purpose, 3. has an objective, 4. conveys information/facts/data, 5. is impersonal, 6. is concise, 7. is directed, 8. is performed with a particular style and in a particular format, 9. is archival and 10. cites contributions of others” (p.4). These features are the most significant characteristics of technical texts that distinguish them from other types of texts.

The content of technical texts which are also named scientific texts is not restricted to only technology. Subjects such as philosophy, psychology, religion, history, geography, anthropology, social sciences, political science, law, education, fine arts, language and literature, science, agriculture, health, medicine, economy, engineering, etc are also known as technical texts (Budinski, 2001).

With the development of technology and new inventions in specific areas, other countries looked forward to these technologies. The first step to reach those technologies and knowledge was translation. Therefore, the translation of 'technical writing' gained importance as well.

According to Kingscott (2002), technical translation “is important, for technical and commercial translation does account for well over 90% of the world’s translation output” (p.247). The technical writer should be careful to be technically

accurate and be aware of the educational level and the comprehension ability of the reader. When it comes to the translator of technical texts, he/she should be able to write correctly and well in the target language especially in his/her mother tongue. The translator is responsible to find the correct register and accurate equivalent for the text in question and that the terminology that he/she uses must reflect the current usage in the particular industry. To sum up, it can be said that the technical translator has to be a technical writer but instead of operating across one language he/she has to operate across two languages (Kingscott, 2002).

In order to translate technical texts, Mossop (1998) proposed 5 tasks that are useful as a description of a practical translation as a whole however, Byrne (2006), stated that they can be easily applied to the process of technical translation as well. These tasks are presented as follows:

> Task 1: Interpret the source text
> Task 2: Compose the translation
> Task 3: Conduct the research needed for tasks 1 and 2
> Task 4: Check the draft translation for errors and correct if necessary
> Task 5: Decide the implications of the commission. In other words, how do the intended users and uses of the translation affect tasks 1 to 4? (Mossop, 1998 cited in Byrne, 2006, p. 17).

1.6. Literary Texts and their Translation

According to the Oxford Learner's Dictionaries, 'literature 'means pieces of writings that are valued as works of art, especially novels, plays and poems (in contrast to technical books and newspapers, magazines, etc.). Therefore, any writing that has artistic and aesthetic essence and affects the reader emotionally and psychologically corresponds to the group mentioned above and is considered to be a literary text.

Kuepper (1977) defines a literary text as follows:

> A literary text does not have a correlative in an objective reality, but rather generates a fictional reality through the reading process. Its meaning cannot be contained in the text but constitutes itself differently each time it is read. The literary text thus offers to the reader concepts and opens up perspectives in which a world known through experience appears in a different manner. Since there is no correspondence between the fictional reality of the text on one hand and the experience of the reader within objective reality on the other hand, the reading process will stimulate the reader to reconcile his knowledge of the real world with the fictional reality (p.244).

He then states that what distinguishes the literary text from other types of texts is that it does not refer to or generate objects in reality (Kuepper, 1977).

The information mentioned above describes the nature of literary texts however, the aim of this study is to examine the translation of literary texts, the methods available for translating such texts, the problems that a translator of literary text may face, and to which aspects of these texts should pay attention.

Literary texts are in the category of expressive texts and literary translation has always been separated from non-literary or technical translation. Before translating a literary text, the literary translator must possess a profound knowledge of the target language, target culture and, target society.

In this regard, Lefevere (1982) stresses that the literature knowledge of a literary translator should be as much as that of a translator of scientific text who knows about the theory of science.

Moreover, the linguistic knowledge of the translator of literary texts should be much better than that of the translator of non-literary or technical texts.

When it comes to literary translator's knowledge of culture Landers (2001), stated that:

> It is commonly thought that translators deal with words, but this is only partly true. Whatever their branch of translation, they also deal with ideas. And literary translators deal with cultures. In a very real sense, Time magazine was right when over a decade ago it called literary translators 'couriers of culture' (p.72).

As mentioned before, the translation of non-literary and technical texts is different from that of literary texts. In the translation of a technical text, each word has its own standard meaning whereas the translation of literary texts is flexible and any translated text can be translated over and again producing more beautiful work without losing the original sense, artistic and aesthetic essence. OSOU (2017) presents the nature of literary translation as follows:

1. No text has a fixed meaning. It differs as per interpretation;
2. Literary Translation is not a change over to another language; it is transfer to another culture;
3. Literary Translation always varies from one translator to another;
4. Faithfulness to the original text in literary translation is a myth. There will be accommodations;
5. Academically speaking literary translation as an art has no fixed theory (p.9).

As to Landers (2001), one of the most challenging and important concepts about literary translation is that "how one says something can be as important,

sometimes more important, than what one says (p.7). Therefore apart from semantic aspects of the literary translation, style and, aesthetic features gained more importance.

In this regard, the relationship between literary translation and general translation was stated by Levy (quoted in Popovic 1970) as follows:

> A translation is not a monastic composition but an interpretation and conglomerate of two structures. On the one hand there are the semantic content and the formal contour of the original, on the other hand, the entire system of aesthetic features bound up with the language of the translation (p.79).

Aesthetic features which are crucial for a literary translation are classified by Dodds (1994) as "phonological features (rhythm, alliteration; sense in sound), syntactic features (verb tense, word constructions, pre/suffixes, grammatical structures, …), positional features (foreground, parallelisms, paragraph structure, poem line breaks, …), semantic features (partial synonyms, antonyms, leitmotifs, keywords, …) and, figures of speech (analogy, metaphor)" (p.141).

According to Landers (2001), another concept that is very important and prevailing in literary translation is that a literary translation should affect its readers in the same way that the original affected its first readers and that should reproduce in the TL reader the same emotional and psychological reaction produced in the original SL reader, for instance, if the SL reader felt horror, curiosity, joy or amusement while reading the source text, so should the TL reader.

For that reason, Hayes (1975), produced a set of four functions for the literary translator as follows:

> 1. He regards the original work in order to understand it thoroughly.
> 2. He identifies the devices through which the author has achieved special effects.
> 3. He decides which lexical and syntactic adjusments will reproduce the effects in the target text.
> 4. He produces a literary work of his own (p.838).

1.6.1. The translation of poetry

According to many experts, translating poetry is called impossible since it is very challenging, even John Card referred to poetry translation as 'the art of failure' (Landers, 2001).

Poetry has been defined in many ways by many experts.

Random House Unabridged Dictionary defined poetry as "the art of rhythmical composition, written or spoken, for exciting pleasure by beautiful, imaginative, or elevated thoughts" (cited in Landers, 2001, p. 97).

In his book named *Literary Translation A Practical Guide*, Landers (2001), demonstrated his thought concerning poetry as follows:

> The soul of poetry lies in the use of language in a figurative, metaphorical mode of expression that transcends traditional semantic limitations of language. The embracing of ambiguity and polysemy is one of the hallmarks of literature, and it is here, more than any problems of scansion or rhyme, that the challenge of translating poetry manifest itself in the most unmistakable fashion (p.97).

Again, another opinion for translating poetry is demonstrated by Clement Wood (1994) the editor of the Complete Rhyming Dictionary. Wood (1994) emphasized the point that it is impossible to translate poetry and that poetry can only be recreated in the new language.

Landers writes that according to Wood, when a translator translates the poem with absolute fidelity, she/he kills the poem. If the translator aims to survive the poem should recreate it with the emotional power of the other language, thus before attempting a translation of poetry a proper attitude of humanity is needed (Landers, 2001).

Literary language especially poetry has been assigned a special character since antiquity due to its special use which is distinct from ordinary, every day and, non-literary language. The reason why this language is different from others is that it breaks the common norms of language such as graphological, grammatical, lexical, semantic, and phonological norms. Sound, prosodic features, imagery, rhythm, elaborate syntax, meter, rhyme, narrative techniques are among these special stylistic and linguistic features of literary language especially poetry.

1.6.2. The translation of short story

The short story is one of the genres of literature which is shorter than a novel and usually deals with only a few characters and is concentrated on a single effect conveyed in just one or a few significant episodes or scenes. Since the scope of the short story is limited, it is often criticized concerning the fact that whether it can convey a complete or satisfying treatment of its characters and subject or not? (Hansen, 2020).

Before the 19th century, the short story was not accepted as a distinct literary form however, its origin dates back to the appearance of language itself. Humans had always enjoyed jests, anecdotes, studied degressions, short allegorical romances, moralizing fairy tales, short myths, and abbreviated historical legends. None of these elements are accepted as short stories, but they had a big impact on the appearance and emergence of short stories (ibid).

As a separate genre of the literature field, the short story also contains cultural nuances and feelings since it contains an artistic, imaginative, and suggestive word set (Ghazala, 2013).

In this respect, the translator of the short story should be aware of the special linguistic features, speech figure, and style of the source text.

Even Nida and Taber (1969) support this nuance in their book entitled *The Theory and Practice of Translation,* by mentioning that "translating consists in reproducing in the receptor language the closest natural equivalent of the source-language message, first in terms of meaning and secondly in terms of style" (p.12).

1.7. Translation Quality Assessment and its Shortcomings

Translation quality assessment (TQA) gained popularity since translation studies became a separate and independent discipline and started to be viewed by scholars more systematically.

According to Newmark (1988), a translation may be analyzed by various authorities like:

> a) The reviser employed by the firm or the translation company; (b) the head of section or of the company; (c) the client; (d) the professional critic of a translation or the teacher marking one; and (e) finally by the readership of the published work (p. 185).

Translation quality assessment has always been a big concern for everyone dealing with the field of translation in this respect, Bowker (2000), in her paper stated that translation "evaluation is one of the most problematic areas of translation" (p.183) and explained this situation as follows:

> The reason for this relative neglect may be because evaluation is one of the most problematic areas of translation, having been variously described as "a great stumbling block" (Bassnett-McGuire, 1991, p.8), "a complex challenge" (Mahn, 1987, p.44), "a most wretched question" (Malmkjaer, 1998, p.70), and "a thorny problem" (Snell-Hornby, 1992, p.19) (p.183).

Another task that should be taken into consideration and causes the main problem in this field is the lack of sufficient research. In this context, Arango-Keeth, and Koby (2003) stated that:

> For the last two decades, translation scholars have been working to develop the various fields involved in translation studies: theory, practice, pedagogy, and evaluation (or quality assessment). Of these four fields, however, translation evaluation has remained the least developed, and for many scholars it is still perceived as a "probabilistic endeavour," one in which subjectivity constitutes the most salient criterion (p.117).

In general, Arango-Keeth, and Koby (2003) listed the problems with translation quality assessment into three groups and presented as follows:

> 1. Lack of a standardized terminology for evaluating translations;
> 2. Existence of a variety of assessment procedures resulting from different theoretical approaches to translation;
> 3. Lack of a consensus regarding what translation competence involves (p.119).

Translation quality assessment is known to be a complex and problematic issue due to its nature, therefore regarding this issue Zehnalová (2013) asked two questions, the first one is "do we really need it?" and the other one is "And if so, who needs it and why do they need it?" (p.42).

Hönig (1997) responded to these questions with the following answers:

> 1. Users need it because they want to know whether they can trust the translators and rely on the quality of their product.
> 2. Professional translators need it because there are so many amateur translators who work for very little Money that Professional translators will only be able to sell their products if there is some proof of the superior quality of their work.
> 3. Translatological research needs it because if it does not want to become academic and marginal in the eyes of practicing translators it must establish criteria for quality control and assessment.
> 4. Trainee translators need it because otherwise they will not know how to systematically improve the quality of their work (Hönig, 1997, p.15 cited in Zehnalová, 2013, p. 42).

To sum up it can be said that according to Drugan (2013), theorists and scholars agree that there is no single way to measure the quality of a translation. In order to attain the quality of translation, scholars and researchers tended to focus on the theoretical aspect of this field, however, the application of these methods, and obtaining a quantitative score indicating the quality of translation as well as categorizing translation errors remained a challenge. In other words, translation quality assessment has always suffered from a standard method (Koçer, 2018).

This statement is supported by O'Brien (2012) as follows:

> The focus here is not on the theory of translation quality assessment, nor on its implementation in translator training, but rather on the practice of translation quality evaluation in the professional sphere where translation quality is also ever topical and contentious (p. 55).

To overcome these shortcomings, the Multidimensional Quality Metrics (MQM) began to address the need for such a method (Koçer, 2018). This flexible framework was designed to evaluate the quality of a translation by detecting errors and putting them into related categories and at the end scoring the overall translation.

1.8. Multidimensional Quality Metrics the Comprehensive TQA

The Multidimensional Quality Metrics was designed by the QTLaunchPad project and it was headed by the German Research Center for Artificial Intelligence (DFKI) in order to present a new, flexible and comprehensive method for evaluating translation quality metrics (Snow, 2015). This model is appropriate for both human and machine translation which allows them to be compared on an equal basis of suitability according to the specified specifications (Snow, 2015).

The Multidimensional Quality Metrics (MQM) framework was designed to examine the quality of translated texts however, it is also suitable for evaluating the source text to detect problems of the source text and their effect on the quality of the translated text (Lommel, Uszkoreit & Burchardt, 2014).

This framework consists of over a hundred error categories organized into a hierarchy of dimensions which act as building blocks in order to create customized translation quality assessment metrics (Snow, 2015).

Based on the answer to the following questions the users of the Multidimensional Quality Metrics can determine what sort of metric or method they want to use (Lommel, Burchardt & Uszkoreit, 2015). Actually, this step is the first step that should be followed in order to start using this framework.

These questions along with their explanations are presented as follows:

1. What is being assessed? Snow (2015), asks this question as “what refers to the focus of the quality evaluation or assessment” (p.10). Translation product (target text), the translation process, or a system for producing translation are the possible options of what is assessing (Lommel et al., 2015a).

2. Who does the assessment? Expert translators, language scholars, community members, and end-users are among the possible group of translation quality evaluators (Lommel et al., 2015a).
3. Where (the context in which) does the assessment take place? The answer to this question helps the users of the framework to understand the requirements for the assessment in the particular context (Lommel et al., 2015a). Some of these sectors are exemplified as academia, translator certification, industry, and government (Snow, 2015).
4. When does the asssessment take place? Concerning the answer to this question Snow (2015) stated that ""when," in this case, does not refer to the time of day the assessment is being conducted, but rather at what stage in the translation workflow the evaluation is being carried out" (p.12).
5. Why is the assessment taking place? The assessment of a translation may be conducted for different purposes. For instance, it may be done to examine whether a translation is ready to be published, to find and fix problems in a translation, or to improve a system (Lommel et al., 2015a).

As mentioned above, based on the answer to these questions, the user of the assessment model will be able to detect a method for assessing the translation based on the need and the purpose of the action (analyzing the quality of a translation) (Lommel et al., 2015a).

These methods are analytic and holistic methods that indicate whether a text should be evaluated as a whole, or segment by segment with an additionl focus on the subsegment level as needed (Snow, 2015).

The analytic method identifies specific issues in a text. This method is 'detail-oriented' and is more appropriate for detecting individual errors. It focuses on segments of a text, from the paragraph level to the word level (Melby, Cox & Mariana, 2015). On the other hand, the holistic method evaluates the translation text as a whole (Lommel et al., 2015a). It gives a 'big picture' image of a translated text and determines whether the translation meets the specifications needed or not (Moorkens et al., 2018a).

After the user has selected the assessment method based on the answers to the questions given above, she/he should define the specifications (the values of the

parameters) for the translation to be assessed. According to Lommel et al. (2015a) a specification is defined as "a description of the requirements for the translation" (defined by ASTM F2575-2014) and they play a significant role since they indicate what is considered a high-quality translation (Melby et al., 2015).

Specifications contain 12 parameters (Lommel et al., 2015a) which are described by Lommel et al. (2015a), as "an aspect of a translation that defines expectations concerning the translation product. For example, 'target language/local' is the parameter that states what language/locale the translated text should appear in."

These parameters are listed as, language/local, subject field/domain, terminology, text type, audience, purpose, register, style, content correspondence, output modality, file format, and information on production technology (ASTM F2575, 2014).

The MQM framework explains these parameters as follows (Lommel et al., 2015a):

1. Language/local: The language/local parameter indicates the language into which the final output (the translation) will be translated and it should specify the geographical language variants where appropriate.
2. Subject field/domain: This parameter presents the subject field(s) or (domain(s)) of the source text and has to be specified very specifically to assist the translation providers in order to find the best translator.
3. Terminology: The terminology parameter presents the list of references and terms to be used in the translation process. Generally, these terms are domain, project, or specific ones.
4. Text type: The text type parameter indicates the type of the source text. In this parameter, the resources should be located with the appropriate linguistic skills. For instance, a translator who is specialized in technical translations is not ideal to translate a religious poem from the 12 century.
5. Audience: This parameter is significant in indicating the target audience of the project. Before translating the project, the audience and the target reader should be described or defined precisely.
6. Purpose: The purpose of a translation states the intended use of the translation and is useful in helping the translator to decide on the appropriate manner and

strategy in which to translate the text. Sometimes, the purpose of the translation may be different from the purpose of the source text.

7. Register: Register describes the linguistic register that will be used in the target language. This parameter is actually difficult to infer from the source text and should be explained on a per-language basis.
8. Style: The style parameter provides information about the style of the document and includes formal style guides, references to comparable documents, or other indications of style expectations.
9. Content correspondence: This parameter specifies how the content should be translated. For example, the owner of the translation may ask the translator to fully translate the text and adapt it to the target locale (a covert or localized translation), or in some cases, he/she may request for a partial or summary translation.
10. Output modality: The output modality parameter gives information about the way in which the translation should be presented. These ways could be specific environments, any limitations, or special requirements.
11. File format: File format describes the format of the file of the translation and it is quite usual for the target file format to be different from the source file format.
12. Production technology: This parameter gives information on the technology or software that has to be used in the process of the translation. These technologies may be specific or generic ones.

It is important to note that MQM users are not expected to apply all of these parameters for each given assessment work; rather, they will use these parameters in the light of the purpose and the function of the target text and culture. For instance, while evaluating the quality of "gist" translations just including mistranslation, untranslated, and unintelligible will be sufficient for a quick and dirty assessment, whereas evaluating a legal text might need most of the categories in the core (Melby et al., 2014). To put it in other words, if the receivers of the translation and their conditions emphasize that the style of translation is not important, reviewers should not critic the translation with style (Moorkens et al., 2018a).

Depending on the specifications, the user decides on the dimension of the text which will be assessed. The MQM framework hierarchy provides seven top-level

branches which are known as accuracy, design, fluency, local convention, style, terminology, and verity.

The next step is to detect translation errors or issues and put them in the appropriate error category. According to Lommel et al. (2015a) "An error is a specific instance of an issue that has been verified to be incorrect".

The figure presented below illustrates the whole process of using the MQM framework. This process is summarized as answering the five questions in order to specify the assessment method, setting the specification and parameters, then depending on the specifications deciding on the dimensions, and at last determining issue types.

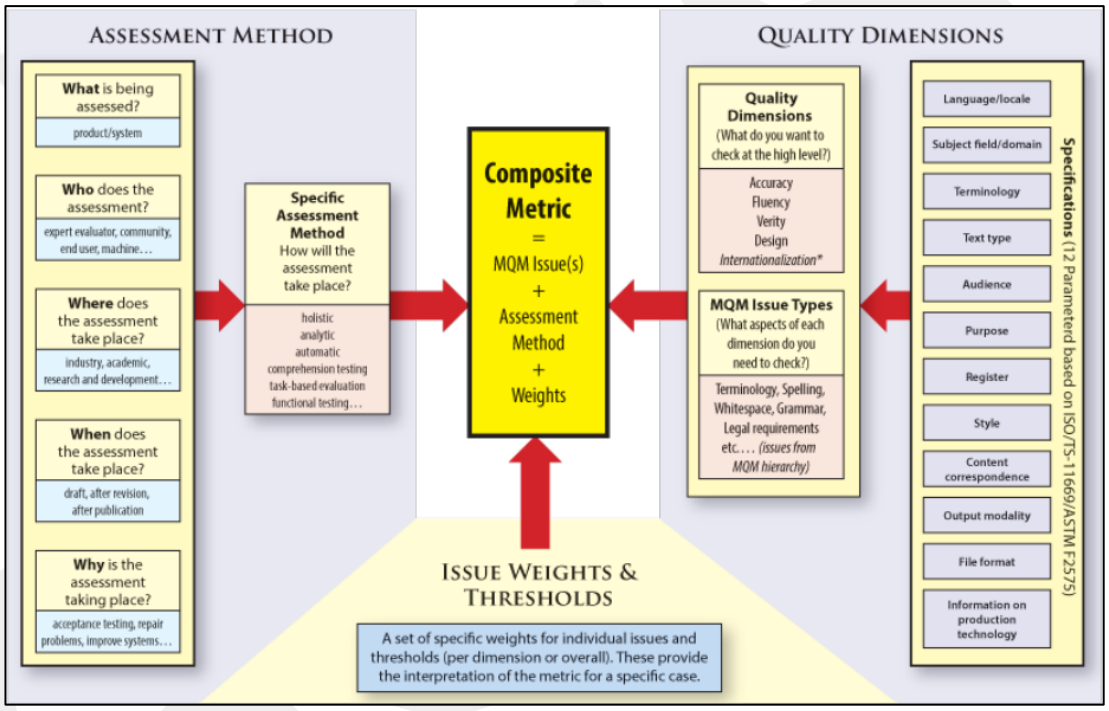

Figure 2: Creating MQM Metrics (Graphic courtesy of the QTLaunchPad Project cited in Snow, 2015, p.22)

The current version of the MQM hierarchy contains over a hundred issue types. Although MQM is presented based on an examination of industry practice, many of the issue types show similarity to the sorts of issues identified by House (1997) (Lommel et al., 2014). Instead of preparing a list of issues that can be applied to all translations and all text types, the developer of MQM prepared a master vocabulary in order to describe translation errors (Moorkens et al., 2018a).

Accuracy, design, locale convention, style, terminology, verity, and fluency are the main and the core of the error category. These seven categories are represented as the 'parent issues and their subcategories are known as 'children'.

The hierarchy depicted in the Figure below is the most significant part of the MQM framework. Every node in the figure is served as a parent issue type, and children of an issue represent specific cases of the parent issue. Therefore, the MQM framework is declared at different levels of granularity (Lommel et al., 2014).

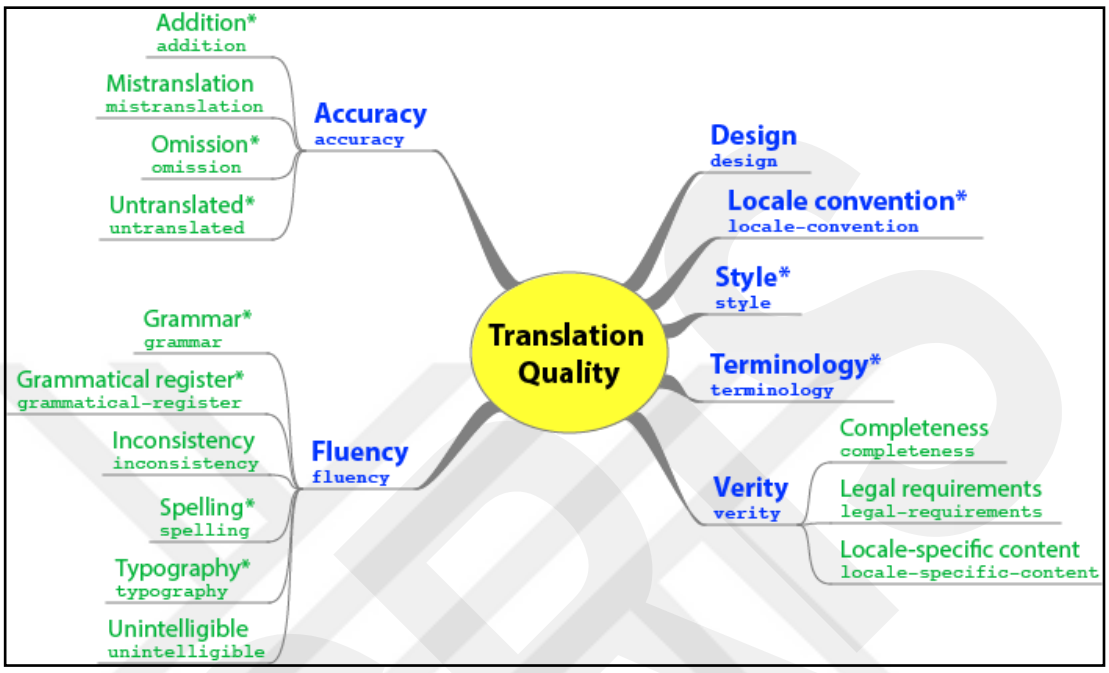

Figure 3: Core Error Categories of MQM (Adapted from, Lommel et al., 2015a)

1.8.1. Error types

The core error categories of MQM consist of seven primaries "branches" or "dimensions". These are accuracy, fluency, design, locale convention, style, terminology, and verity. This part of the study will give a broad definition of each error type 'parents 'and 'children 'in order to fully understand the error categories and how to detect them for comparing the translation quality of technical texts and literary texts translated by google translate from Turkish into English.

All the examples and citations given below are used from the following http://www.qt21.eu/mqm-definition/issues-list-2015-12-30.html website.

Accuracy

Accuracy error takes place when the meaning of the target text does not reflect accurately the source text (Lommel, Burchardt, Uszkoreit, Görög & Melby, 2015). The relationship of the meaning between the source text and target text is important and this relationship should be assessed. Any change that has an impact on the intended

meaning which will be conveyed to the target language like addition, omission, and other errors such as mistranslation is considered as accuracy errors (Lommel et al., 2015b).

The category of accuracy which is the parent category contains four error types or children which are addition errors, mistranslation errors, omission errors, and untranslated errors. Below there will be a short explanation of each error type.

1. Addition Errors: The MQM framework defines addition errors as "the target text includes text not present in the source." or as "a translation includes portions of another translation that were inadvertently pasted into the document" (Lommel et al., 2015b). This means that addition errors are items like words, punctuation marks, graphics, numbers, and tables, etc which are added to the target text although they were not included in the source text. From this situation, one can understand that added parts are pasted in the text by mistake and considered as errors however, they could be also added by purpose by the translator in order to give more information about the source text to make it familiar to the target audience which can be given in the text or by footnotes. In some cases, these additions could bother the reader as they could restrain the smooth flow of reading (Koçer, 2018).
2. Mistranslation Errors: Mistranslation error is defined as "the target content does not accurately represent the source content." (Lommel et al., 2015b). When items such as date/time, entity (such as name or place), false friend, the mistranslation of technical relationship, number, literal translation, unit conversion are not conveyed accurately to the target text, mistranslation occurs in the translation. Here is an example of the MQM framework concerning the mistranslation error:

> A source text states that a medicine should not be administered in doses greater than 200 mg, but the translation states that it should be administered in doses greater than 200 mg (ibid).

In this example, the translator has omitted (not), which conveys the main meaning of the phrase thus the sentence is mistranslated.

3. Omission Errors: Omission errors occur when "content is missing from the translation that is present in the source" (Lommel et al., 2015b). According to an example of MQM, sometimes "a paragraph present in the source is

missing in the translation" (ibid). However, in some cases, omission can take place in order to make the target text sound more target-oriented for the readers.

4. Untranslated Errors: Untranslated error is defined by the MQM framework as "content that should have been translated has been left untranslated" (Lommel et al., 2015b). MQM exemplifies an untranslated error as follows: "a sentence in a Japanese document translated into English is left in Japanese." (ibid). Untranslated errors may occur as the untranslated-graphics errors as well, which happen when a text in a graphic is left untranslated. For example: "part labels in a graphic were left untranslated even though running text was translated." (ibid).

Fluency

According to the MQM framework, the fluency error type is described as "issues related to the form or content of a text irrespective as to whether it is a translation or not." (Lommel et al., 2015b). For a broader definition, it can be said that fluency "is understood as referring to features such as grammaticality, clarity, and format that apply to any text, regardless of its status as a translation." (Lommel, Burchardt & Uszkoreit, 2013).

Fluency is a significant fact even for non-translated texts that many scholars have mentioned about it. One of those scholars was Venuti (2008) who has described fluency in detail for every text type as follows:

> A translated text, whether prose or poetry, fiction or nonfiction, is judged acceptable by most publishers, reviewers, and readers when it reads fluently when the absence of any linguistic or stylistic peculiarities makes it seem transparent… (p.1).

When looking at Venuti's description, it can be inferred that if a text or a translated text does not flow smoothly and make the reader struggling on understanding what she/he is reading, the text is not acceptable. In this respect, fluency plays an important role in the quality of a translation (Koçer, 2018).

The category of fluency which is the parent one contains ambiguity errors, grammar errors, inconsistency errors, spelling errors, typography errors, and unintelligible errors as error types or children. Below there will be a short explanation of each error type.

1. Ambiguity Errors: Ambiguity error is a situation in which a translated text is ambiguous in its meaning. For a broader understanding, Nida and Taber (1982) stated that: "translating consists in reproducing in the receptor language the closest natural equivalent of the source-language message, first in terms of meaning and secondly in terms of style" (p.12). Semantically, a word can contain more than one meaning (Lyons, 1995). Synonym words cause serious problems for a translator, in this respect Illyas (1989) stated that:

> Abundance of synonyms in a language does help the translator in some ways, for he will have more freedom in selecting the equivalent, yet it can give him much pain if he is not aware of the slight and acute denotational and connotational differences between certain synonyms (p.50).

In some cases, ambiguity may be a source for writers of literary texts or political discourses, however, it may cause problems in technical texts (Saraireh, 2001).

Paying attention to ambiguity while translating each text type is very important, however in translating technical text it is more important since technical texts convey more serious information, thuerefore the language should be explicit and clear.

The MQM framework exemplifies ambiguity as follows:" I cannot recommend this too highly". This sentence is ambiguous in meaning since it convey two different meaning. One meaning could be like the speaker cannot make a good recommendation or that it is highly recommended (Lommel et al., 2015b).

2. Grammar Errors: The MQM framework defines grammar errors as "errors related to the grammar or syntax of the text, other than spelling and orthography" (Lommel et al., 2015b). It is also described as "the content uses the wrong grammatical register, such as using informal pronouns or verb forms when their formal counterparts are required" (ibid). Each language contains a grammatical rule or system which is special to that language, in this respect a translator should be aware of both source text's and target text's grammatical rules in order to produce a high-quality translation (Koçer, 2018).

Regarding the grammar error, MQM gives an example as follows: "The man was seeing the his wife".

This example could happen in both source text and target text, the writer has used “the” in the wrong place in the phrase. Therefore, while facing an error related to the rule of grammar, it should be categorised as a fluency error.

3. Inconsistency Errors: Inconsistency errors occur when the text has internal inconsistency in terms of lexical items (Lommel et al., 2015b). These errors are likely to happen in technical texts. This can take place for several reasons. Sometimes, different translators can work on different sections of the same document, or the source text can change several times and for the translators could be too time-consuming to detect changed units of the source text and also translators would have individual criteria for using certain translations or even choosing from a set of possible translations (Markel, 1998). Another inconsistency example that MQM (ibid) has stressed is inconsistency in abbreviations and gave the further example:

Assume a translated text which contains “app.” in one paragraph and “approx.” in another paragraph for approximately.

The situations mentioned above may distort information and mislead the reader thus, inconsistency should be taken into consideration as an error.

4. Spelling Errors: Spelling errors are issues related to the spelling of words and their wrong orthography (Lommel et al., 2015b). As a parent issue spelling errors contains two children issues which are capitalization and diacritics. The MQM framework (ibid) exemplifies these tree error types as follows:

Spelling error: For spelling error the German word *Zustellung* is spelled as *Zustetlugn*.

Capitalization: For capitalization error when the name *John Smith* is written as “john smith”.

Diacritics: “The Hungarian word bőven (using o with a double acute (˝)) is spelled as bõven, using a tilde (˜), which is not found in Hungarian.”

5. Typography Errors: The MQM framework defines these errors as “issues related to the mechanical presentation of text.” These issues are punctuations, unpaired quote marks, and whitespaces. MQM underlines that

typography error type “should be used for any typography errors other than spelling.” (Lommel et al., 2015b).

6. Unintelligible Errors: These are errors that their exact nature cannot be determined and lead to a significant breakdown in fluency. For better understanding the MQM framework gives the following example:

“The following text appears in an English translation of a German automotive manual: “The brake from whe this ક્ષતારો િસ S149235 part numbr,,.” (Lommel et al., 2015b).

The unintelligible errors usually appear in machine translations rather than human translations.

Verity

Verity addresses directly the audiences or the readers of a translated text and serves to examine “the suitability of a content for the target local and audience.” (Lommel et al., 2015b). In other words, verity errors happen when the target text makes statements that conflict with the world of the target text audiences (Koçer, 2018). To say it in a simple way, for example, assume that, a factual statement is considered true in the source locale but not true in the target locale.

Verity has nothing to do with fluency or accuracy because a translated text may be fluently written or accurately translated and still be inappropriate and for local audiences. (Lommel et al., 2015b).

Verity as a parent category contains two error types: these are legal requirements errors, and locale-specific content errors. The explanation of each error is presented as follows:

1. Legal Requirement Errors: These errors occur when” a text does not meet legal requirements as set forth in the specification.” Legal requirement errors are generally known as critical errors and may cause serious problems for the translator. The MQM fremawork (Lommel et al., 2015b) exemplifies legal requirement error as follows:

Specifications stated that FCC regulatory notices be replaced by CE notices rather than translated, but they were translated instead, rendering the text legally problematic for use in Europe.

2. Local-Specific-Content Errors: These errors happen where "content specific to the source locale does not apply to the intended target locale, audience, or purpose" (Lommel et al., 2015b). For a better understanding the MQM framework exemplifies this error as follows:

- "An advertising text translated for Sweden refers to special offers available only in Germany and therefore is misleading."
- "A manual for a printer sold in Spain describes features that apply only to versions of the printer sold in Japan and thus may confuse purchasers."

Design

Anything related to the physical presentation of a text is under the category of design (Lommel et al., 2015b). Design issues can be seen either in documentions in isolation for example when a second level heading is formatted as a first-level heading or in relationship between the source text and target text when headings are formatted differently between source and target (Lommel et al., 2015b).

Errors related to the design category are listed as follows: the position of graphics and tables or missing graphic/tables, hyphenation of a word, the length of a sentence the local formatting, markup, missing text and, overall design (layout).

Terminology

Terminology errors are related "to the use of domain or organization-specific terminology" (Lommel et al., 2015b). That means the use of specific words related to specific concepts.

The terminology error contains three sub-error which are term-inconsistency, termbase and terminology-domain. The terminology error has nothing to do with the mistranslation error type and should not be confused with it. Because a translation could be a valid and reasonable translation of the source text but miss the particular required specific technical domain or particular organization terminology. For a better understanding the MQM framework (Lommel et al., 2015b) gives the following example:

> For example, if a text translates '*river bank'* into Spanish as '*banco'* (a financial institution) instead of '*orilla'* (a river bank), this would be a mistranslation because *banco* would *never* be a valid term for the concept of a river bank. However, if a term base specified that '*orilla'* should be used and the

> translation uses '*ribera'* instead, this would be a Terminology error because '*ribera'* is a valid term for the concept, but not the specified one.

Local convention

These errors occur when "the text does not adhere to local-specific mechanical conventions and violates requirements for the presentation of content in the target local" (Lommel et al., 2015b).

Local convention errors should not be confused with local-specific content errors. Local-specific-content errors are covered under the category of verity and should be distinguished from local convention errors. The MQM framework (Lommel et al., 2015b) clarifies this matter as follows:

> This issue type is distinguished from local-specific-content in that this category refers only to whether the text is given the proper mechanical form for the locale, not whether the content applies to the locale or not. If text conforms to conventions for the locale, but does not apply to the target locale, local-specific-content should be used instead.

Local convention errors involve issues such as address format, postal code, calendar type, currency format, date format, local specific punctuation, quote mark type, measurement format, name format, national language standard, number format, shortcut key, telephone format and, time format.

The MQM framework exemplifies local convention errors as follows (Lommel et al., 2015b):

- An incorrect format for currency 's used for a German text, with a period (.) instead of a comma (,) as a thousands separator.
- A text translated into Japanese uses Western quote marks to indicate titles rather than the appropriate Japanese quote marks (「 and 」).

Style

These errors occur while a translated text has a problem with the style of the text (Lommel et al., 2015b).

These issues are usually related to the category of fluency, however, they are sometimes treated separately by tools and quality processes therefore, the MQM framework grouped them as a separate dimension (Lommel et al., 2015b).

Style as a parent category contains awkward style, company-style, inconsistent-style, register, third-party-style and, unidiomatic errors as children.

The example mentioned below is given by MQM for a better understanding of the style error category (ibid):

> The translation of a light-hearted and humorous advertising campaign is in a serious and "heavy" style even though specifications said it should match the style of the source text.

All the error categories and issues explained above will be examined in examples in the next chapters in terms of technical texts and literary texts.

After each error is detected and put in the appropriate category, it is time for setting the weight of each error in order to be able to calculate the quality score of a translation. However, one of the most important questions that come to mind is that how to categorize errors?

1.8.2. Categorizing errors or issues

Hierarchical categorization of error types or issue types is presented by the Multidimensional Quality Metrics (MQM) Framework, for translated texts which can be applied to both the analytic and the holistic system. The decision tree contains 115 issue types categorized into five major branches. Although the decision tree contains all the possibilities, the users are not asked to apply all of them to their translation. They can make their own (smaller) decision tree in accordance with their specifications. To use the decision tree, the users are asked to answer the first question and follow the appropriate answers to finally reach the correct issue type (Lommel et al., 2015b).

Due to its complexity, the dcision tree is optimally printed on A0 paper (Lommel & Burchardt, 2014), fort this reason it will be presented in the appendix section of the

thesis, however, via the following link users can reach the decision tree: http://www.qt21.eu/downloads/fullDecisionTreeComplete.pdf

After this stage of the evaluation, it is time for setting the weight to errors or determining their severity. Below there will be a full explanation of this process.

1.8.3. What is error weights and severities

When it comes to qualifying the quality of a translation and calculating its score, detecting only the errors or issues is not sufficient. Knowing the severity and the weight of each error is a significant task in the MQM framework.

Each error has a weight and severity which derive from the nature of the error and has an impact on the usability of the translation. The more severe an error is, the more likely it is to affect the quality score of a translation. Severity is applied to individual errors only, not to error categories as a whole (Moorkens et al., 2018a).

Critical, major, minor, and none are the four severity level presented by the MQM framework.

Each severity level is explained as follows:

1. Critical: Critical errors have a penalty point of 100. These errors are issues that prevent the translation to be used for any purpose. Even a single critical error would impact the purpose of a translation and may even have safety or legal implications (Moorkens et al., 2018a). When critical errors appear in a translation, they could convey wrong information, and harm the user of it, and cause serious problems. In this respect, Moorkens et al. (2018a), give the following example:

> If a translation of a text describing weight limits for an industrial centrifuge converts “2 pounds” into “2 kilograms” (instead of “0.9 kilograms”), it could result in destruction of the equipment or injury of its user, and is a critical error (p.120).

Since a critical error contains a penalty point of 100 it could also decrease dramatically the score of the quality of any translation.

2. Major: Major errors have a penalty point of 10. These errors make the meaning of translated text unclear and impact its usability but, they do not cause any harm like critical errors. However, they should be corrected

before release, but as said before if not they would not cause any serious problem to the user. For example:

If a translation of an educational book about insects renders the Italian *ape* ('bee') as *monkey* in English because *ape* is a false friend, the intended meaning may not be recoverable from the text, but it is unlikely to result in negative outcomes (Moorkens et al., 2018a, p.120).

3. Minor: Minor errors have a penalty point of 1. These errors do not have any impact on the usability of a translation. Usually, the reader of the text would not notice them or correct them and move on (Moorkens et al., 2018a). For example:

If an English translation says "to who it may concern" instead of "to whom it may concern," no meaning is lost and many, perhaps a majority, of readers will not even notice the slight grammatical error. Because they do not affect usability, minor errors do not need to be fixed prior to distribution (Moorkens et al., 2018a, p.121).

4. None: None issues have a penalty point of 0. The none or null level was added to the MQM framework in 2014 (Moorkens et al., 2018a). These issues are items that are not against the translation and cause noting wrong to the final result but need to be noted for further attention or fixing. Since this level has a penalty of zero, it is not discussed in the scoring formula (Lommel et al., 2015a).

1.8.4. How to set error weights and severities

In the article named *Tutorial/ MQM-DQF: A Good Marriage (Translation Quality for the 21st Century)* which was presented by Arle Lommel and Alan k. Melby on March 17, 2018, at the the 13th Conference of The Association for Machine Translation in the Americas, there is a title named Decision Tree for Severity.

In this part of the article, they have prepared a guideline in the form of a questionnaire in order to specify the weight and severity of each error or issue. By answering each of these questions and following its chronological order, the evaluator of the translation would be able to set the weight and severity of each error.

The questionnaire is presented as follows:

1. Is the issue a violation of the translation specifications or of general professional translator practice that would be expected for a project of the type in question?

- Yes: Go to Question 2.

- No: The issue is not considered an error. (Add note in Appendix)

2. For the issue, do any of the following?

(a) render the product unusable,

(b) expose the user to potential physical or legal harm,

(c) expose the content creator to potential legal liability,

(d) potentially harm the content creator's brand

(e) would directly result in the intended user needing to contact technical support

(f) otherwise render the project unfit for purpose?

- YES: The issue is CRITICAL (100 point penalty).

NOTE: Any critical issues MUST be repaired prior to acceptance of the translation. The presence of a single critical error renders the project unfit for purpose. If you feel that an error is CRITICAL and it does not fit the above criteria, please provide an explanation. Otherwise, any issue that does not meet the above criteria is either MAJOR or MINOR.

- NO: See question 3.

3. Is the issue one that prevents the intended user from correctly understanding the intended meaning of the text but does not render the text unfit for purpose?

- YES: The issue is MAJOR (10 point penalty).

NOTE: Major errors must be repaired prior to acceptance but do not, individually render the text unfit for purpose.

- NO: See question 4.

4. Is the issue primarily cosmetic in nature or one that is easily corrected by the intended user (perhaps without them evening noting its presence) without any loss of information?

- YES: The issue is MINOR (1 point penalty).

NOTE: Minor errors should be noted, but if they are present in small numbers would not result in rejection of a translation; if there are sufficient numbers of minor errors to cause the translation to miss thresholds, then they must be addressed sufficiently to bring it to thresholds.

- NO: If none of the question apply, the issue should be considered a preferential change rather than an error. It may be noted, but shall not impact acceptance or use of the translation.

Note: If in doubt about any issues, their severity, or whether they apply to a given translation, please make a note of the issue and provide an explanation.

1.a. Do the specifications adequately represent the requirements for the translation?

- YES: Do not count the issue as an error. It does not violate specifications. It may be considered a preferential change for the future, but should not be counted against the translator.

- NO: The specifications must be revised. Any issues do not violate the specifications as provided to the translator, but which would violate adequate specifications, should be noted and addressed per requirements, but should not be counted against the translator. Go to Question 2.

Example:

- If the specifications for an NGO's annual report state Style is not important, these specifications are likely to be inadequate because the projection of corporate image is crucial in such documents. Therefore the specification should be revised and violations of the revised specifications noted. However, the translator should not be held responsible for style problems in this instance because he/she was told in advance that Style is not important (Lommel & Melby, 2018, pp. 37-40).

1.8.5. How to calculate the quality score of a translation

By using the MQM framework scoring formula one can obtain a percentage in order to evaluate the quality of a translation. The MQM scoring model is only applicable to the error-count implementation of MQM. This means that among the holistic and analytic systems it is applied only to the analytic system because the analytic method is detail-oriented and detects individual errors in a text contrary to the holistic method which analysis the final output as a whole instead of focusing on different segments of a text such as paragraphs and words (Lommel et al., 2015a).

In order to calculate a score, at first errors or issues should be detected and put in an appropriate error category, then the weight and the severity of each error should be specified. As mentioned above, a critical error contains a penalty point of 100, a major error has a penalty point of 10 and for a minor error, the penalty point is 1.

Then each error should be multiplied by its severity value and weight in order to obtain a penalty point (Moorkens et al., 2018a).

At last, the score of the translation will be calculated with the following formula (Moorkens et al., 2018a, p.122):

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

The result is usually presented as a percentage. For example, if a translation contains 500 words, and the evaluator finds 5 minor errors and 3 major errors (5.1 + 3.10 = 35 penalty points), the score would be 93%. It is important to know that obtaining negative scores is also possible if the penalty points exceed the number of words of the translation (Moorkens et al., 2018a).

The users of the MQM scoring formula also need to set thresholds in order to determine what is an acceptable translation according to them. It is said according to them because there is not a universal threshold for an acceptable translation and the value may vary between the users of the MQM framework (Moorkens et al., 2018a).

However, this thesis will not set a threshold for obtained percentages because the aim of this study is to compare the performance of Google translate in the translation of technical texts and literary texts with the scores obtained from the MQM scoring formula. In this respect, after the translation quality score of each text type is determined, it will be a comparison between them to conclude that the translation of which text type translated by Google translate is more acceptable.

SECTION 2: THE DESIGN OF THE STUDY AND INFORMATION ON CONTEXTUALIZATION OF MATERIALS

In this chapter of the study, there will be information on the contextualization of materials (text samples), their classification by Reiss's text typology and, the number of words in each sample. Then, there will be an explanation of the procedure of error detecting and scoring the translation of each text in order to compare the translation quality of technical texts and literary texts translated by Google neural machine translation in the samples translated from Turkish into English by using the Multidimensional Quality Metrics.

In this respect, for the evaluation of the translation of technical texts, the study is limited to the texts chosen randomly in the fields of science, economy, social sciences and, engineering and for the literary texts, the thesis is limited to a short story by Aziz Nesin trasnalted by Masud Akhtar Shaikh named 'I Committed Suicide' and a poem named 'Pins' by Can Yücel translated by Ruth Christie. Each text will be analyzed in its own discipline.

2.1. The Methodology and the Design of the Study

This study is a comparative, descriptive, and replication study of a thesis conducted by Betül KOÇER in 2018 cited as *Translation Quality Assessment of TSE Standards in the Field of Construction Translated from English into Turkish: Examining the Effect of Commission in the Light of Skopos Theory*.

The translation of each sample will be analyzed in a chart format in detail. The first column will represent, the original source text in Turkish, the second column will represent the existing human translation and the third column will represent their translation in English which will be translated by the Google neural machine translation. Detected errors will be classified according to the decision tree presented by the MQM framework and they will be analyzed under the accuracy and fluency error category.

Comments on each error will be given below the tables. Only sentences with errors will be shown in the charts. The whole translation of samples by the Google neural machine translation will be presented as printscreens in the appendix of the

thesis. After obtaining the quality score of each text type, percentages will be compared and contrasted in the last chapter of the study.

2.2. Text Samples of the Study

Text samples are categorized and chosen according to Reiss's text typology.

As said before, for the sample of technical texts there will be texts in the fields of science, social sciences, engineering, and economy and for the sample of literary texts, one short story from Aziz Nesin and one poem from Can Yücel will be analyzed.

According to Reiss text typology mentioned in the first chapter, technical texts are in the group of informative texts and literary texts are in the group of expressive texts. Therefore, each sample will be analyzed in respect of the features of text types. The table below summarizes these features (Şahin, 2015).

Table 2: Text Samples and their Features

Text Type / Text Feature	Content-focused	Form-focused
Genre	Technical	Literary
Language function	Informative	Expressive
Language dimension	Logical	Aesthetic
The main aim of the transition	Transmission of referential content	Transmission of aesthetic content
Text types chosen as sample	-Academic Article Abstract -Central Bank of the Republic of Turkey's website	-Short story -Poem
Number of words	-Economy: 192 -Science: 291 -Engineering: 281 -Social science: 272	-Poem: 172 -Short story: 1039

Adapted from Şahin, 2015, p.70

2.2.1. The sample of technical texts

The sample of the text about economy is chosen from the Central Bank of the Republic of Turkey's website. On this website, there is a section named reports, which publish Price Developments, Inflation Reports, Financial Accounts Reports, Financial Stability Reports, Balance of Payments and International Investment Position Reports, Annual Reports, International Reports and Notes and, Discontinued Publications. All of these reports and information are published both in Turkish and English. A particular section of the Inflation Report of 2021 will be used as a sample in the field of economy.

Samples of science, social science and, engineering texts are chosen from DergiPark Akademik's website. This website contains academic articles in the fields of social science, medicine, engineering, basic sciences, agriculture, architecture, pharmacy, dentistry, veterinary medicine and, sport sciences. The abstract of most of the articles which are in Turkish are translated into English, therefore, they can be used as samples for this study. Samples are picked randomly.

2.2.2. The sample of literary texts

The sample of the literary part of the study consists of Can Yücel's poem named 'Pins' (İğneli), translated by Ruth Christie and a short story from Aziz Nesin named 'I Committed Suicide' (Nasıl İntihar Ettim) translated by Masud Akhtar Shaikh.

2.2.2.1. The Turkish poet Can Yücel

Can Yücel, was a Turkish poet, translator, and at the same time a pioneer of Modern Turkish Poetry after the 1950s. Can Yücel was the son of Hasan Ali Yücel, the Minister of Education in 1938 in Turkey. He was born in Istanbul in 1926 and died in 1999 in Izmir. He studied classics at the University of Ankara and continued his education at Cambridge University. Yücel worked for five years as a program assistant in the Turkish Section of the BBC External Service in London.

Can Yücel was also a great translator of Shakespeare, Emily Dickinson, Auden, Eliot, Dylan Thomas, and the Greek epigrammatic poets.

His poems gained fame in Turkish literature since Yücel was a modern poet whose poems stand between two periods. The first one was "Garip" and the other one was "Second New" (Karakaya, 2018). "Yazma" was the first published poem of Yücel that carried the features of those periods and attracted the attention of the poetry environment with a mixture of nature and human imagination (Arslan, 2014).

According to Fergar (1992), Can Yücel was "a man of vast knowledge and culture, as well as keen political and social awareness" (p. 17).

In his poems, he approached events and incidents with a socialist and critical point of view, this is the reason why in his writing style a strong combination of lyricism, irony, sarcasm, swearing, slang, obscenity, and lampooning can be detected (Akpınar, 2010).

Fergar (1992) put forward his thoughts about Can Yücel as follows:

> Can Yücel has earned himself a leading place in todays's Turkish poetry as a man who upholds what is bright and what gives hope and courage to life. He says jovially, in his big-chested baritone voice: "I've never been awarded a prize, only a prison sentence (p.17).

Can Yücel, with his special writing style, usage of language, and point of view about life and society attracted a wide range of audience in Turkey. This is the reason why this study will analyze the poem of Can Yücel as a literary text type sample in order to examine the performance of Google translate in translating the poem named "pins" (İğneli) translated by Ruth Christie from Turkish into English and to determine to what extent Google translate is capable to transfer that poem to the English language and the target reader in an accurate and fluent way because the writing style of the poet with all of the ironies, sarcasm, and slangs could be challenging for Google translate.

2.2.2.2. The Turkish writer Aziz Nesin

Aziz Nesin is known as a modernist and socialist writer. He was born in 1915 in Istanbul as Mehmet Nusret, however, in 1934 with the surname law in Turkey, he adopted the name Aziz from the short version of his father's name (Abdulaziz) and the surname Nesin (Faroqhi, 2021).

Aziz Nesin was a controversial Turkish poet, novelist, playwright, and short-story writer as well as one of the first authors who wrote fiction for children in Turkey.

He was a master of satire and humor, this is the reason why his works gained fame rapidly in modern Turkish Literature and all around the world.

As an author of the republican period, Nesin in his stories, dealt with the relationship between the individual and socio-political system and drew attention to conflicts arising from the socio-political disorganizations and inefficiency of the bureaucratic system. Some of his stories took the reader to a different phase of reading with its subversive attitude and freestyle language usage (Ormengul, 2012).

As a man of the people and a great transmitter of Turkish culture, folk cultures elements such as traditions, merits, customs, beliefs… can be seen in his works, presented with his self-style and special language usage.

Another feature of Aziz Nesin's writings is that he was one of those writers who invented specific vocabulary and idioms by himself. He used those specific

expressions to emphasize the aesthetic aspect of his work in a satirized and humorous way.

This is why in this study, one of Aziz Nesin's short stories named "I Committed Suicide" (Nasıl İntihar Ettim?) from his book (İt Kuyruğu) translated by Masud Akhtar Shaikh will be used as a sample of literary text type.

In the next chapter, the English translation of the relevant short story by Google translate will be analyzed in order to detect to what extent Google translate is able to transfer and translate all the cultural codes, satirized and humorous style of the writing, idioms, and the special language usage of the writer from the Turkish language into the English language and culture in a fluent, accurate and explicit way.

SECTION 3: SAMPLE ANALYSIS

In this chapter, the quality of the translation by the Google Neural machine translation of samples that were chosen randomly in the previous chapter will be analyzed and compared in the light of Multidimensional Quality Metrics.

First of all, samples with their translation by the Google neural machine translation which contains errors will be presented in charts in the light of the methodology presented in chapter two, then each error will be put in the appropriate error category according to the decision tree revealed by the Multidimensional Quality Metrics. After detecting each error, the weight and severity of them will be determined.

In conclusion, the translation quality of each sample will be calculated according to the formula presented by the Multidimensional Quality Metrics, and the results will be compared and contrasted.

Each text sample will be analyzed separately.

3.1. The Process of the Analysis in Detail

As mentioned in the first chapter, the first step to evaluate the quality of a translation by using the Multidimensional Quality Metrics is to specify the method based on the purpose of the evaluation. According to the Multidimensional Quality Metrics, these methods are analytic and holistic methods. The analytic method is more ‘detail-oriented and identifies specific issues in a text and detects individual errors. On the other hand, the holistic method analyses the translated text as a whole.

As a method, this study conducts an analytic method since it will analyze the translation of each text sample in detail and detect each error type separately. Another reason is that the formula that will be used in order to calculate the quality of the translation is only applicable for analytic method evaluation.

The second step is to specify specifications. This study will focus on the transmission of content and information in an accurate and fluent way for the translation of technical texts and the transmission and recreation of aesthetic content accurately and fluently in the translation of literary texts, especially in the poem. Depending on the specification and the purpose of the translation, the dimensions should be determined. This study will analyze the translation of samples under the accuracy and fluency dimensions, afterwards detected translation errors will be

analyzed in detail below each chart and they will be categorized according to the decision tree presented by the Multidimensional Quality Metrics (MQM).

After detecting errors, the evaluator should set error weights and severities since each error has its own level of impact and influences the translation in different ways. In the first chapter, this process is explained in detail but as a reminder of the subject, it can be said that by following the questions mentioned in the questionnaire presented by Arle Lommel and Alan K. Melby and answering them step by step with its order one can set error weights and severity.

The last and the main step of this whole process is calculating the score and the quality of a translation. The obtained score will give an idea about the result. Since there is not any universal threshold for an acceptable translation yet, this study will compare and contrast the obtained results between the translation of technical texts and literary texts translated by the Google neural machine translation from Turkish into English. The score of samples will be calculated under a separate title after the error analysis process and the results will be discussed in the next chapter.

3.2. The Evaluation of I Committed Suicide

I Committed Suicide is a short story by Aziz Nesin and will be used as a sample for literary text type. This 1039 word-length short story contains idioms and aesthetic features. This is the reason why it is used as a sample for literary texts to see to what extend the Google neural machine translation can to transfer them to the English culture accurately and fluently.

The evaluation of the translation of I Committed Suicide translated by Google translate is presented below:

Table 3: Example 1

Source Text	Human Translation	Google Translate
“Hey aşık!” dedim, kendi kendime, “ölümlerden ölüm beğen bakalım. Tabanca mı, bıçak mı, kırk katır mı, kırk satır mı?” (Nesin, 2012, p. 79)	I asked myself: “O ye romantic patient! What type of death would you like? Will a pistol suit your temperament or a knife? The depth of the sea or the wheels of a train? Poison or? … (Shaikh, 2009, p. 41)	Hey lover!” I said to myself, **“**Let's like death from death. Pistol or knife, forty mules or forty lines?”

In this example, two translation errors have been detected. The first one is a mistranslation error and belongs to the accuracy category. Google translate translated

“ölümden ölum beğen bakalım” to “let’s like death from death”. Actually, in this sentence of the story, the writer asks himself [what type of death would you like] however when it comes to the translation by Google translate, the translation means nothing to the target reader and does not convey the intended message of the writer. Thus, Google translate has mistranslated the sentence since, “the target message and meaning do not accurately represent the source content” (Lommel et al., 2015b). This error is considered a major error since it misguides the reader.

The second error concerns the translation of idioms. In this example, “Kırk katır mı, kırk satır mı” is a Turkish idiom that means [choosing the type of death]. When it comes to the translation by Google translate it is apparent that the idiom is translated word for word and does not make any sense in the target language. The meaning is not reflected accurately therefore, according to the decision tree present by the Multidimensional Quality Metrics, this error is considered to be an overly literal error and belongs to the category of accuracy. “Overly-literal errors occur when the translation does not convey the idiomatic meaning of the source text” (Lommel et al., 2015b). “Since the error prevents the target audience to understand properly the intended meaning of the writer of the source text, it is a major error” (Lommel & Melby, 2018).

Table 4: Example 2

Source Text	Human Translation	Google Translate
Ölüm ölüm bir ölüm… (Nesin, 2012, p. 79)	After all one dies only once in a lifetime. (Shaikh, 2009, p. 41)	death is death, death...

This example shows the most apparent feature of Google translate which is the word-for-word translation. By writing “ölüm ölüm bir ölüm” Nesin, is trying to emphasize [after all one dies only once in a lifetime] in an aesthetic way. Such writing style can be seen in literary texts.

The error detected in this example is a mistranslation error and belongs to the category of accuracy and contains a weight of 10 (major) since it confuses the reader.

Table 5: Example 3

Source Text	Human Translation	Google Translate
Sonunda da, "Elveda ey fani dünya, elveda ey kahpe felek, elveda ey sadrazam…" dedikten sonra bir kadeh zehiri yuvarladım ve yere uzandım. (Nesin, 2012, p. 79)	ending with a sentence which read something like this: "Adieu, thou mortal world!" And then I gulped a peg of poison down my throat and lied down on the floor. (Shaikh, 2009, p. 41)	Finally, after saying, "Goodbye, mortal world, goodbye, hey hell, goodbye, oh grand vizier…" I rolled a glass of poison and lay down.

The error detected in this example is again a mistranslation error. In this Turkish sentence, "bir kadeh zehiri yuvarladım", "yuvarlamak" in general means [to roll] however, it can also be used as an expression which means [to drink].

As Google translate is not programmed to detect all the expressions and idioms existing in all languages and translate in a word-for-word manner, a mistranslation error can occur, same as this example. This error contributes to the accuracy error category and conveys a weight of ten.

Table 6: Example 4

Source Text	Human Translation	Google Translate
Sonradan öğrendim ki, meğer bu memlekette yalnız sütler sulu, yağlar karışık, peynirler hileli değil, zehirler bile bozukmuş. (Nesin, 2012, p. 79)	It was only later on that I discovered that in our very dear country, where milk is sold mixed with water, butter with mashed potatoes, chillies with powdered bricks, they do not hesitate selling even poison without making it impure! (Shaikh, 2009, p. 42)	Later I learned that in this country, only milk is watery, oils are mixed, cheeses are not fraudulent, even poisons are spoiled.

According to the online Cambridge Dictionary, fraudulent is an adjective meaning something that is dishonest and illegal.

In this sentence, the writer is trying to emphasize the fraudulent situations dominant in Turkey in that domain by giving examples like milk was sold mixed with water or butter and cheese was sold mixed with other ingredients… by saying "yalnız sutler sulu, yağlar karışık, peynirler hileli değil, zehirler bile bozukmuş." In this sentence, the adjective "fraudulent" is not used just to describe cheeses, on the contrary Nesin is describing the whole situation. However, Google translates used the adjective "fraudulent" to describe "cheeses" which is an unacceptable translation since cheese can never be "fraudulent".

This error is again another mistranslation error from the accuracy category and is considered a major error.

Table 7: Example 5

Source Text	Human Translation	Google Translate
Aklıma bişey koydum mu mutlaka yaparım. (Nesin, 2012, p. 79)	Once an idea takes roots in my mind, sooner or later, I do succeed in putting it into practice. (Shaikh, 2009, p. 42)	If I put something in my mind, I will definitely do it.

In this example, another mistranslation error has occurred. Google translate, instead of translating as "if I put my mind to do something, I will definitely do it" has translated as "If I put something in my mind, I will definitely do it", which is a wrong sentence and could confuse the target reader. The error contains a penalty point of ten since the intended message of the writer is missing.

Table 8: Example 6

Source Text	Human Translation	Google Translate
Cesedimi ciddi bir biçimde bulmaları için kendime en uygun pozu verdim ve Azraili beklemeye başladım. (Nesin, 2012, p. 80)	At last I adopted a highly dignified pose so that people find me a serious person, at least after my death. (Shaikh, 2009, p. 42)	I gave myself the most appropriate pose for them to find my corpse seriously and started to wait for the Grim Reaper.

In this example, Google translate has mistranslated the sentence by translating "I gave myself the most appropriate pose for them to find my corpse seriously". In the source text, the writer is trying to emphasize: [so that people find me a serious person]. Here the "seriousness" is devoted to the protagonist of the story, not to the doctors who are seeking to discover the protagonist's body.

In this respect, this error contributes to the category of accuracy with a penalty point of 10 (major error), since the translation is highly confusing and does not convey the intended meaning of the source text.

Table 9: Example 8

Source Text	Human Translation	Google Translate
Arkadaşıma projemi anlatınca, bir kahkaha attı, az salak değilsin, dedi, havagazı musluğundan gaz değil, yalnız hava çıkar. (Nesin, 2012, p. 80)	You are a fool of the first order, I must say. Don't you know the gas pipes emit pure air now-a-days? (Shaikh, 2009, p. 43)	When I told my friend about my project, he laughed and said, "You're not a bit of an idiot" he said. Only air comes out of the gas tap, not gas.

In this part of the story, two translation errors by Google translate have been detected. The first one is due to the word-for-word translation feature of Google translate and the second one is a duplication error.

In the first error, "az salak değilsin" carries the meaning of [you are a fool of the first order] or [you are very foolish or stupid]. Google translate has translated this

expression as “you’re not a bit of an idiot”, this translation is a good example of a word-for-word translation, which is a meaningless expression. This translation error is a mistranslation error, with severity of ten.

The other translation error is a duplication error of the fluency error category. “He said” is repeated twice in the phrase, which violates the smooth flow of the text. This error is a minor error with a penalty point of one.

Table 10: Example 9

Source Text	Human Translation	Google Translate
Sana bir dostluk yapmak isterim, dedi. (Nesin, 2012, p. 80)	Maybe this is how I can pay you back for your friendship.” (Shaikh, 2009, p. 43)	I would like to make friends with you, he said.

Another mistranslation error has occurred in this example. “Sana bir dostluk yapmak isterim” means [to pay back someone's friendship] or [doing something nice for the sake of friendship] however, Google translate has translated as “I would like to make friends with you” which is far away from the actual meaning of the source text’s intended message. This error belongs to the accuracy error category and is accepted as a major error since it confuses the reader with the wrong message.

Table 11: Example 10

Source Text	Human Translation	Google Translate
Arkadaşımın dostluğuna teşekkür ederek gidip hemen tığ gibi bir Bursa bıçağı aldım. (Nesin, 2012, p. 80)	I thanked him for his valued counsel, went straight to the market and bought a knife. (Shaikh, 2009, p. 43)	Thanking my friend for his friendship, I went and bought a crocheted Bursa knife.

According to the online Cambridge Dictionary, “crochet” is the activity of making clothes and other products by using wool and a special needle with a hook at one end and “crocheted” stands for something wich is made of wool, cotton, etc., thread using a special needle with a curve at one end. The Turkish equivalent of “crochet” is “tığ”, however, in this example, “tığ gib bir Bursa bıçağı” is an expression that stands for [a tall knife]. When it comes to the translation by Google translate, “tığ gibi bir Bursa bıçağı” is translated as “a crocheted Bursa knife” which is a word for word and a mistranslated translation.

The error detected in this example is a mistranslation error belonging to the accuracy error category and is accepted as a major error.

Table 12: Example 11

Source Text	Human Translation	Google Translate
Doğrusu "cart!" diye bıçakla insanın barsaklarını deşmesi hoş bişey değil. (Nesin, 2012, p. 80)	If you ask me the truth, the idea of taking out one's intestines with a knife, especially when the intestines happen to be your own, is not very pleasant. (Shaikh, 2009, p. 43)	In fact, "cart!" It is not nice to pierce one's intestines with a knife.

As it is apparent from the example, the word "cart" which is used in the source text is not translated into its English equivalent and it remained as an untranslated error. The word "cart" stands [for the sound of tearing something hard, such as paper or cloth] which is not translated by Google translate. This situation could confuse the reader, thus it is considered as a major error, under the category of accuracy as an untranslated error.

Table 13: Example 13

Source Text	Human Translation	Google Translate
Meğer, cinayetleri önlemek için arama-tarama ekiplerinden birine çatmışım. (Nesin, 2012, p. 81)	I now realized that I had been unlucky enough to come across that special police squad which starts searching respectable citizens now and then in order to reduce the ever-increasing incidents of theft, robberies, and other crimes in the town. (Shaikh, 2009, p. 44)	Turns out, I got in touch with one of the search-and-scan teams to prevent murders.

This example is another example of a word-for-word translation that is not suitable for the translation of literary texts. In the source text, "arama-tarama ekipleri" stands for [special police squad which searches citizens]. Google translate has transferred this expression as "search-and-scan teams" which means nothing to the target audience and remains meaningless. The translation error is a mistranslation error and contains a weight of ten (major error).

Table 14: Example 14

Source Text	Human Translation	Google Translate
Hey Allahım, dedim, alınan isabetli kararlar sayesinde, şu memlekette yaşayamıyoruz, ama, ölemiyoruz da… Hep böyle çekecek miyiz? (Nesin, 2012, p. 81)	I said to myself: "O God, it was never an easy matter to live in this land of yours, but now it appears equally difficult to die here. How long are we destined to tolerate this high handedness?" (Shaikh, 2009, p. 44)	Oh my God, I said, thanks to the right decisions, we cannot live in this country, but we cannot die… Will we always shoot like this?

Another mistranslation error has occurred in this example. By saying "hep böyle çekecek miyiz" the writer, is trying to transfer the feeling of tolerating. The verb "çekmek" stands for [tolerate, endure and bear] however, this verb contains other

meanings too such as [to shoot, to pull and…]. Since Google translate is not aware of the context, it can choose the wrong equivalents for the words with several meanings. As it is apparent from this example, instead of translating as "tolerating" for the verb "çekmek", Google translate transferred that word as "to shoot" which is a mistranslation error under the category of accuracy with a penalty point of ten (major error).

Table 15: Example 15

Source Text	Human Translation	Google Translate
Bikez öleceğim dedim mi ölürüm. (Nesin, 2012, p. 81)	Once I have decided to end my life, who on earth can prevent me from doing so? (Shaikh, 2009, p. 44)	Bikez, when I say I'm going to die, I die.

In this example, "bikez" is remained untranslated. "Bikez" means [once] and should have been translated by Google translate. The error is an untranslated error under the category of accuracy and is considered a major error since the transfer of the intended meaning is missing and the whole sentence is meaningless for the target audience.

Table 16: Example 16

Source Text	Human Translation	Google Translate
Daha bikez bile sallanmaya kalmadan pat diye yere düştüm. (Nesin, 2012, p. 81)	As soon as the chair fell off, I dropped on the floor with a thud. (Shaikh, 2009, p. 44)	I fell to the ground with a bang before my bike even wobbled.

The word "bike" has been inappropriately added to the target text by Google translate. Although the source text is talking about the chair, Google translate has added the word "bike" which is out of context and unnecessary. This translation error is an addition error from the category of accuracy and is accepted as a major error with a weight of ten.

Table 17: Example 17

Source Text	Human Translation	Google Translate
Bakkal, Sağlam mal olsa satarlar mı? dedi… (Nesin, 2012, p. 81)	His innocent reply: "Sir, we no longer get the genuine stuff from abroad, how can we then supply genuine stuff to our customers?" (Shaikh, 2009, p. 44)	General store, Do they sell if they are solid goods? said…

In this example, three translation errors have been detected. Both of them are mistranslation errors and the other one is a word order error.

Since Google translate is not programmed to detect and analyze the context of a text, it has translated "bakkal" which in this context means [the man who works in the store], into "general store" which indicates a place instead of a person. This error is again a mistranslation error with a penalty point of ten (major error).

The other mistranslation error concerns "solid goods". In the source text, by writing "sağlam mal", the writer aimed to convey the meaning of [quality product] since in general "sağlam" means [durable, of good quality] however it does also have other meanings like [solid, hard]. Since the context of the story is unclear for Google translate, it has transferred "sağlam" with its other meaning which has nothing to do with the context of the text and mislead the target audience. In this respect, since the intended meaning and the message of the source text are not conveyed accurately, the error contributes to the accuracy error category and is considered as a major error with severity often.

In the last error of this example, there is a mistake in the word order of the phrase. The word "said" should have been at the beginning instead of the end of the sentence, because in that way the sentence is meaningless and confusing for the target reader. This error type is named word order error and corresponds to the fluency category and carries a weight of 10 (major error).

Table 18: Example 18

Source Text	Human Translation	Google Translate
Ben de pastırmalı yumurta yedim. Bir de konserve yalancı dolma. (Nesin, 2012, p. 81)	There I got some omelette and ate them with canned food. And I topped it all with spaghetti. (Shaikh, 2009, p. 45)	I ate bacon and eggs too. And canned stuffed stuffed.

This example contains two translation errors. The first error corresponds to the addition error from the accuracy category. The word "too" is added inappropriately to the target text by google translate. That word has not any Turkish equivalent in the source text. The error is a major error since this addition could confuse the reader and violate the smooth flow of the reading.

The second error is a duplication error which contributes to the fluency error category. Duplication errors occur when a word or longer portion of a text is repeated in an unintentional way (Lommel et al., 2015b). The word "stuffed" is repeated twice in the translation by Google translate which is an unacceptable situation. The error contains a penalty point of ten (major error).

Table 19: Example 19

Source Text	Human Translation	Google Translate
Bir cankurtaran arabasıyla zor hastaneye attılar. Bayılmışım. (Nesin, 2012, p. 82)	By the time I reached the hospital, I had fainted because of severe pain. (Shaikh, 2009, p. 45)	They rushed him to the difficult hospital with a lifeboat. I passed out.

In this example, "they rushed him to the difficult hospital" is the translation of "zor hastaneye attılar" which is an incorrect translation and contains a mistranslation error from the accuracy category since by saying "zor hastaneye attılar" the writer is trying to emphasize that [they scarcely reached him to the hospital]. The translation by Google translate is absolutely an unacceptable and meaningless translation with a weight of ten (major error).

The other translation error corresponds to the mistranslation of the word "cankurtaran arabası". The English equivalent for that expression is [lifeguard vehicle], however, Google translate translated as "lifeboat" which is far away from the accurate and correct translation. This translation is also a major error.

Table 20: Example 20

Source Text	Human Translation	Google Translate
Ne? diye haykırdı, ölmediğine dua et. (Nesin, 2012, p. 82)	You got away unharmed. Thank your stars, you are still alive. (Shaikh, 2009, p. 46)	What? she cried, pray she's not dead.

As it is not definite in the story that the doctor was a man or a woman, the translation of Google translate as "she" could be acceptable however, the sentence "pray she's not dead" is not an acceptable translation at all since, the doctor is talking to the protagonist of the story and instead of "she", Google translate should have translated as "you". The error detected is a mistranslation error belonging to the accuracy category with a penalty point of ten (major error).

Table 21: Example 21

Source Text	Human Translation	Google Translate
Hastaneden çıkarken düşünüyordum: Peki biz ne yapacağız? Yaşamaya bırakmıyorlar, ölmeye bırakmıyorlar… Amma rahat rahat sürünebiliriz. (Nesin, 2012, p. 82)	While returning from hospital, my mind continued asking me the question: "If poor people like me are not destined to live a comfortable life, why are we denied a comfortable death?" (Shaikh, 2009, p. 46)	As I was leaving the hospital I was thinking: So what are we going to do? They don't let them live, they don't let them die... But we can crawl in peace.

In the last example, two translation errors are found. Both are mistranslation errors from the accuracy error category. In this sentence of the source text, "yaşamaya

bırakmıyorlar, ölmeye bırakmıyorlar…" the protagonist is talking, and asking the question to himself or maybe all of us (the readers), thus, the sentence, "they don't let them live, they don't let them die…" should have been translated as "they don't let us live, they don't let us die…". This mistranslation error is considered to be a major error with a penalty point of ten since the translation above is highly confusing and could disturb and bother the target reader.

When it comes to the second translation error, the sentence "amma rahat rahat sürünebiliriz" in the source text, stands for "living a life of great misery". The actual and the common meaning of the verb "sürünmek" is [to crawl], however, again since Google translate is far away from the context of the story it has been mistranslated as "but we can crawl in peace" which is a word for word translation. This translation error contributes to the accuracy error category as a mistranslation error and contains a weight of ten (major error).

3.2.1. The summary of translation errors found in I Committed Suicide

In this part of the study, a summary of all the errors found in the first sample (I Committed Suicide) is conducted. 1039 words of the English translation of the short story were examined, all the translation errors by the Google neural machine translation were identified and categorized according to the decision tree presented by the Multidimensional Quality Metrics.

In total, 26 errors were detected, 25 of them were major errors and 1 of them was a minor error.

The table below presents a summary of error types identified in the sample, along with their weights (critical, major, minor) and their quantity (Koçer, 2018).

Table 22: Summary of Translation Errors

Error Types	Minor Errors	Major errors	Critical Errors	Total
Accuracy: mistranslation	0	18	0	18
Accuracy: untranslated	0	2	0	2
Accuracy: addition	0	2	0	2
Accuracy: overly literal	0	1	0	1
Fluency: duplication	1	1	0	2
Fluency: word order	0	1	0	1
Total	1	25	0	26

Adapted from Koçer, 2018

3.2.2. Scoring the translation of I Committed Suicide

The Multidimensional Quality Metrics framework provides a formula in order to calculate the quality of a translation as a percentage. To obtain the score of a translation, one must detect errors, put them into their appropriate error category, and indicate errors weights and severities.

A critical error contains a penalty point of 100, a major error has a penalty point of 10 and, a minor error has a penalty point of 1.

In the end, errors have to be multiplied by their severity value to obtain a penalty point suitable for the formula.

The formula is presented as follows:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

In the translation of I Committed Suicide, 25 major errors and 1 minor error were detected. By putting these numbers into the formula, the following result is obtained:

$$Score = 1 - \frac{(1.1) + (25.10)}{1039} = 75\%$$

The obtained result shows that the translation quality score of I Committed Suicide by the Google neural machine translation from Turkish into English is 75%.

3.3. The Evaluation of The Poem Pins

According to the discussions made in the first chapter concerning the translation of literary texts, the translation of those texts especially poems is quite different when it comes to machine translations. As Wood (1994) stated, "poetry cannot be translated; it can only be recreated in the new language."

Poems carry the soul and the emotional and imaginary power of the poet, therefore in the process of translating poetry, human power and the ability to recreate that piece of art are required (Landers, 2001).

Due to its distinct features such as graphological, grammatical, semantic, lexical, and phonological features, poetry transition gains a different position in comparison with other text types.

Prosodic features, imagery, sound, rhythm, elaborate syntax, meter, rhyme, narrative techniques are the most typical characteristic of literary text types especially poems.

From all of these explanations it can be inferred that without human power, poetry translation remains something impossible. However, in order to prove that fact, the following analysis will be conducted.

The following poem by Can Yücel is the second sample for literary text types with a 172-word length. It should be specified that each translator has a different style and method in recreating poems and a single poem might have different translation versions. The following sample is translated by Ruth Christie.

The evaluation of the translation of the poem named Pins by Can Yücel is presented as follows:

Table 23: Example 1

Source Text	Human Translation	Google Translate
Anam babama aşık olmuş, Babam da anama. (Yücel, 2017, p.77)	My mother was in love with my father, and he with her. (Christie, 1992, p.118)	My mother fell in love with my father, My father is also my mother.

According to the Multidimensional Quality Metrics and the decision tree, the error detected in this example is a mistranslation error from the accuracy error category. In the poem, the poet wrote as "babam da anama" which emphasizes the [love of his father to her mother], however for detecting such nuance the translator or

the machine translate should be aware of the context of the poem. Without fully understanding the previous sentence, the translation of “babam da anama” is quite challenging.

Since Google translate cannot detect and analyze the context of writing especially literary texts such as poems, it can mistranslate sentences. This translation error is a major error with a penalty point of ten.

Table 24: Example 2

Source Text	Human Translation	Google Translate
Gezelim bu Çarşamba demiş babam. (Yücel, 2017, p.77)	Let’s take a walk on Wednesday, said my father. (Christie, 1992, p.118)	Let's travel this Wednesday, my father said.

Another accuracy error is found in this translation since the error is related to the difference in the meaning between the source text and the target text (Lommel et al., 2015b).

By saying “gezelim” the poet draws the attention of the reader to [take a walk], however, Google translate has been translated as “travel” which turned on a dime and changed the subject of the poem.

According to the decision tree, the detected translation error is a mistranslation error and is accepted as a major error since the intended message of the writer is not transferred correctly.

Table 25: Example 3

Source Text	Human Translation	Google Translate
Ablasının nişanlığını istemiş ödünç, (Yücel, 2017, p.77)	and asked to borrow her sister’s wedding dress. (Christie, 1992, p.118)	He asked for his sister’s engagement to borrow

This example contains two translation errors. The first one concerns the wrong translation of the subject of the sentence. When looking at the context of the poem, the poet’s mother asked for her sister’s engagement dress. This means that, instead of “he asked for his sister's betrothal to borrow”, the transition should be as [she asked for her sister’s engagement dress to borrow]. Again, another mistranslation error concerning the subject of the sentence has occurred in this example. The error carries a penalty point of ten (major error).

The other translation error is an omission error from the accuracy error category. In this poem, the word "nişanlığı" stands for [wedding dress or engagement dress], however, in the translation by Google translate the word "dress" is omitted. Again, the error is a major error because "he asked for his sister's engagement to borrow" miss the most crucial word which is "dress" to be meaningful.

Table 26: Example 4

Source Text	Human Translation	Google Translate
Teyzem daha toplu, oturmamış üstüne entari, (Yücel, 2017, p.77)	My aunt being fatter, her dress didn't fit my mother, (Christie, 1992, p.118)	My aunt is more tidy, she didn't sit in a dress,

By writing "teyzem daha toplu" the poet, is trying to explain that [his aunt was fatter than his mother], but Google translate transferred it as "my aunt is more tidy". The reason why Google translate has translated "toplu" as "tidy" is because that the word "toplu" has two meanings. One is [being tidy] and the other one is [being fat]. Again, as Google translate is not aware of the context of the poem it has chosen the wrong equivalent to transfer to the target audience. According to the decision tree presented by the Multidimensional Quality Metrics, this error is considered as a mistranslation error with a weight of ten (major error).

Another translation error that is detected is again a mistranslation error. "Oturmamış üstüne entari" refers to [her dress didn't fit my mother], however, this sentence is transferred by Google translate as "she didn't sit in a dress", which is a meaningless sentence and do not convey any intended message of the source text and must be reviewed. This translation error is among the major errors with a weight of ten.

Table 27: Example 5

Source Text	Human Translation	Google Translate
Teyelle, iğneyle ayarlamışlar üstüne anamın. (Yücel, 2017, p.77)	so they fixed it together on her with basting and pins. (Christie, 1992, p.118)	They set it up with tacking and needle, on top of my mother's.

This example contains two translation errors, the first one is a mistranslation error from the accuracy error category and the other one is a grammar error from the fluency error category.

In the translated sentence by Google translate: "They set it up with tacking and needle, on top of my mother's", "on top of my mother's" is not the accurate equivalent

for “ayarlamışlar üstüne anamın”, at the same it is a meaningless sentence without any message to be conveyed. Thus, the error is a mistranslation error with a penalty point of ten (major error).

This translated sentence contains another translation error which is a grammar error. In this sentence, the possessive is not used in the appropriate place. According to grammar rules, “mother’s” indicates that something belongs to the mother, however, in the source text, there is not an equivalent for that translation. This error is a major error because it has the potential to confuse and bother the target reader.

Table 28: Example 6

Source Text	Human Translation	Google Translate
Bebeğe götürmüş o Afrodit’i (Yücel, 2017, p.77)	brought his Aphrodite to Bebek. (Christie, 1992, p.118)	She took Aphrodite to the baby

According to the general context of the poem, this is the dad who took the mother to take a walk in Bebek (the name of a district in Istanbul), thus “she took Aphrodite to the baby” is a mistranslated translation and highly confusing. The translation error is a mistranslation error with a penalty point of ten (major error).

The other translation error indicated in this example is the translation of “Bebek” into “baby”.

“Bebek” is [the name of a district in Istanbul], and should be transferred as “Bebek” since it is a proper name (place name). However, Google translate transferred that proper name as “baby” which is the translation of its meaning.

According to the decision tree presented by the Multidimensional Quality Metrics, the error of this example is an entity error. Entity error belongs to the category of accuracy and happens in situations when the name of a person, place, or organization is translated incorrectly (Lommel et al., 2015b) and as the meaning of the final result does not transfer the intended message of the writer the error is considered to be a major error.

Table 29: Example 8

Source Text	Human Translation	Google Translate
Fistandaki iğneler batmaz mı eline! (Yücel, 2017, p.77)	didn’t those pins in the dress stick in his hand! (Christie, 1992, p.118)	Don't the needles in the fist sting in your hand!

Two translation errors have been detected in this example. The first one corresponds to the addition error from the accuracy error category and the second one is again a mistranslation error.

The word “fistan” used in the source text stands for [dress] however, Google translate has transferred that word as “fist” which carries totally another meaning different from “dress”, the reason why this translation error is an addition error is because the word “fist” is inappropriately added to the target text without being present in the source text. The error is a major error with a penalty point of ten.

The other translation error is a mistranslation error because the poet indicates that [those pins in the dress stick in his father’s hand] however, Google translate transferred that sentence as “in your hand” which is an incorrect translation and the message of the source text is not transferred properly. The error is among major errors and contains a penalty point of ten.

Table 30: Example 9

Source Text	Human Translation	Google Translate
Ay! Demiş bağırmış babam… (Yücel, 2017, p.77)	Ah! shouted my father— (Christie, 1992, p.118)	Moon! My father shouted…

According to the Cambridge Online Dictionary, an interjection is used to demonstrate a short and sudden expression of emotion. In this example though, in the source text “Ay” is used as an interjection by the poet’s father to express his feeling, however, at the same time “Ay” stands for [moon]. According to the context of the poem, the correct and accurate translation of “Ay” is “Ah” the same as the translation of the human translator. Again, the Google translate has mistranslated that word into its first meaning, which is “moon”.

The mistake made is a grave mistranslation error with a weight of ten (major error) and has to be post-edited immediately.

Table 31: Example 10

Source Text	Human Translation	Google Translate
Yaşamda da, şiirde de Böyle iğneli konuşmaklığım… (Yücel, 2017, p.77)	my manner of talking both in poetry and life is like that - full of pins. (Christie, 1992, p.118)	In life and in poetry My stingy talk like this…

The translation errors found in this example are grammar and mistranslation errors.

In the translation by Google translate, in the last phrase, the verb is missing. The translation must have been as [My stingy talk is like this] in order to be grammatically correct. This error corresponds to the fluency error category and is a major error since it violates the first and the most significant requirement for an understandable phrase which is grammar.

The last translation error is again a mistranslation error from the accuracy error category. "İğneli konuşma" mentioned in the source text stands for [causticity], however, Google translate transferred that expression as "stingy talk" which according to the online Cambridge dictionary, the word "stingy" means "someone who is not generous". This translation is not the appropriate equivalent for "iğneli konuşma" and prevents the transfer of the intended message of the poem. In this respect, the translation error is a major error and contains a penalty point of ten.

3.3.1. The summary of translation errors found in the poem Pins

This part of the thesis presents a summary of all the translation errors detected in the poem named Pins by Can Yücel. The English translation of Pins with 172-word counts by Google neural machine translation have been analyzed. Detected translation errors were discussed in detail in the previous part of the study. All translation errors were categorized according to the Multidimensional Quality Metrics Framework.

In total, 16 errors were obtained, all of them were major errors.

The table below presents a summary of error types identified in the sample, along with their weights (critical, major, minor) and their quantity (Koçer, 2018).

Table 32: Summary of Translation Errors

Error Types	Minor Errors	Major errors	Critical Errors	Total
Accuracy: mistranslation	0	11	0	11
Accuracy: entity	0	1	0	1
Accuracy: omission	0	1	0	1
Accuracy: addition	0	1	0	1
Fluency: grammar	0	2	0	2
Total	0	16	0	16

Adapted from Koçer, 2018

3.3.2. Scoring the translation of the poem Pins

The formula presented by the Multidimensional Quality Metrics framework for calculating the quality of a translation as a percentage is as follows:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

In the translation of the poem Pins by the Google neural machine translation from Turkish into English, 16 major errors have been detected. By putting these numbers into the formula, the following result is obtained:

$$Score = 1 - \frac{(16.10)}{172} = 7\%$$

The result shows that the translation quality score of the poem Pins by the Google neural machine translation from Turkish into English is 7%. All the percentages obtained in this chapter will be discussed in detail in the next chapter.

3.4. The Evaluation of Technical Texts's Sample

As mentioned before, technical texts contribute to the category of informative texts and their audiences are usually specific reader groups. These types of texts are written in order to give specific information on specific subjects, or teach something to the reader. In this regard, information written in the source text should be transferred and translated without any addition, omission, or change in the meaning and the accuracy of the text since each word's meaning count in those text types and carry crucial information. In this respect, this study aims to examine the performance of the Google neural machine translation in order to see to what extent this machine can translate these text types accurately and fluently.

In this part of the study, the English translation of four technical texts sample chosen randomly will be conducted. Samples are translated by the Google neural machine translation and the evaluation will be in the light of the Multidimensional Quality Metrics. The samples will be in the fields of economy, engineering, science, and social science.

The samples of the fields of engineering, science, and social science are chosen from the DergiPark Akademik's website and the sample of the field of economy is chosen from the Central Bank of the Republic of Turkey's website.

3.4.1. The engineering sample

The translation of the abstract of an academic study named "Conceptual Design and Simulation of Railway Machinist Excitation System for Transportation Safety" with a 281 word-length is picked for the evaluation of the engineering sample.

The translation by Google neural machine translation is analyzed as follows:

Table 33: Example 1

Source Text	Human Translation	Google translate
Devre üzerinde, treni temsilen sinyal üretici; titreşimlerin ve kapasitif değerlerin algılandığını temsil eden butonlar, alınan sinyallerin yükseltildiği opamplı yükselteç devresi, iki algılayıcıdan da alınan verilere göre makiniste bilgi gönderilmesine karar verecek olan bir karşılaştırıcı (VE kapısı), sinyallerin izlendiği dijital osiloskop ve deray algılandığında makinist uyarımında kullanılacak sesli/ışıklı uyarım sistemi (buzzer) bulunmaktadır. (Sümbül, Böğrek & Tunçer, 2021, p.1)	This signal generator representing the train on the circuit; the buttons representing the detection of vibrations and capacitive values, the opamp amplifier circuit in which the received signals are amplified, a comparator (AND gate) that will decide to send information to the machine according to the data received from both sensors, the digital oscilloscope where the signals are monitored and the audible/light stimulation system to be used in the mechanic warning when the derails are detected are available. (Sümbül, Böğrek & Tunçer, 2021, p.1)	On the circuit, the signal generator representing the train; Buttons representing the detection of vibrations and capacitive values, amplifier circuit with opamp in which the received signals are amplified, a comparator (VE gate) that will decide to send information to the machine according to the data received from both sensors, a digital oscilloscope where the signals are monitored, and an audible/light excitation system to be used in the driver warning when the derail is detected (buzzer) is available.

In this example, three translation errors are detected. The first one concerns the capitalization error of the fluency category.

There are 7 rules of capitalization in English. These are known as, capitalizing the first word of a sentence, capitalizing names and other proper names, capitalizing the first word of a quote, capitalizing days, months, and holidays, capitalizing most of the words in titles, capitalizing cities, countries, nationalities, and languages and capitalizing time periods and events (Lukyanchuk, 2021).

Any other capitalization except these rules is considered a translation error and must be reviewed and post edited by the translator.

The word "buttons" is capitalized in an inappropriate place in the sentence and violates the 7 rules of capitalization of English grammar. The error contains a weight of 1 (minor error) since it does not affect the meaning of the sentence in a big way.

The second error belongs to the category of accuracy as an untranslated error. (VE kapısı) is remained untranslated and abandoned as (VE gate). This error is

a major error since it could confuse the target reader and does not infer the intended meaning of the source text.

The last error is a word order error of the category of fluency. In the original translation, the translator chose to omit the word “buzzer” because “buzzer” is put in the parentheses which means that it is a piece of additional information and can be omitted. However, Google translate transferred that word to the target text but put it in the wrong place in the sentence and violated the word order of the phrase, therefore this error is a major error since it affects the intended meaning to be transferred.

Table 34: Example 2

Source Text	Human Translation	Google translate
Bunun neticesi olarak da ölümlü / yaralanmalı / maddi kayıplı kazaları engellenerek ülkemize tren ile güven ile ulaşım konusunda yeni bir literatür kazandırılacağına inanılmaktadır. (Sümbül, Böğrek & Tunçer, 2021, p.1)	As a result of this, it is believed that a new literature will be brought to our country on safe transportation by train by preventing accidents with death/injury/financial loss. (Sümbül, Böğrek & Tunçer, 2021, p.1)	As a result of this, it is believed that a new literature on safe transportation by train will be gained to our country by preventing fatal / injury / material loss accidents.

The translation error in this example is a mistranslation error under the category of accuracy. “Maddi kayıp” should have been translated as [financial loss or financial damage] instead of “material loss”. This error is considered to be a minor error since it does not violate the transfer of the intended meaning however does not infer the exact meaning as well.

3.4.1.1. The summary of translation errors found in the engineering sample

In the 281 word-length text in total four translation errors are detected. Two of them are major errors and two of them correspond to the group of minor errors. All of the translation errors are analyzed and discussed in detail in the previous part of the study and categorized according to the Multidimensional Quality Metrics. The table below demonstrates a summary of error types identified in the sample, along with their weights (critical, major, minor) and their quantity (Koçer, 2018).

Table 35: Summary of Translation Errors

Error Types	Minor Errors	Major errors	Critical Errors	Total
Accuracy: untranslated	0	1	0	1
Accuracy: mistranslation	1	0	0	1
Fluency: capitalization	1	0	0	1
Fluency: word order	0	1	0	1
Total	2	2	0	4

Adapted from Koçer, 2018

3.4.1.2. Scoring the translation of the engineering sample

The formula revealed by the Multidimensional Quality Metrics Framework for calculating the quality of a translation as a percentage is as follows:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

The translation quality score of this sample is calculated below:

$$Score = 1 - \frac{(2.1) + (2.10)}{281} = 92\%$$

The result shows that the translation quality score of the engineering sample translated by the Google neural machine translation from Turkish into English is 92%. All the percentages obtained in this chapter will be discussed in detail in the next chapter.

3.4.2. The social science sample

The translation of the abstract of an academic study named "Transformation of the Self with Sufism: Ayşe Şasa" with a 272 word-length will be used for the evaluation of the translation of social science sample by Google neural machine translation.

The evaluation is demonstrated as follows:

Table 36: Example 1

Source Text	Human Translation	Google translate
Bu nedenle Şasa, hakikati düşünmüş, düşlemiş ve iç alemine doğru bir keşfe çıkmıştır. (Soysal, 2021, p.114).	For this reason, Şasa thought and dreamed of the truth and went on a journey towards her inner world. (Soysal, 2021, p.114).	For this reason, Sasa thought and dreamed of the truth and went on a journey towards his inner world.

This example contains two translation errors. The first one is an entity error from the accuracy error category and the second one is a mistranslation error which is also from the accuracy error category.

"Şasa" is the name of a person (a proper name), which should be conveyed to the target language as it is written in the source text. However, Google translate transferred as "Sasa" which is a wrong translation. Since the proper name is translated incorrectly, the translation error is an entity error, however, as the error does not affect the meaning of the translated text and conveys the intended message of the author, the error is a minor error with a severity of one.

The second error is a mistranslation error from the accuracy error category. In the whole source text, the given information is all about "Şasa" who is a woman (female). However, except for the first sentence of the source text which is translated correctly as (she/her), the other sentences are all translated as (he/his), which is a mistranslation error. Since Google translate is not aware of the context, it cannot distinguish the pronoun perfectly. In this respect, this error is classified as a major error with a penalty point of ten, because the error has the potential to confuse the reader in a big way.

Table 37: Example 2

Source Text	Human Translation	Google translate
Zamanla bu sıkıntılar içerisinde Şasa'yı manevi yücelmeye götüren şey İbn-i Arabi'nin Füsusu'l-Hikem adlı eseri olmuştur. (Soysal, 2021, p.114).	Over time, the thing that led Şasa to spiritual exaltation in these troubles was İbn-i Arabi's work called Füsusu'l -Hikem. (Soysal, 2021, p.114).	Over time, the thing that led Shasa to spiritual exaltation in these troubles was Ibn Arabi's Füsusu'l-Hikem.

The error detected in this example, is again an entity error from the accuracy error category with a severity of one (minor error). This time "Şasa" is transferred as "Shasa" which is an incorrect translation. This situation is not consistent, since the target audience faces three different proper names in the text (Şasa, Sasa, and Shasa).

3.4.2.1. The summary of translation errors found in the social science sample

In this sample, in total 3 translation errors have been found which both of them are minor errors and the other one is a major error. The errors were discussed in detail in the previous part and categorized according to the Multidimensional Quality Metrics. The table below shows a summary of error types detected in the social science sample with their weights (critical, major, minor) and their quantity (Koçer, 2018).

Table 38: Summary of Translation Errors

Error Types	Minor Errors	Major errors	Critical Errors	Total
Accuracy: mistranslation	0	1	0	1
Accuracy: entity	2	0	0	2
Total	2	1	0	3

Adapted from Koçer, 2018

3.4.2.2. Scoring the translation of the social science sample

According to the scoring formula of the Multidimensional Quality Metrics which is presented below:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

The translation quality score of that sample is calculated as follows:

$$Score = 1 - \frac{(2.1) + (1.10)}{272} = 95\%$$

According to the result, the translation quality score of the social science sample by the Google neural machine translation from Turkish into English is 95%.

3.4.3. The science sample

The translation of the abstract of an academic study named "The Investigation of the Effects of Deltamethrin on Carassius gibelio (Bloch, 1782) by Electrophoretic and Biochemical Methods" prepared in 2021 by Gey and Ersan with a 291 word-length will be used for the analysis of the English translation of science sample by the Google neural machıne translation.

The analysis is presented as follows:

Table 39: Example 1

Source Text	Human Translation	Google translate
Bu araştırma, Carassius gibelio (Havuz balığı) üzerine Deltamethrin'in etkilerinin incelendiği ekotoksikolojik bir çalışmadır. (Ersan & Gey, 2021, p.1713)	This research is an ecotoxicological study examining the effects of Deltamethrin on Carassius gibelio (Prussian carp). (Ersan & Gey, 2021, p.1713)	This research is an ecotoxicological study examining the effects of Deltamethrin on Carassius gibelio (Pool fish).

In this example, from the category of accuracy, mistranslation error is detected. “Havuz balığı” which means [Prussian carp] is translated as “pool fish” by the Google translate. This translation is a word-for-word translation and does not convey the intended meaning of the expression. Therefore, this error is a major error. In technical and academic texts, each word should be translated precisely and correctly, since the meaning of all of them count.

Table 40: Example 2

Source Text	Human Translation	Google translate
Farklı dozlardaki Deltamethrin uygulamasına bağlı olarak serum protein ekspresyonları, karaciğer enzim düzeyleri, oksidatif stres ve bazı kan biyokimya parametreleri araştırılmıştır. (Ersan & Gey, 2021, p.1713)	Serum protein expressions, liver enzyme levels, oxidative stress and some blood biochemistry parameters were investigated depending on the application of Deltamethrin at different doses. (Ersan & Gey, 2021, p.1713)	Depending on the administration of different doses of Deltamethrin, serum protein expressions, liver enzyme levels, oxidative stress and some blood biochemistry parameters were investigated.

This example also contains a mistranslation error. Deltamethrin is a chemical that must be used with the verb “application” instead of “administration” which is used by Google translate. This translation error is in the category of accuracy since it corresponds to the difference in the meaning of the source text and the target text (Lommel et al., 2015b) and contains a weight of 1 (minor).

Table 41: Example 3

Source Text	Human Translation	Google translate
Deltamethrin’in etkisinde olan deney gruplarındaki balıkların kan dokusunda bazı biyokimyasal parametrelerden Alanin amino transferaz (ALT) ve Kolesterol düzeylerinde istatistiksel olarak önemli farklar saptanmıştır ($p<0.05$). (Ersan & Gey, 2021, p.1713)	There were statistically significant differences of some biochemical parameters like Alanine aminotransferase (ALT) and Cholesterol levels in the blood tissue of the fish in the experimental groups affected by Deltamethrin ($p <0.05$). (Ersan & Gey, 2021, p.1713)	Statistically significant differences were found in blood tissue of some biochemical parameters Alanine amino transferase (ALT) and Cholesterol levels of fish in the experimental groups under the influence of deltamethrin ($p<0.05$).

Word order error is the translation error from the category of fluency detected in this example. In the source, the writer is talking about the “Cholesterol levels in the blood tissue of the fish” however, Google translate translated that sentence as “Cholesterol levels of fish” and used “blood tissue of some biochemical” which is a wrong translation and does not transfer the information in the source text fluently and as mentioned before, these texts are technical and academic texts and carry crucial information that should be transferred to the target audience accurately and fluently, therefore the translation error is a major error.

Table 42: Example 4

Source Text	Human Translation	Google translate
Sonuç olarak, Deltamethein'in Carassius gibelio balığın uygulanan doz ve sürede toksik etki yaparak serum protein ekspresyonları, karaciğer enzim düzeyleri, oksidatif stres ve bazı kan biyokimya parametreleri üzerinde önemli değişiklikler oluşturduğu saptanmıştır. (Ersan & Gey, 2021, p.1713)	As a result, Deltamethrin was found to cause significant changes by toxic effects in serum protein expressions, liver enzyme levels, oxidative stress and some blood biochemistry parameters on Carassius gibelio. (Ersan & Gey, 2021, p.1713)	As a result, it was determined that Deltamethein caused significant changes in serum protein expressions, liver enzyme levels, oxidative stress and some blood biochemistry parameters by making a toxic effect at the dose and time applied to Carassius gibelio fish.

The last example contains an addition error from the accuracy category. "Carassius gibelio" is already the name of a fish and is used just as "Carassius gibelio", however, Google translate added the word fish after "Carassius gibelio" which is a wrong translation. The error contains a weight of 1 (minor).

3.4.3.1. The summary of translation errors found in the science sample

The table below will demonstrate a summary of the translation errors by Google neural machine translation detected in the science sample of the technical texts. The sample contains 291 words and all the translation errors were explained in detail and categorized according to the Multidimensional Quality Metrics. In total 4 errors have been found, 2 of them were major errors and the other ones were minor errors.

The table below presents a summary of error types identified in the sample, along with their weights (critical, major, minor) and their quantity (Koçer, 2018).

Table 43: Summary of Translation Errors

Error Types	Minor Errors	Major Errors	Critical Errors	Total
Accuracy: mistranslation	1	1	0	2
Accuracy: addition	1	0	0	1
Fluency: word order	0	1	0	1
Total	2	2	0	4

Adapted from Koçer, 2018

3.4.3.2. Scoring the translation of the science sample

In the light of the formula presented by the Multidimensional Quality Metrics which is as follows:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

The translation quality score by the Google neural machine translation for the science sample is calculated below:

$$Score = 1 - \frac{(2.1) + (2.10)}{291} = 92\%$$

According to the result, the translation quality score of the science sample by the Google neural machine translation from Turkish into English is 92%. The result will be discussed in detail in the next chapter.

3.4.4. The economy sample

As mentioned in the second chapter, the sample concerning the economy text type is chosen from the Central Bank of the Republic of Turkey's website. The translation of a particular part of the Inflation Report of 2021 by Google neural machine translation will be analyzed in detail in the light of Multidimensional Quality Metrics. The sample contains 192 words.

The analysis is presented as follows:

Table 44: Example 1

Source Text	Human Translation	Google translate
Önümüzdeki dönemde, ABD tahvil faizleri bileşenlerinin seyri, Türkiye gibi GOÜ'lerin varlıklarına yönelik risk iştahı açısından önem arz etmektedir. (Türkiye Cumhuriyeti Merkez Bankası, 2021, p.60).	In the coming period, the course of the components of the US Treasury bond yields is important in terms of the risk appetite for the assets of developing countries like Turkey. (Türkiye Cumhuriyeti Merkez Bankası, 2021, p.60).	In the upcoming period, the course of the US bond interest components is important in terms of the risk appetite for the assets of EMs like Turkey.

The error concerning this sample is a mistranslation error of the accuracy category. In Turkish, "GOÜ" is the abbreviation of [developing countries]. Google translate translated that abbreviation as "EM" which does not have any equivalent in the target culture and language and is remained as an incorrect translation and could confuse the target audience in a big way. Therefore, this error is a major error.

3.4.4.1. The summary of translation errors found in the economy sample

From the sample above, only one translation error has been detected which is a major error. The error was categorized according to the Multidimensional Quality Metrics and discussed in the previous part of the study.

The table below shows a summary of the error type detected in the economy sample with its weights (critical, major, minor) along with its quantity (Koçer, 2018).

Table 45: Summary of Translation Errors

Error Types	Minor Errors	Major Errors	Critical Errors	Total
Accuracy: mistranslation	0	1	0	1
Total	0	1	0	1

Adapted from Koçer, 2018

3.4.4.2. Scoring the translation of the economy sample

According to the scoring formula presented by the Multidimensional Quality Metrics which is as follows:

$$Score = 1 - \frac{Penalties}{Word\ Count}$$

The translation quality score of the economy sample is calculated below:

$$Score = 1 - \frac{(1.10)}{192} = 94\%$$

In the light of the obtained result, the translation quality score of the economy sample by Google neural machine translation from Turkish into English is 94%.

3.5. The Summary of All Obtained Translation Scores

In the previous parts of the study, the English translation of all samples by Google neural machine translation has been analyzed in detail. All translation errors were detected precisely and categorized according to the MQM decision tree and discussed in detail.

As mentioned before, this study aims to compare the performance of Google neural machine translation between the translation of technical texts and literary texts translated from Turkish into English in the light of the Multidimensional Quality

Metrics. In this respect, the table below will demonstrate all the scores obtained from the translation of all samples in order to present a better look at the process.

Obtained translation scores

Table 46: Summary of All Obtained Translation Scores

	Literary Samples	Technical Samples
I Committed Suicide	75%	—
Pins	7%	—
Engineering Sample	—	92%
Social Science Sample	—	95%
Science Sample	—	92%
Economy Sample	—	94%

All obtained results will be compared and contrasted with each other and discussed in detail in the next chapter.

DISCUSSION AND CONCLUSION

This study examined the performance of Google neural machine translation between the translation of technical texts and literary texts translated from Turkish into English in the light of the Multidimensional Quality Metrics, to see to what extent Google neural machine translation is able to translate those text types in an accurate and fluent way or which text type is translated with good quality based on the translation quality score obtained from the evaluation made in the previous chapter.

In this regard, for the evaluation of technical texts, four samples in the fields of economy, social science, engineering, and science have been analyzed in detail and for the evaluation of literary texts two samples have been chosen, the first one was a short story by Aziz Nesin named "I Committed Suicide" and the other sample was a poem by Can Yücel named "pins".

Translation errors in each sample have been detected and categorized according to the decision tree presented by the Multidimensional Quality Metrics and analyzed in detail by giving comments on each error. At last, the translation quality score of each sample has been calculated in percentages.

In this respect, the answer to each research question presented in the introductory section of the thesis is conducted as follows:

1. *To what extend can Google translate be used in the translation of literary texts?*

According to the translation quality scores obtained from the translation of literary texts with the formula presented by the Multidimensional Quality Metrics, the translation quality score of the poem sample was 7% and the translation quality score of the short story sample was 75%. These results show that Google translate failed in the translation of the poem sample, however by using post-editing it can be used in the translation of short stories.

According to O'Brien (2007), recent researches from the industry revealed that by using machine translation and post-editing, it is possible to increase creativity, productivity, and at the same time it can help translators in saving time and energy.

This study supports the productivity and creativity aspect of post-editing with an example of the translation evaluation of the short story by Aziz Nesin presented in

the third chapter. Aziz Nesin, invented specific vocabulary and idioms by himself to emphasize the aesthetic aspect of his work. “Mortimani hastalığı” is one of those expressions which in Aziz Nesin’s vocabulary conveys the meaning of “having the tendency to commit suicide”. In this example, Google translate translated “mortimani hastalığı” into “mortimania” which is a creative translation by Google translate. The only inadequacy about this translation is that without post-editing and giving a footnote about what actually “mortimania” means, the translation could be meaningless and confusing for the target reader, since “mortimani hastalığı” is an expression invented by the author of the source text. Therefore, with post-editing and giving a footnote about that expression, the final result could be better than the original translation.

The example above is compatible with the study by Cadwell, Castilho, O’Brien & Mitchell (2016) who had reported from their focus groups with translators that “using MT gives them inspiration or ideas that they would not otherwise have and helps to ‘kick-start’ the translation process for them” (p.235 cited in Moorkens, Toral, Castilho & Way, 2018, p. 251).

In this respect, from obtained results, it can be inferred that Google translate can be used in the translation of short stories by post-editing the translation.

2. *To what extend can Google translate be used in the translation of technical texts?*

When it comes to the translation quality scores obtained from the technical text samples, results were 92% for the engineering sample, 95% for the social science sample, 92% for the science sample, and 94% for the economy sample. These findings demonstrate that a light post-editing could help to use the final results easily since obtained percentages are quite satisfying.

Even these results are compatible with Hutchin’s (1995) statement who indicated that while post-editing is common, machine translation production can be left unedited or only lightly revised in certain cases, such as when it is intended only for specialists familiar with the text topic or output may also be used as a 'pre-translation,' or a rough draft for a human translator.

3. *Under which error category of MQM do translation errors in Google translate of technical texts fall?*

From four technical text samples, in total 12 translation errors by Google translate have been detected. According to the decision tree presented by the Multidimensional Quality Metrics, 9 of them were from the accuracy error category and 3 of them were from the fluency error category. From these results, it can be inferred that most of the translation errors of the technical texts translated by Google translate are from the accuracy error category.

4. *Under which error category of MQM do translation erros in Google trabslate of literary texts fall?*

For the evaluation of literary texts, two samples have been analyzed. One of them was a short story by Aziz Nesin and the other one was a poem by Can Yücel.

In the short story sample, in total, 26 translation errors have been detected. By classifying them according to the decision tree presented by the Multidimensional Quality Metrics, 23 errors were accuracy errors and 3 errors were fluency errors.

For the poem sample, in total 16 translation errors have been found. 14 of them were accuracy errors and 2 of them were fluency errors.

Results show that most of the translation errors of the literary texts translated by Google translate are from the accuracy error category.

From all of these results it can be suggested that, in the translation of both technical and literary text types, according to the decision tree of the MQM framework, most of the errors are from the accuracy error category.

5. *Which text type is more suitable for being translated by Google translate?*

The score obtained regarding the translation quality of technical texts by using the formula presented by the Multidimensional Quality Metrics were respectively 92% for the engineering sample, 95% for the social science sample, 92% for the science sample and 94% for the economy sample and the translation quality score of literary texts were 75% for the short story sample and 7% for the poem sample.

According to the obtained data, it can be inferred that technical texts are more suitable to be translated by Google translate.

As mentioned in the first chapter, technical texts convey important information in order to inform the reader and teach them something, in this respect the language of technical texts is usually explicit and literal. Therefore, machine translation seems to show a good performance in the translation of technical texts since they contain short and unambiguous sentences and require a literal translation which is word-for-word and close to the source text rather than creative translation (Moorkens et al., 2018a).

It is also approved by Hutchins (1995) that Machine translation shows great potential in translating domain-specific text types (technical texts) in a controlled environment.

In this regard, results obtained from Google translate support the function of machine translation and as a common machine translation, Google translate has demonstrated a better performance in the translation of technical text type compared to the translation of literary texts.

When it comes to the translation of literary texts with Google translate the process of translation, the expectations of the target audience and the final results go to another phase. In general, in all languages, every word carries a certain number of meanings. While these words come together and are combined with other words in order to make meaningful sentences, among all the meaning that a word hold, just one of them get activated and become bold. This aspect is one of the characteristics of poems and all literary writings which distinguish them from other text types. Elements related to the style of a text such as metaphor, alliteration, metonymy, and rhyme push the translator to make choices regarding the literal meaning of the original text and bring that literal meaning to the target reader at the expense of losing some of them (Irvine & Jones, 2013).

Therefore, the translation of these types of text with machine translation gets quite challenging and despite the great progress and advance in the field of machine translation, there is no prospect of machine translate being useful in the translation of such type of text (literary texts) (Toral & Way, 2018).

However, in prose and informative texts (technical texts), each word conveys only one meaning therefore, their translation also becomes easier for the translators.

According to Paz (1971), “the greatest pessimism about the feasibility of translation has been concentrated on poetry” (p.155). Mounin (1963), stated the point that it is possible to translate the denotative meaning of a text however, the transfer of the connotative meaning is almost impossible since poetry is a mix of echoes, reflections, and the interaction of sounds with meanings that carries connotations.

Another theory concerning poetry translation belongs to Paul Valéry who stated that translating poetry is “producing analogous effects with different implements” (Valéry, cited in Paz, 1971, p. 160).

By saying that, Valéry pointed the idea that poetry translation is reproducing and recreating an original poem in another poem which means that translation and creation are parallel processes.

However, Paz (1971) disagrees with the point that the translation of poetry is almost an impossible task and supported his idea with the translation of Hugo and Unamuno’s poems by stating:

> Translation is very difficult no less difficult than writing do-called original texts but it is not impossible. The poems of Hugo and Unamuno illustrate that connotative meaning can be preserved if the poet-translator successfully reproduces the verbal situation, the poetic context, into which they are mounted (p.156).

Something which is very interesting about Paz is that in his writing in 1971, he envisioned that one-day technology will evolve and machine translation will become one of the main topics of translation studies, thus he asked himself the following question: “if they ever really translate, they too will perform a literary operation, and they too will produce what translators now do: literature” (p.157).

This question is also the main research question of this study which asks: which text type is more suitable to be translated by Google translate. This question is answered by calculating the quality of the translation by Google translate in the light of the Multidimensional Quality Metrics. Obtained scores show that the translation quality score of the poem sample is 7% and the translation quality score of the short story is sample is 75%. Compared to the scores obtained from technical text type which are 92% for the engineering sample, 95% for the social science sample, 92% for the science sample, and 94% for the economy sample it can be inferred that technical texts are more suitable to be translated by Google translate. And in order to answer the question asked by Paz, based on the acquired percentages, it can be said that machine

translation (Google translate) cannot perform a literary operation and cannot produce what translators do, at least in the translation of poems.

Besacier (2014) support this idea by stating that:

> Machine translation and post-editing (by non-profesional translators) might be a useful low-cost alternative to human translation of literary works for those willing to sacrifice a degree of quality (cited in Moorkens et al., 2018b, p. 244).

However, this does not mean that machine translation (Google translate) cannot be used in the translation of literary texts at all. Although literary texts seem to be viewed as a whole category, however, they are classified and described as genres (Moessner, 2001). Literary texts are classified into three main genres as prose, drama, and poetry (Lazar, 2007). Each literary genre is characterized and categorized according to its own language patterns, specific stylistic choices, and patterns of cultural orientation (Benzoukh, 2017). For instance, according to Benzoukh, (2017) short stories "take advantage of their setting and plot to expand new degrees of realism" however, "poetry is known of its various forms; it controls standard expectations about usage" (p. 247).

By taking into consideration the different features of each genre, the translation quality score obtained from the poem sample which is 7% shows that this genre is not suitable and appropriate to be translated by Google translate however, the translation quality score of the short story which is 75% demonstrates that short story can be translated by Google translate with the assistance of post-editing.

From these results, it can be inferred that the translation of all the genres of literary texts should not be evaluated in the same way, instead, the translation of each genre has to be reviewed in its own discipline since their translation by Google translate has demonstrated different performances.

The findings of this thesis have opened a new window into the performance of Google translate in relation to the translation of literary texts. Therefore, future studies can be conducted in this field in order to reach more information in accordance with the translation of different genres of literary texts by Google translate.

CONCLUSION

In order to make a comment on the usability and the quality of machine translation based on the results obtained from this study, it can be said that with post-editing the final result produced by Google neural machine translation, technical texts, and some of the literary text's genre can be translated by Google translate, however, when it comes to the poem genres, the Google neural machine translation will never be able to perform like a human translator since the machine does not have a soul.

Even, the participants of a study conducted by Moorkens et al. (2018b) supports this idea by stating that “it is scary and frightening to see that the machines are getting better, however, MT systems are still far from being a threat” (p.255) for human translators.

Also, this idea is compatible with the result of a study conducted by Koçer Güldal & İşisağ (2019) in which they concluded that “although Google Translate provides much quicker translations among a large number of languages, there is still need for human assistance” (p. 375).

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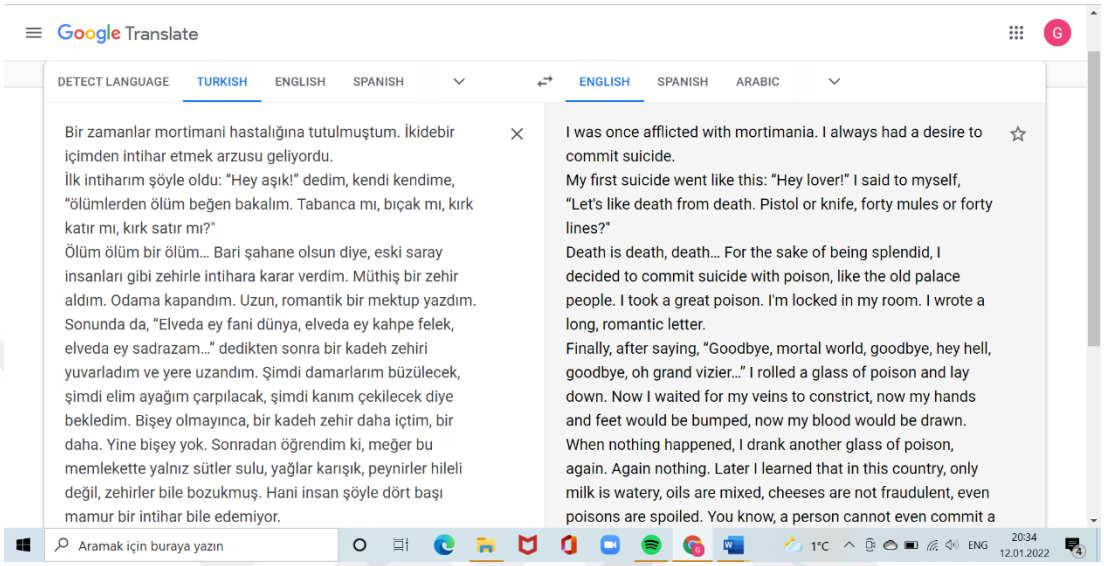
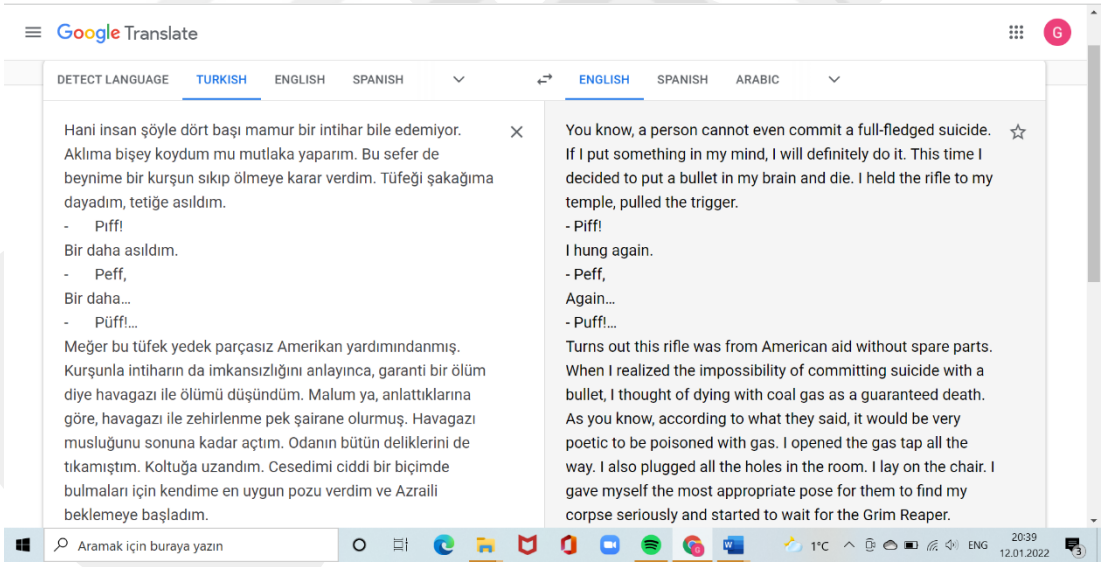
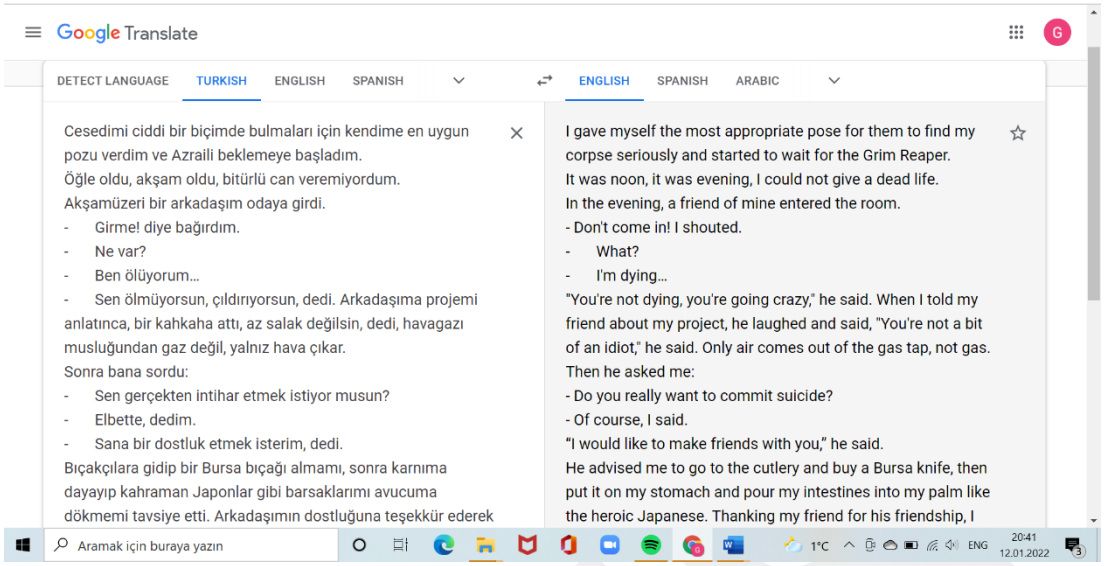
APPENDICES

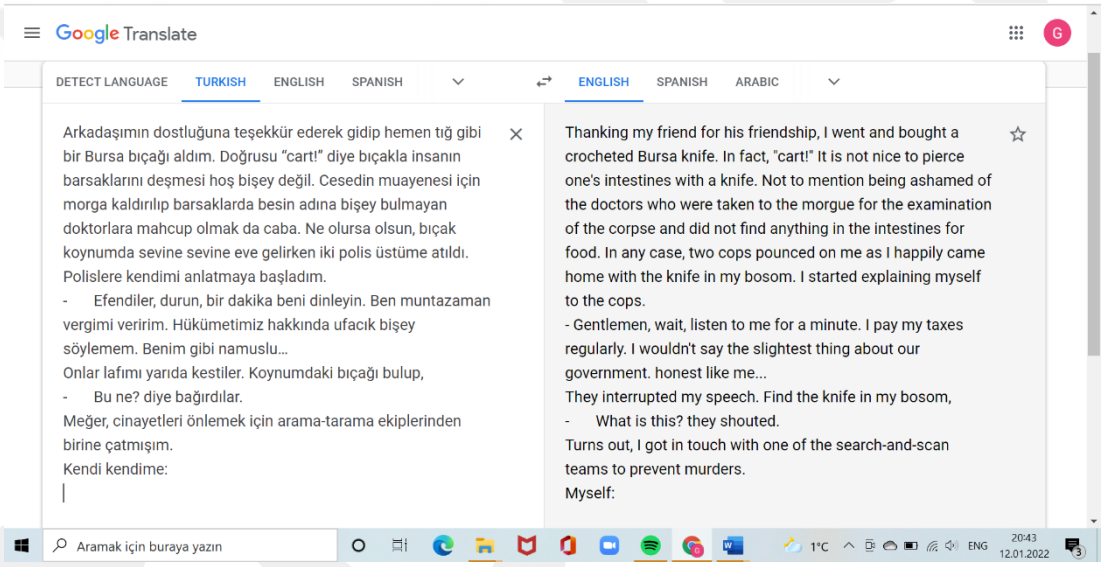
APPENDIX 1: PRINTSCREENS OF SAMPLE TRANSLATIONS

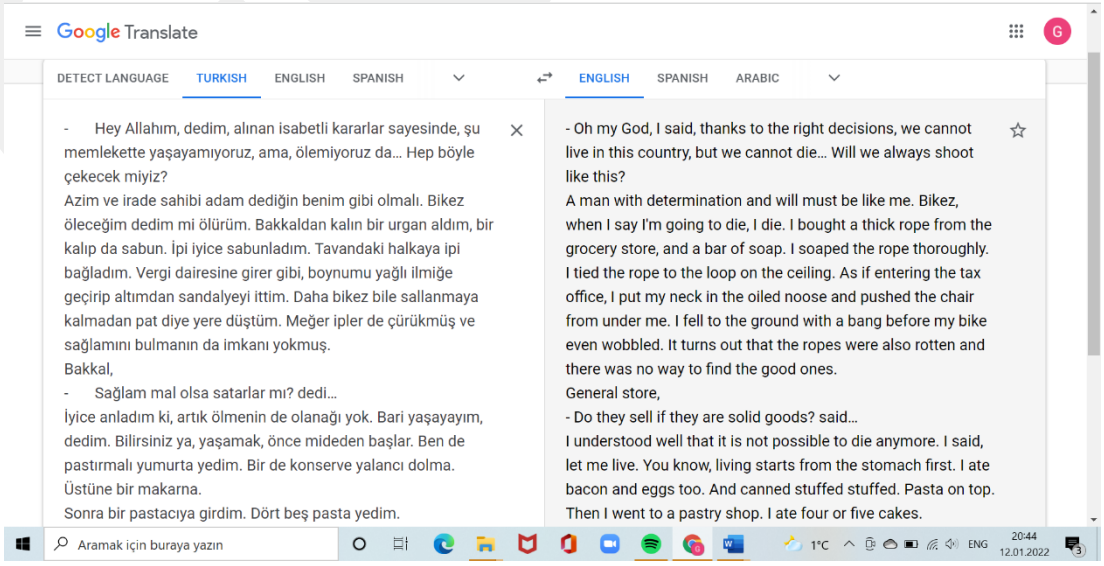
Printscreen 1: Short story translation

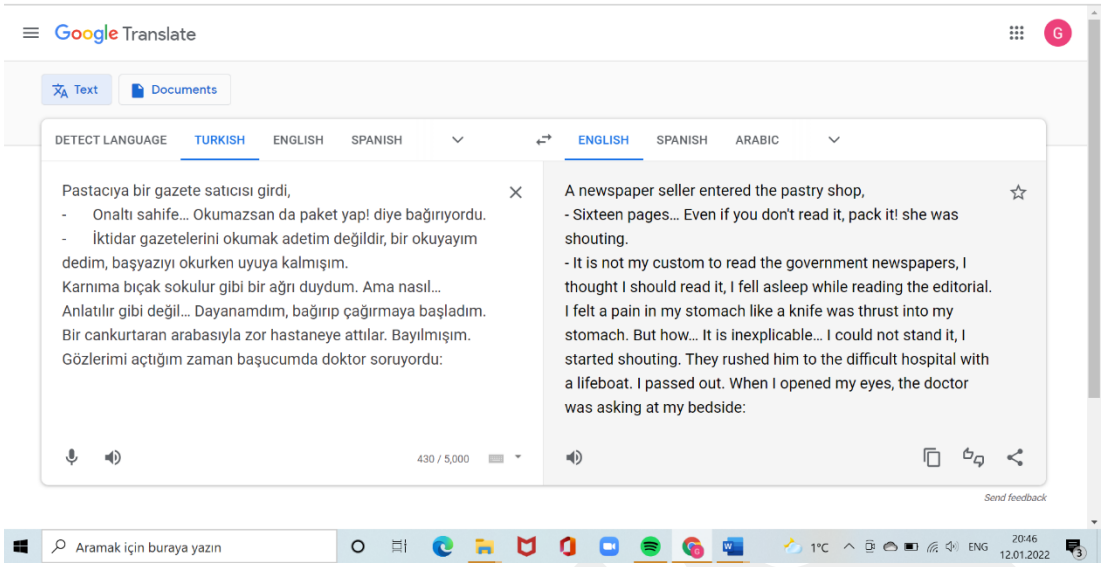


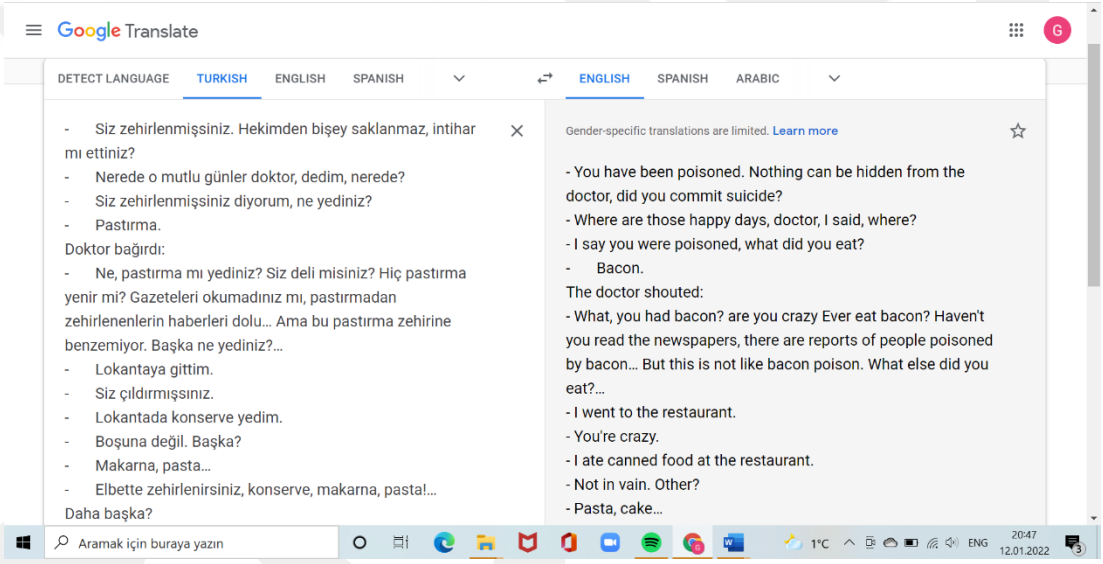


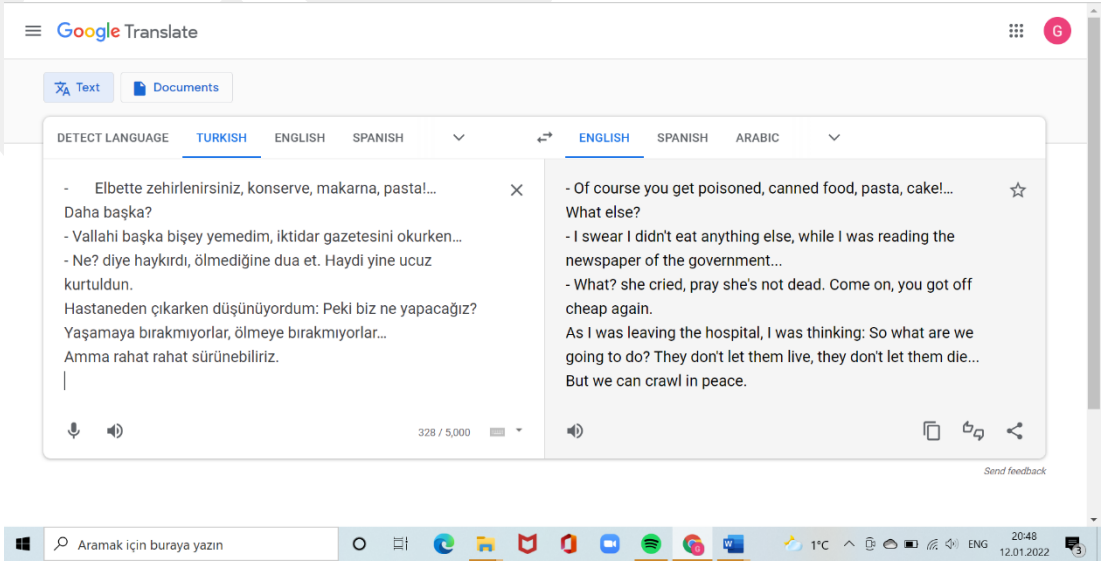

Google Translate
DETECT LANGUAGE TURKISH ENGLISH SPANISH
ENGLISH SPANISH ARABIC
Cesedimi ciddi bir biçimde bulmaları için kendime en uygun pozu verdim ve Azraili beklemeye başladım.
Öğle oldu, akşam oldu, bitürlü can veremiyordum.
Akşamüzeri bir arkadaşım odaya girdi.
- Girme! diye bağırdım.
- Ne var?
- Ben ölüyorum...
- Sen ölmüyorsun, çıldırıyorsun, dedi. Arkadaşıma projemi anlatınca, bir kahkaha attı, az salak değilsin, dedi, havagazı musluğundan gaz değil, yalnız hava çıkar.
Sonra bana sordu:
- Sen gerçekten intihar etmek istiyor musun?
- Elbette, dedim.
- Sana bir dostluk etmek isterim, dedi.
Bıçakçılara gidip bir Bursa bıçağı almamı, sonra karnıma dayayıp kahraman Japonlar gibi barsaklarımı avucuma dökmemi tavsiye etti. Arkadaşımın dostluğuna teşekkür ederek
I gave myself the most appropriate pose for them to find my corpse seriously and started to wait for the Grim Reaper.
It was noon, it was evening, I could not give a dead life.
In the evening, a friend of mine entered the room.
- Don't come in! I shouted.
- What?
- I'm dying...
"You're not dying, you're going crazy," he said. When I told my friend about my project, he laughed and said, "You're not a bit of an idiot," he said. Only air comes out of the gas tap, not gas.
Then he asked me:
- Do you really want to commit suicide?
- Of course, I said.
"I would like to make friends with you," he said.
He advised me to go to the cutlery and buy a Bursa knife, then put it on my stomach and pour my intestines into my palm like the heroic Japanese. Thanking my friend for his friendship, I
Aramak için buraya yazın
20:41
12.01.2022


Google Translate
DETECT LANGUAGE TURKISH ENGLISH SPANISH
ENGLISH SPANISH ARABIC
Arkadaşımın dostluğuna teşekkür ederek gidip hemen tığ gibi bir Bursa bıçağı aldım. Doğrusu "cart!" diye bıçakla insanın barsaklarını deşmesi hoş bişey değil. Cesedin muayenesi için morga kaldırılıp barsaklarda besin adına bişey bulmayan doktorlara mahcup olmak da caba. Ne olursa olsun, bıçak koynumda sevine sevine eve gelirken iki polis üstüme atıldı.
Polislere kendimi anlatmaya başladım.
- Efendiler, durun, bir dakika beni dinleyin. Ben muntazaman vergimi veririm. Hükümetimiz hakkında ufacık bişey söylemem. Benim gibi namuslu...
Onlar lafımı yarıda kestiler. Koynumdaki bıçağı bulup,
- Bu ne? diye bağırdılar.
Meğer, cinayetleri önlemek için arama-tarama ekiplerinden birine çatmışım.
Kendi kendime:
Thanking my friend for his friendship, I went and bought a crocheted Bursa knife. In fact, "cart!" It is not nice to pierce one's intestines with a knife. Not to mention being ashamed of the doctors who were taken to the morgue for the examination of the corpse and did not find anything in the intestines for food. In any case, two cops pounced on me as I happily came home with the knife in my bosom. I started explaining myself to the cops.
- Gentlemen, wait, listen to me for a minute. I pay my taxes regularly. I wouldn't say the slightest thing about our government. honest like me...
They interrupted my speech. Find the knife in my bosom,
- What is this? they shouted.
Turns out, I got in touch with one of the search-and-scan teams to prevent murders.
Myself:
Aramak için buraya yazın
20:43
12.01.2022

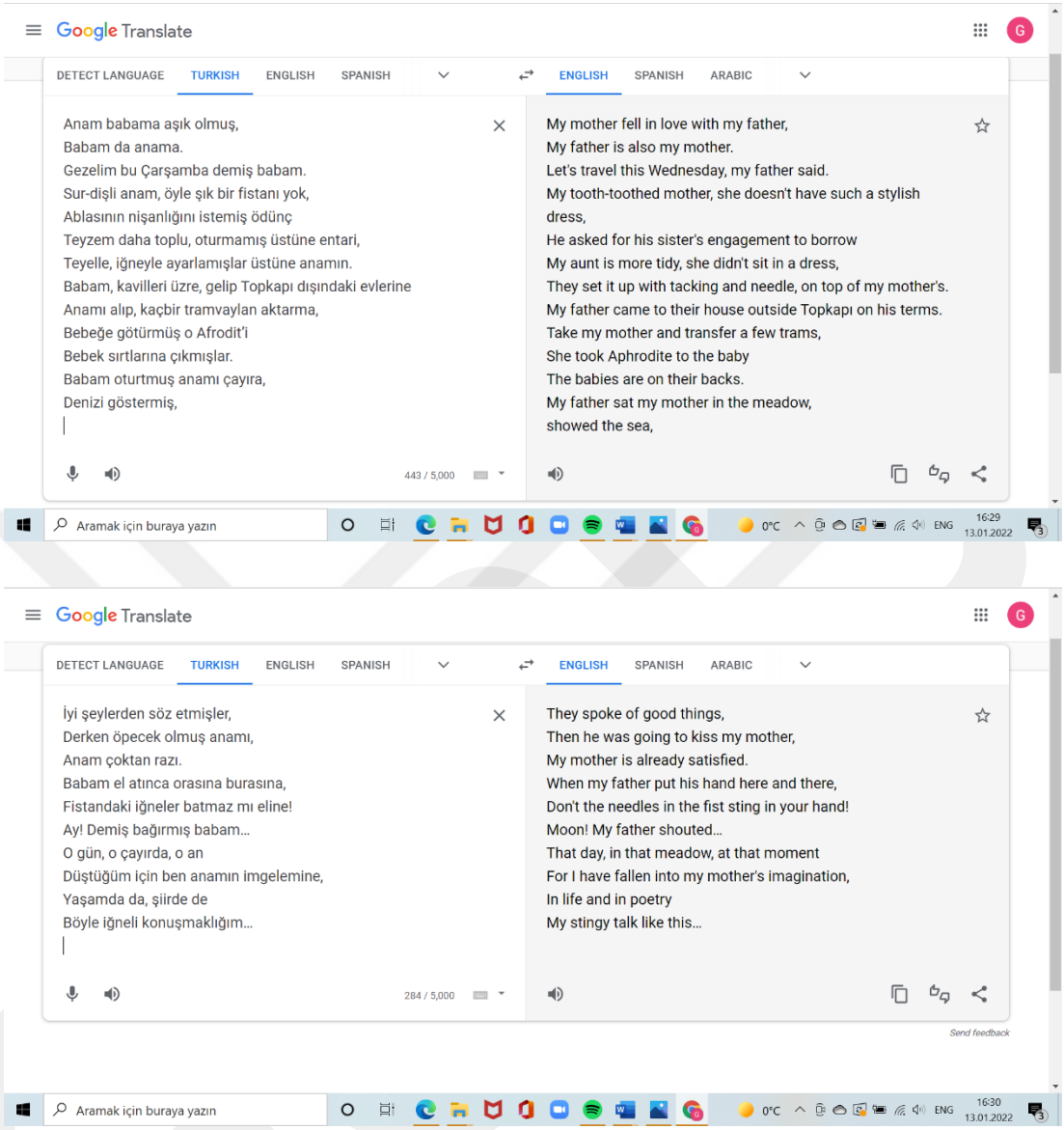

Google Translate
DETECT LANGUAGE TURKISH ENGLISH SPANISH
ENGLISH SPANISH ARABIC
- Hey Allahım, dedim, alınan isabetli kararlar sayesinde, şu memlekette yaşayamıyoruz, ama, ölemiyoruz da... Hep böyle çekecek miyiz?
Azim ve irade sahibi adam dediğin benim gibi olmalı. Bikez öleceğim dedim mi ölürüm. Bakkaldan kalın bir urgan aldım, bir kalıp da sabun. İpi iyice sabunladım. Tavandaki halkaya ipi bağladım. Vergi dairesine girer gibi, boynumu yağlı ilmiğe geçirip altımdan sandalyeyi ittim. Daha bikez bile sallanmaya kalmadan pat diye yere düştüm. Meğer ipler de çürükmüş ve sağlamını bulmanın da imkanı yokmuş.
Bakkal,
- Sağlam mal olsa satarlar mı? dedi...
İyice anladım ki, artık ölmenin de olanağı yok. Bari yaşayayım, dedim. Bilirsiniz ya, yaşamak, önce mideden başlar. Ben de pastırmalı yumurta yedim. Bir de konserve yalancı dolma. Üstüne bir makarna.
Sonra bir pastacıya girdim. Dört beş pasta yedim.
- Oh my God, I said, thanks to the right decisions, we cannot live in this country, but we cannot die... Will we always shoot like this?
A man with determination and will must be like me. Bikez, when I say I'm going to die, I die. I bought a thick rope from the grocery store, and a bar of soap. I soaped the rope thoroughly. I tied the rope to the loop on the ceiling. As if entering the tax office, I put my neck in the oiled noose and pushed the chair from under me. I fell to the ground with a bang before my bike even wobbled. It turns out that the ropes were also rotten and there was no way to find the good ones.
General store,
- Do they sell if they are solid goods? said...
I understood well that it is not possible to die anymore. I said, let me live. You know, living starts from the stomach first. I ate bacon and eggs too. And canned stuffed stuffed. Pasta on top.
Then I went to a pastry shop. I ate four or five cakes.
Aramak için buraya yazın
20:44
12.01.2022


Google Translate
Text
Documents
DETECT LANGUAGE
TURKISH
ENGLISH
SPANISH
ENGLISH
SPANISH
ARABIC
Pastacıya bir gazete satıcısı girdi,
- Onaltı sahife... Okumazsan da paket yap! diye bağırıyordu.
- İktidar gazetelerini okumak adetim değildir, bir okuyayım dedim, başyazıyı okurken uyuya kalmışım.
Karnıma bıçak sokulur gibi bir ağrı duydum. Ama nasıl...
Anlatılır gibi değil... Dayanamdım, bağırıp çağırmaya başladım.
Bir cankurtaran arabasıyla zor hastaneye attılar. Bayılmışım.
Gözlerimi açtığım zaman başucumda doktor soruyordu:
430 / 5,000
A newspaper seller entered the pastry shop,
- Sixteen pages... Even if you don't read it, pack it! she was shouting.
- It is not my custom to read the government newspapers, I thought I should read it, I fell asleep while reading the editorial.
I felt a pain in my stomach like a knife was thrust into my stomach. But how... It is inexplicable... I could not stand it, I started shouting. They rushed him to the difficult hospital with a lifeboat. I passed out. When I opened my eyes, the doctor was asking at my bedside:
Send feedback
Aramak için buraya yazın
ENG
20:46
12.01.2022

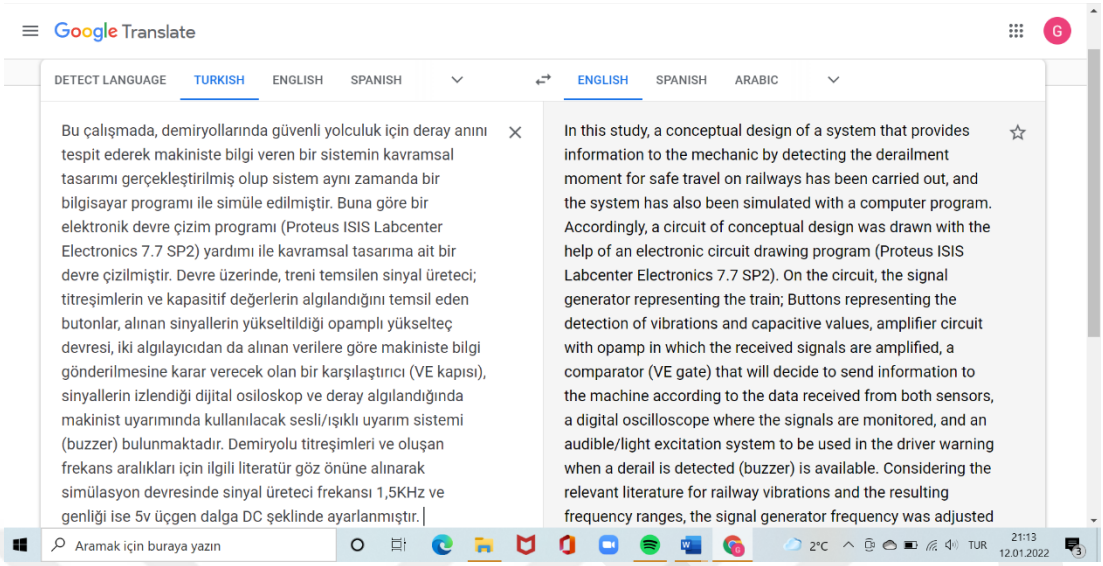

Google Translate
DETECT LANGUAGE
TURKISH
ENGLISH
SPANISH
ENGLISH
SPANISH
ARABIC
- Siz zehirlenmişsiniz. Hekimden bişey saklanmaz, intihar mı ettiniz?
- Nerede o mutlu günler doktor, dedim, nerede?
- Siz zehirlenmişsiniz diyorum, ne yediniz?
- Pastırma.
Doktor bağırdı:
- Ne, pastırma mı yediniz? Siz deli misiniz? Hiç pastırma yenir mi? Gazeteleri okumadınız mı, pastırmadan zehirlenenlerin haberleri dolu... Ama bu pastırma zehirine benzemiyor. Başka ne yediniz?...
- Lokantaya gittim.
- Siz çıldırmışsınız.
- Lokantada konserve yedim.
- Boşuna değil. Başka?
- Makarna, pasta...
- Elbette zehirlenirsiniz, konserve, makarna, pasta!...
Daha başka?
Gender-specific translations are limited. Learn more
- You have been poisoned. Nothing can be hidden from the doctor, did you commit suicide?
- Where are those happy days, doctor, I said, where?
- I say you were poisoned, what did you eat?
- Bacon.
The doctor shouted:
- What, you had bacon? are you crazy Ever eat bacon? Haven't you read the newspapers, there are reports of people poisoned by bacon... But this is not like bacon poison. What else did you eat?...
- I went to the restaurant.
- You're crazy.
- I ate canned food at the restaurant.
- Not in vain. Other?
- Pasta, cake...
Aramak için buraya yazın
ENG
20:47
12.01.2022

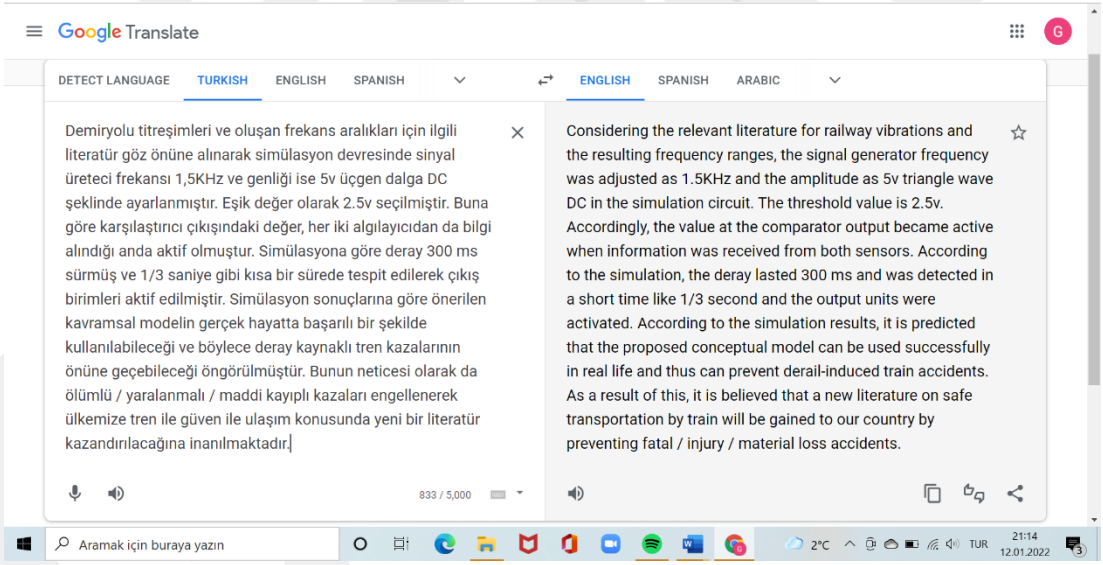

Google Translate
Text
Documents
DETECT LANGUAGE
TURKISH
ENGLISH
SPANISH
ENGLISH
SPANISH
ARABIC
- Elbette zehirlenirsiniz, konserve, makarna, pasta!...
Daha başka?
- Vallahi başka bişey yemedim, iktidar gazetesini okurken...
- Ne? diye haykırdı, ölmediğine dua et. Haydi yine ucuz kurtuldun.
Hastaneden çıkarken düşünüyordum: Peki biz ne yapacağız?
Yaşamaya bırakmıyorlar, ölmeye bırakmıyorlar...
Amma rahat rahat sürünebiliriz.
328 / 5,000
- Of course you get poisoned, canned food, pasta, cake!...
What else?
- I swear I didn't eat anything else, while I was reading the newspaper of the government...
- What? she cried, pray she's not dead. Come on, you got off cheap again.
As I was leaving the hospital, I was thinking: So what are we going to do? They don't let them live, they don't let them die...
But we can crawl in peace.
Send feedback
Aramak için buraya yazın
ENG
20:48
12.01.2022

Printscreen 2: Poem translation

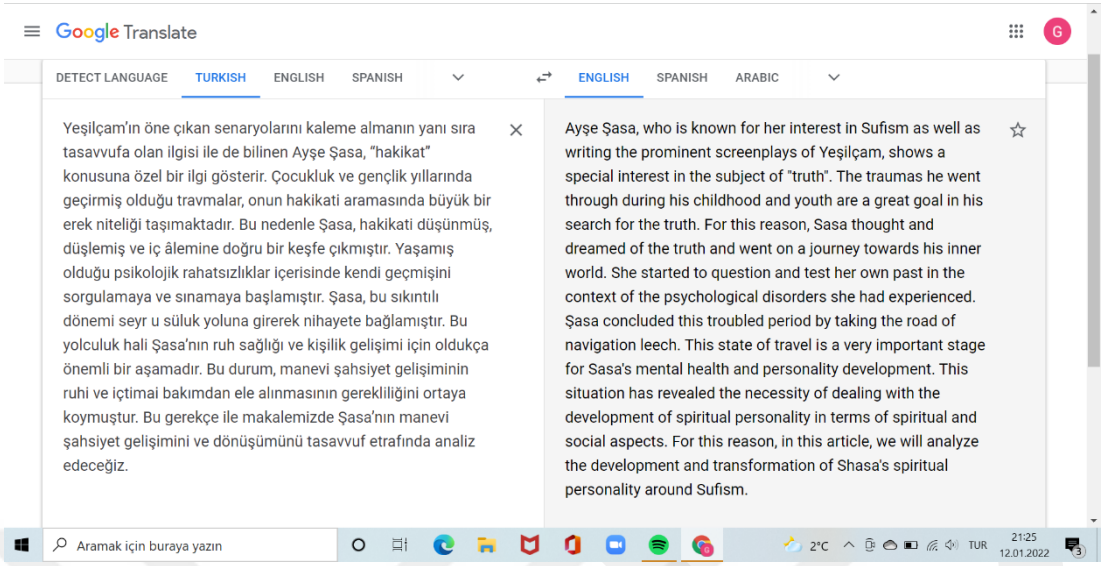


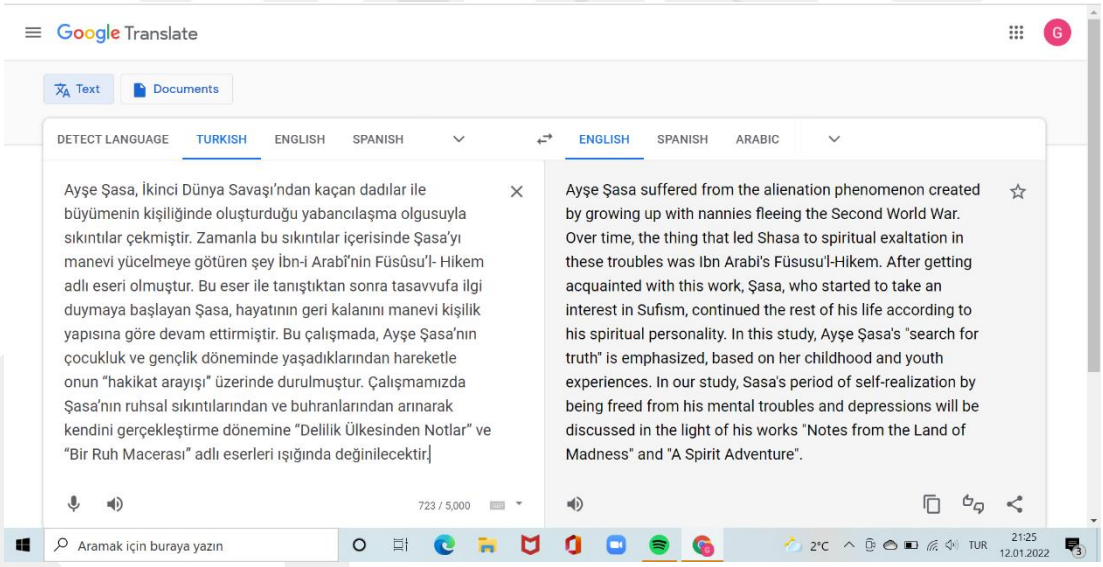
Printscreen 3: Engineering sample translation



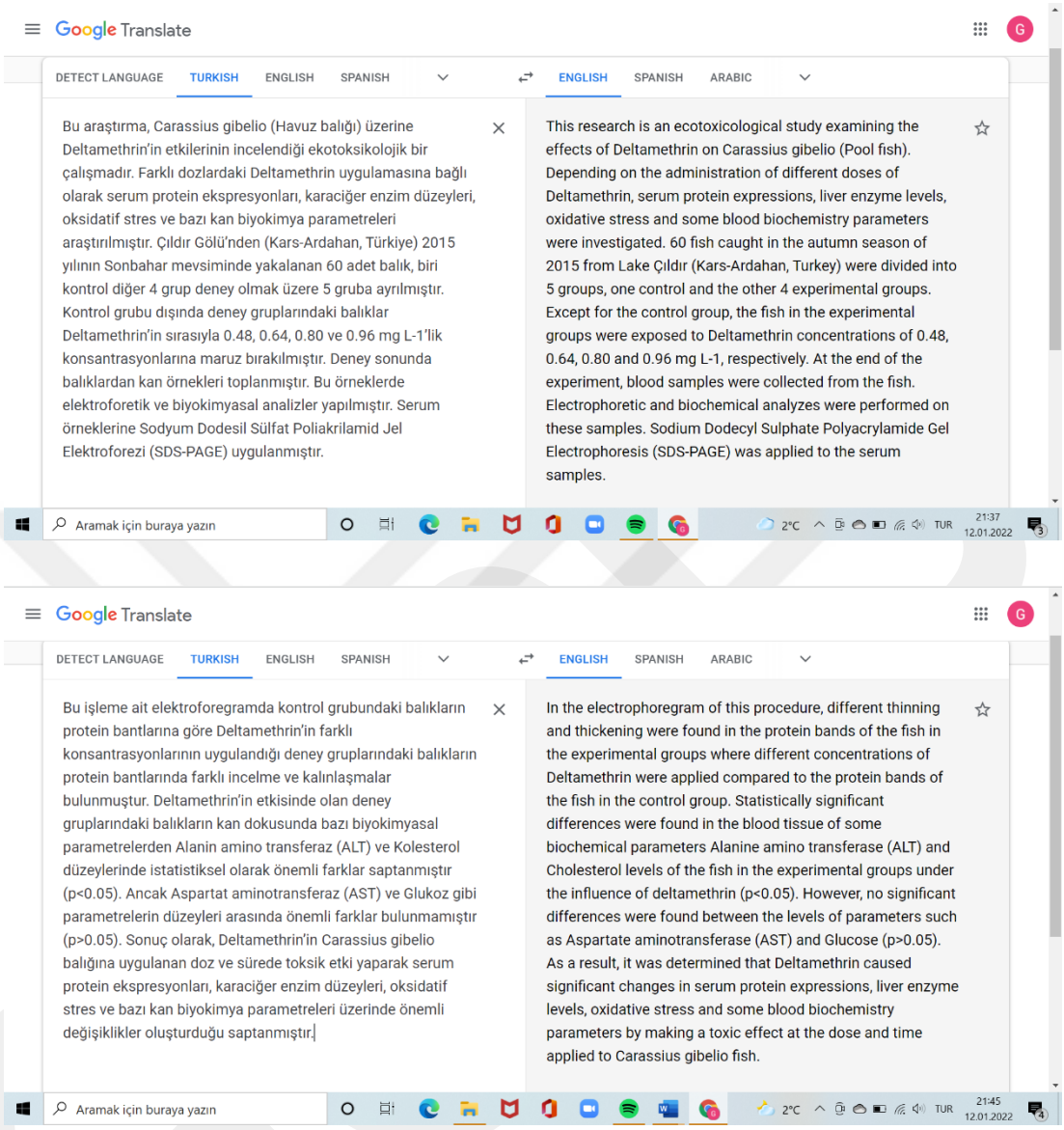


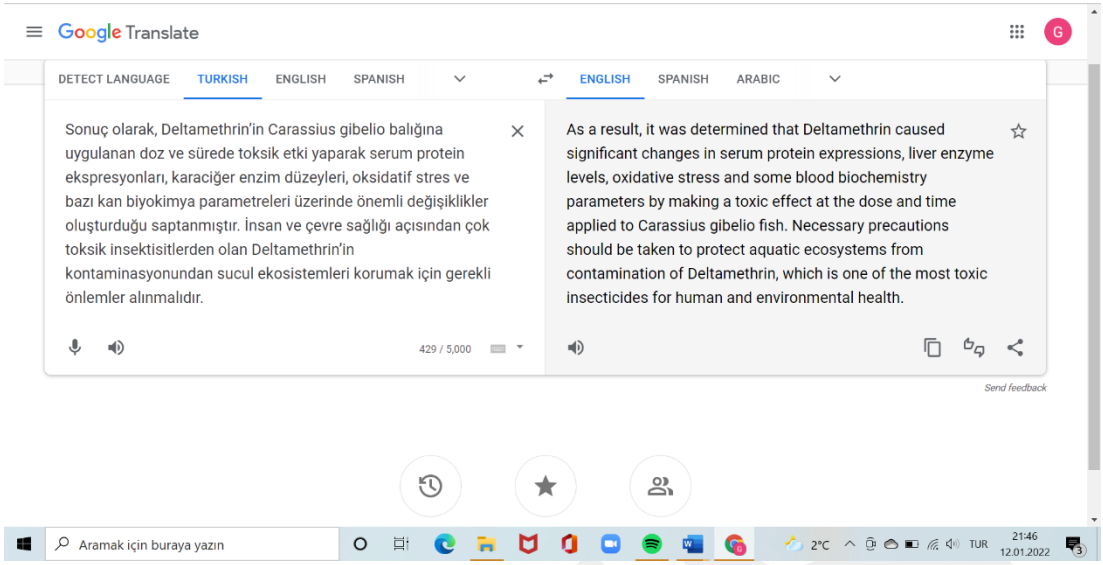
Printscreen 4: Social science sample translation



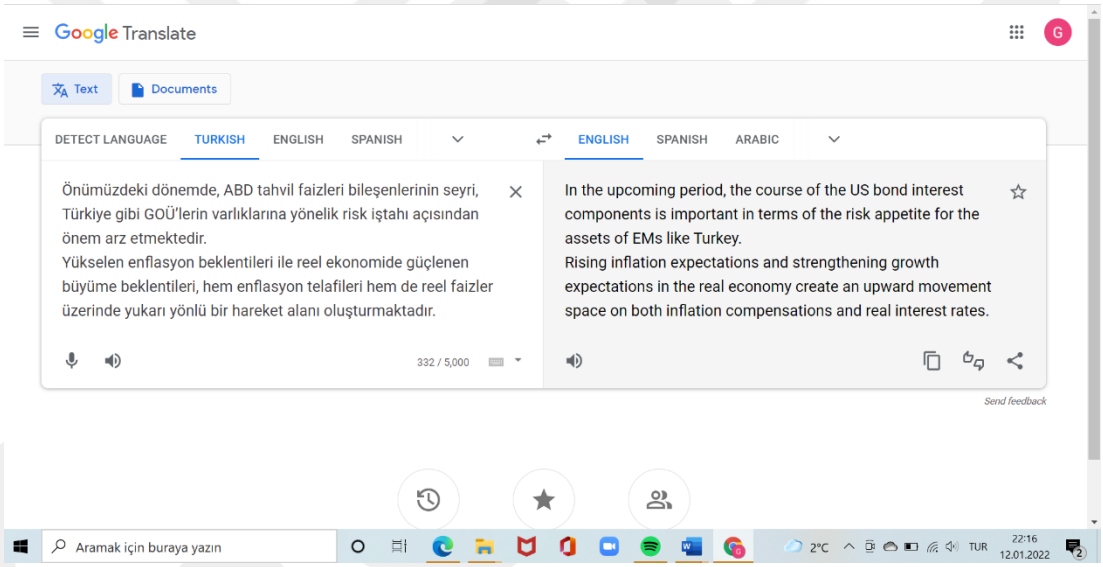


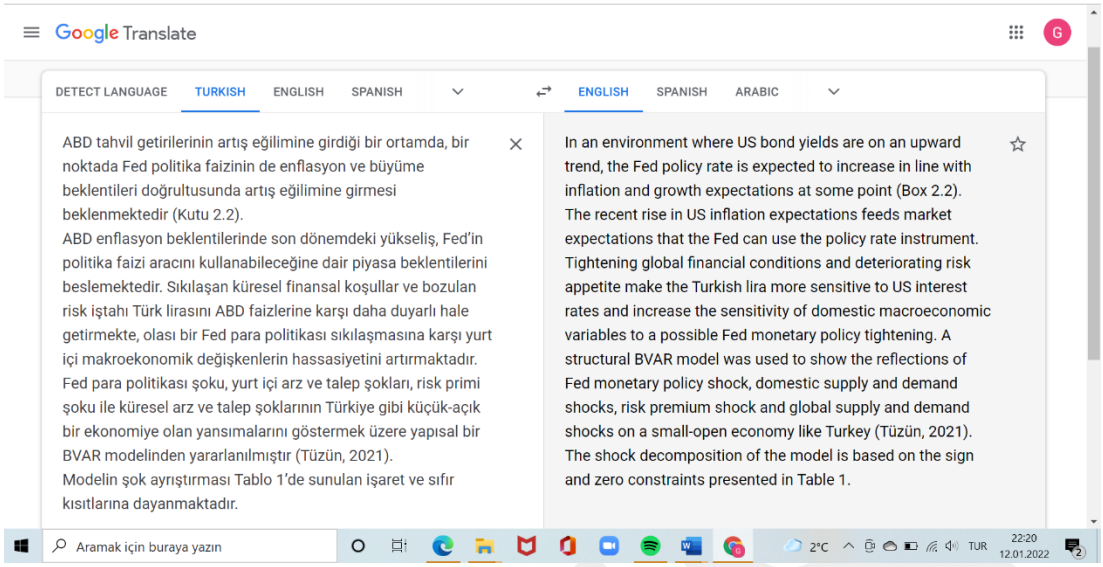
Printscreen 5: Science sample translation





Printscreen 6: Economy sample translation




Google Translate
DETECT LANGUAGE
TURKISH
ENGLISH
SPANISH
ENGLISH
SPANISH
ARABIC
ABD tahvil getirilerinin artış eğilimine girdiği bir ortamda, bir noktada Fed politika faizinin de enflasyon ve büyüme beklentileri doğrultusunda artış eğilimine girmesi beklenmektedir (Kutu 2.2).
ABD enflasyon beklentilerinde son dönemdeki yükseliş, Fed'in politika faizi aracını kullanabileceğine dair piyasa beklentilerini beslemektedir. Sıkılaşan küresel finansal koşullar ve bozulan risk iştahı Türk lirasını ABD faizlerine karşı daha duyarlı hale getirmekte, olası bir Fed para politikası sıkılaşmasına karşı yurt içi makroekonomik değişkenlerin hassasiyetini artırmaktadır.
Fed para politikası şoku, yurt içi arz ve talep şokları, risk primi şoku ile küresel arz ve talep şoklarının Türkiye gibi küçük-açık bir ekonomiye olan yansımalarını göstermek üzere yapısal bir BVAR modelinden yararlanılmıştır (Tüzün, 2021).
Modelin şok ayrıştırması Tablo 1'de sunulan işaret ve sıfır kısıtlarına dayanmaktadır.
In an environment where US bond yields are on an upward trend, the Fed policy rate is expected to increase in line with inflation and growth expectations at some point (Box 2.2).
The recent rise in US inflation expectations feeds market expectations that the Fed can use the policy rate instrument. Tightening global financial conditions and deteriorating risk appetite make the Turkish lira more sensitive to US interest rates and increase the sensitivity of domestic macroeconomic variables to a possible Fed monetary policy tightening. A structural BVAR model was used to show the reflections of Fed monetary policy shock, domestic supply and demand shocks, risk premium shock and global supply and demand shocks on a small-open economy like Turkey (Tüzün, 2021).
The shock decomposition of the model is based on the sign and zero constraints presented in Table 1.
Aramak için buraya yazın
2°C
TUR
22:20
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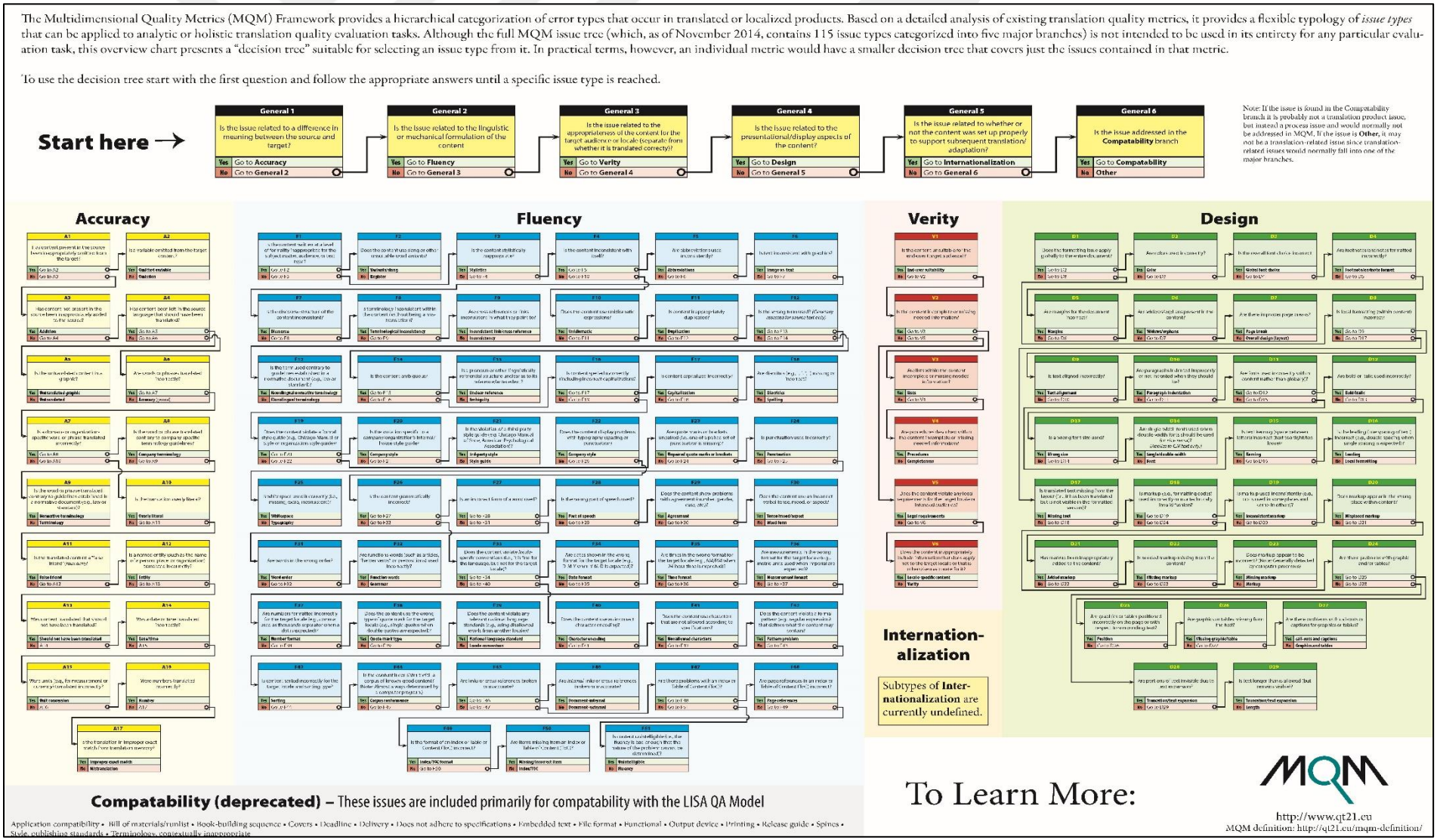
APPENDIX 2: MULTIDIMENSIONAL QUALITY METRICS (MQM): FULL DECISION TREE

The Multidimensional Quality Metrics (MQM) Framework provides a hierarchical categorization of error types that occur in translated or localized products. Based on a detailed analysis of existing translation quality metrics, it provides a flexible typology of *issue types* that can be applied to analytic or holistic translation quality evaluation tasks. Although the full MQM issue tree (which, as of November 2014, contains 115 issue types categorized into five major branches) is not intended to be used in its entirety for any particular evaluation task, this overview chart presents a "decision tree" suitable for selecting an issue type from it. In practical terms, however, an individual metric would have a smaller decision tree that covers just the issues contained in that metric.

To use the decision tree start with the first question and follow the appropriate answers until a specific issue type is reached.



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Yüksek lisans tezi

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RESUME

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Date: 31/01/2022