

Ramping the Future of Translation Studies through Technology-based Translation

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ABSTRACT

Technology has remarkably increased the stipulation for global communication in cross-different cultural settings and diverse linguistics environment. People have experienced tremendous challenges associated with language barriers and constraints. Translation into different languages across the globe has become a necessity to keep these frequent contacts with every corner and maintain mutual understanding among people regardless of the language they speak and the cultural values they keep. The study is an attempt to explore the potentials of Technology-based Translation represented in the three main streams like Machine Translation (MT), Computer-Aided translation (CAT), and Translation Management System (TMS). The potentials of all these distinct genres of Technology-Based Translation are demonstrated through theoretical perspectives and practical framework. Moreover, the ways of accessing and working with these three application interfaces are also precisely explored. The study also focuses on the comparison between Google Translate, as one of the most frequently used types of MT, and human translators in terms of translating an Arabic text into English. In addition, Grammarly, as one of the most popular editing software, is used as scale-based software to measure the quality of two translated versions associated with Clarity, fluency, and fidelity. The study consolidates the role of technology-based translation as a vibrant driving force in shaping the future of the translation industry worldwide. In spite of these issues, the quality of TMS, MT, and CAT tools remain a complex issue that needs to be investigated in numerous practical researches and studies to determine and identify whether or not the outcomes would be accepted by global translation standards.

INTRODUCTION

Globalization has brought various changes in almost all aspects of human practices and activities reshaping the economic growth, cultural spread through virtual borders, and social ties and the identity crisis among diverse communities. Globalization, as an unpredictable and inexorable phenomenon, persistently dramatizes the whole nations into one giant society where ethical, linguistic, and social identities are, by all means, unified and connected. These new concepts of connectivity have given rise to different practices to mold human communication and interaction regardless of languages spoken. Therefore, language is no more a barrier for cross border and cultural communication. In this context, a common language is needed to understand the nature of these global communication and practices. However, one language does not serve the purpose of global communication due to a variety of political, social, and religious constraints. Therefore, this notion has given rise to translation as one of the essential practices that are intimately manifested in the concept of globalization. Since a long time back, translation has become a solution for global communication among different linguistic and cultural settings. Translating one language into another ensures smooth transmission of

the concepts of globalization resulting in mutual assimilation among different nations.

Translation has been established as a field with affluent theoretical backgrounds and literature review along with clear principles and techniques that would facilitate the transmission of meaning from one language into another. Translation, as a domain of knowledge and discipline, connects almost all fields of knowledge. Therefore, translating specialized texts such as medical, engineering, technical, religion, media and press, law and the court, and political has become a prominent type of translation in relation to other disciplines.

Recently, there have been dramatic changes in using technology for consolidating the concepts and practices of translation. Apparently, there is a three-dimensional scope where Globalization, Technology advancement, and translation meet. Hence, the relationship among them is indispensable. Technology fosters the concepts of globalization which is conceived as an excellent product of technology advancement whereas translation unifies the international community linguistically, politically, and socially. Technology has spawned Machine Translation, Computer-Aided Translation, and Translation Management System to facilitate

the necessity to unify linguistic and cultural diversity. Ever since, the tendency to use technology in translation studies has brought into many questions revolving round accountability, reliability, fidelity, and truthfulness of the translated texts. Therefore, this study aims at revealing the myth of the potentials of Technology-based Translation by addressing all these existing questions.

LITERATURE REVIEW

The fast pace of technology and its applications in fostering human communication around the globe have revolutionized the translation process in terms of practices and applications. Technology is remarkably conceived as a driving force in reshaping the future of the translation industry. The role of technology in facilitating translation is obviously seen through various software and applications developed solely for bringing state-of-the-art technology that would enable practitioners to translate sufficient information and documents at a stunning rate. In addition, technology has brought a great in-depth solution to an ever persisting demand of translating texts into different languages in spite of the constraints of the quality of outcomes. However, the question of truthfulness and credibility of using these applications to produce high-quality translation has not been fully answered yet. Although various researches and studies have already been conducted with the purpose of investigating the potentials of technology-enhanced translation, the use of technology requires a theoretical and practical framework to arrive at a better understanding of its merits and pitfalls.

Tracing the development of technological applications and software, it is worth mentioning the most known types of technology-enhanced Translation: Machine Translation (MT), Computer-Assisted Translation (CAT), and Translation Management System. This study will explore the similarities and distinctions of all these types of translations with a view to reflecting the distinct approaches and pedagogical sound practices.

Machine Translation (MT)

Machine Translation (MT) is defined as the use of computer system to convey meaning from Source Language (SL) to the Target language (TL) (Bird et al. 2009) without the intervention of human translator at any stage of the translation process: pre-translation, translation, and post-translation. (Gouadec, 2007). According to Wikipedia ("Machine translation," n. d.)

Machine translation, sometimes referred to by the abbreviation MT (not to be confused with computer-aided translation, machine-aided human translation (MAHT) or interactive translation) is a sub-field of computational linguistics that investigates the use of software to translate text or speech from one language to another.

The typology of MT lies at the heart of three basic distinct types where the TM system is used. First, MT supports human translator in the translation process which is known in the field of translation as Human Translation with Machine Support (HTMS). Second, MT does the translation job with the assistance of a human translator which is known as

Machine Translation with Human Support (MTHS). Finally, MT takes responsibility for providing fully automated Translation without any direct or indirect human interventions Known as Automated machine Translation (AMT)

Types of Machine Translation

1. Statistical Machine Translation (SMT)

Statistical Machine Translation (SMT) is one of the approaches to MT. It has a distinct translation mechanism as it is entirely based on the notion of coding texts in statistical representations of the analysis of a pool of text collections frequently organized in corpora. SMT follows different mechanisms in decoding bilingual texts through different approaches that remarkably contribute to the process of translation. These approaches are Word-for-word translation, Syntactic transfer, Inter-lingual approaches, Controlled language, Example-based translation, and Statistical Translation.

2. Rule-Based Machine Translation (RBMT)

Rule-based Machine Translation (RBMT) is a subpart of Machine Automated translation. Not like SMT, RBMT is based on linguistics information rather than an analysis of bilingual texts corpora. The generated translated version of texts is done through analyzing and matching of linguistics items represented semantics, and grammatical structure, and morphological items exist in the source text and target text, for instance. The translation process entails three main approaches: 1) examine and analyzing different components of the source language text within the scope of linguistics data 2) transfer of meaning into the target texts that is the decoding of meaning and 3) the final product of the texts generated from the source.

3. Hybrid Machine Translation

The idea of having a hybrid machine translation is based on using a verity of machine translation approaches to work all together instead of depending on only one or two approaches. This hybrid machine Translation has various approaches:

- 1). Multi-engine
- 2). Statistical rule generation
- 3). Multi-Pass
- 4). Rules Post-Processed by Statistics
- 5). Statistics Guided by Rules

4. Example-Based Machine Translation

As the name suggests, Example-Based Machine Translation (EBMT) is the use of analogy in translating texts. It is in deep contrast with the ways in which human translators make use of linguistic analysis of the source texts to arrive at a better translation in the target language. According to Wikipedia, ("Example-Based machine translation," n. d) EMMT is defined as;

A method of machine translation often characterized by its use of a bilingual corpus with parallel texts as its main knowledge base at run-time. It is essentially a translation by analogy and can be viewed as an implementation of a case-based reasoning approach to machine learning.

EBMT, as demonstrated, depends entirely on bilingual corpora to provide a variety of well-constructed sentences in the target language.

Somers (1999) explains three types of EBMT as follows:

1. EBMT uses a bilingual corpus.
2. EBMT uses a bilingual corpus as its main knowledge base.
3. EBMT uses a bilingual corpus as its main knowledge base, at run-time.
5. *Neural Machine Translation (NMT)*

Brownlee (2017) defines Neural Machine Translation (NMT) as; "Neural machine translation, or NMT for short, is the use of neural network models to learn a statistical model for machine translation." Forcada (2017), in his article entitled as "Making Sense of Neural Machine Translation," defines Neutral Machine Translation as:

..... a new breed of corpus-based machine translation (also called data-driven or, less often, corpus-driven machine translation). It is trained on huge corpora of pairs of source language segments (usually sentences) and their translations, that is, from huge translation memories containing hundreds of thousands or even millions of translation units. In this sense, it is similar to the statistical machine translation technology that was state of the art until very recently but uses a completely different computational approach: neural networks.

Computer-Assisted Translation (CAT)

Computer-Assisted Translation (CAT) is defined, according to Wikipedia ("Computer-assisted translation," n.d) "a form of language translation in which a human translator uses computer hardware to support and facilitate the translation process." The definition is in huge contrast with the definition of Machine translation. The latter is the automated translation of a text written or spoken with absolutely no intervention of human translator. The only possible connection between the two is that both CAT and MT are products of innovative technologies that employ a range of applications. CAT uses computer hardware and software to accelerate the process of the translation done by the human translator in areas associated with lexical, grammatical, syntactical, and semantical items in texts, for instance. Therefore, CAT works hand in hand with human translators collaboratively as a sophisticated tool to ensure the high-quality output of the translated version of texts. Hence, the primary role of CAT is to facilitate and support the translation process through editing, creating, storing, and managing the final product of the translation process.

The core components of the CAT

1. *Translation Memories*

The critical components of CAT represent all the state-of-the-art technology that has been used recently to enhance the potentials and promises of CAT as the most influential technology. It has various capabilities to make the translation process easier, faster, and with high quality. Esselink, illustrates TM as:

Translation memory is a technology that enables the user to store translated phrases or sentences in a special database for local re-use or shared use over a network. Translation

memory systems work by matching terms and sentences in the database with those in the source text. If a match is found, the system proposes the ready-made translation in the target language. (2000: 362).

2. *Terminology-based database*

Translation of terminology is the most critical issues translators face at arriving more accurate and appropriate terms from the source language to their equivalent in the target language. CAT facilitates the translation of terminology by providing terminology database that enables translators to cross-check terms to determine their suitability to fit into the particular context.

3. Dictionaries
4. Glossaries

Examples of CAT Tools and Applications

CAT employs various software and application to assist a translator in arriving at high-quality translation products. These applications and tools are frequently changed in features and capabilities as technological advancements are happening in every single moment.

1. *Electronic Dictionaries*

Dictionaries, in general, are the essential tools a translator consults on regular basis regardless of the format (e-dictionary & paper dictionary). Dictionaries have immeasurable advantages for taking ambiguity associated with lexical meaning, word formation, collocation, syntactical issues, for instance.

2. *Thesaurus*

Thesaurus is one of the best reference tools with limitless potential for assisting translators in the editing and revision process. It is available in different formats like an independent website accessed at (<https://www.thesaurus.com/>), traditional format represented in books, and as built-in features in the word processing program. Thesaurus provides quick access to grouped lists of synonyms and antonyms allowing translators to choose the words and phrases that fit into the edited and revised context of the translation output. Moreover, translators are most benefited from the synonyms and antonyms to vary their writing style of the final draft of the translation. Not like dictionaries, thesaurus focus on providing a list of words grouped all together with and according to synonyms and antonyms with no much emphasis on giving meaning.

3. *A linguistic corpus*

Linguistics corpora are defined as a collection of natural language components represented in various authentic situations. The term has widely been used to include various functions in language settings. Some scholars categorize it as an analysis tool that can be applied to different technical language learning situations. Others believe that it is a method in which all-natural languages are analyzed to figure out the possible linguistics connection among them. In automated Translation, corpus linguistics represents the critical core of language models that represents one of the significant components of Statistical Machine Translation. (SMT). Those mechanisms in which two sets of natural languages are translated through equivalents.

4. Concordance

Concordance is one of the most advanced tools that translators have heavily used in examining the translation outputs. Concordance enables translators to have in-depth knowledge about texts in terms of vocabulary usage, word count, and how frequently are used, organization and style, for instance.

5. Editing Software

The use of CAT is to assist human translators in the final production of the translated version of texts. This stage requires meticulous editing and proofread strategies to ensure the quality of the output in terms of clarity and readability. Therefore, editing software has become one of the essential tools that help to polish and to buff the translated text. Some editing software is available online. However, all features are not provided for free. One of the best examples of these types of editing software is Grammarly, www.grammarly.com and Word processing Program.

Translation Management System (TMS)

Apparently, and as the name suggests, Translation Management System (TMS) is an online platform where the translation process is done through projects. TMS accelerates the workflow among translators, editors, and reviewers done through projects. TMS is the finest and latest product of technology-enhanced Translation that has been implemented in massive translation projects around the globe where many translators participate in the process of translation. It has been implemented to accelerate the workflow among translators, editors, and reviewers to collaborate in translating a bulk of documents in high speed and quality. TMS entirely reveals more advanced strategies to translate different types of texts using different features and create a community of translators to collaborate in the process of translation in real-time communication. According to Globalme (Oct 25, 2018), "Translation Management Systems are programs that support complex translation tasks. Most translation projects involve multi-person teams, possibly located in several different countries, and TMS can bring their different functions together, so it almost seems as if they're working side-by-side."

The intersection among MT, TMS, and CAT

At the first glimpse, someone might believe that these three concepts sounded identical and equated to have the same sort of technology with the exact same technical features and approaches. However, the mainstream of MT is very different from CAT in how the translation process is supported and assisted. Machine translation takes the responsibility of producing automated translation versions and making it easier for any post-editing process. Hence, individual translators do not have to start translating from scratch. (Plitt and Masselot 2010; Federico et al. 2012; Green et al. 2013) MT makes use of various approaches to translation like Machine-Based Translation approach which is known as the transformer approach, Statistical Approach, and Computer-Assisted Translation. This classification has been done by Ulitkin, in his 2011 article "Computer-assisted Translation Tools: A brief

review." According to him, CAT seems one of MT approaches. The transformer approach, in fact, adopts parallel translation techniques by matching the source language text components with its equivalent in the target language. Ulitkin, explains this mechanism as follows:

Input sentences of the source language were transformed directly into output sentences of the target language, using a simple form of parsing. The parser did a rough analysis of the source sentence, dividing it into the subject, object, verb, etc. Source words were then replaced by target words selected from a dictionary, and their order rearranged so as to comply with the rules of the target language. (2011).

In addition, as technology keeps moving, two critical issues are identified: First, the use of modern and innovative computers supports MT. Second, the transformer approach to translation was replaced by what is known as the linguistics knowledge approach. (Ulitkin, 2011). This new adoption of technology and approaches has altered the ways in which MT has to do the job. More emphasis is placed on the linguistic features of the source texts in alignment with the same linguistic features exist in the target language texts. New sets of computers with sophisticated features have been used to support statistical analysis approach which employs indirect processing of the texts required for translation known as Linguistics. The final product of MT is often undergoing through the process of editing and revising by human intervention. On the other hand, TMS is a platform where MT and CAT are heavily involved in the translation process. Translators who are working in a translation project make use of translation memory, glossaries, and linguistics corpora to arrive at a better quality of translation products under the close supervision of project managers and clients through Asynchronous and Synchronous communication. TMS provides quick access to MT software packages like Google Translate, one example among many, to enable translators to translate efficiently reducing the time and cost. Some of TMSs integrate MT as a built-in feature in the TMS along with accessible CAT tools and applications. Consequently, these technical features make TMS as a powerful translation tool as it accommodates all technology-enhanced translation in one platform. Moreover, TMS embraces many options to facilitate collaborative translations and works on the same documents with a different role to play ranging from translating, editing, reviewing, and revising.

MT, CAT Tools, and TMS Working Environment

1. Machine Translation (MT)

One of the most popular types of MT is Google Translate. Working on Google Translate does not require a profound grasp of technical knowledge. The application is user-friendly and can be used even with those who have lower technical skills. Google Translate enables translators to paste text or browse for it in their computers in different file formats as doc., docx., odf., pdf., ppt., pptx., ps., rtf., txt., xls, or xlsx (See Figure 1). GT provides more than 100 natural languages to translate promptly at no cost. Some features of GT are community and send feedback. The former facilitates the collaboration between translators and the global community

through translation services. A translator may participate in translating text in the source and target languages specified by the user connected to the GT community. On the other hand, translators might participate in improving the quality of translation by sharing their ideas and thoughts enhanced with a screenshot of the translation through send feedback option.

2. CAT Tools

CAT tools are recognized as types of software that assist translators in editing and revising a translated text more efficiently with a range of tools such as dictionaries, terminology databases, and translation memory. CAT tools provide two modes of assistance. First, as a standalone application when translators make use of software editors and reference tools independently to tackle areas associated with finding the proper terms, vocabulary, rules-based grammar and lexical patterns. Second, as an online platform that is known as a web editor, which is one of the features integrated into most of the sophisticated and recent CAT tools. (See Figure 2 Web editor integrated with Memsourse software). The mechanism of the editor is to break the text into different segments and provide alternatives for translation using MT, which provides three options for editing such as in context, exact, and fussy match. The translator can edit each segment manually,

split or merge them, and then confirm. The completed file could be downloaded.

3. Translation Management System (TMS)

Working on the Translation Management System as one of the most sophisticated translation tools encompasses the mechanism of MT and enables translators to edit their final product through a variety of integrated CAT tools in the system. The research study adopts Memsourse as a popular type of Translation Management System to explore the potentials of the platform in enhancing the quality of the translation. Memsourse provides a cloud-based translation platform that commercially licensed for freelance translators, translation agencies, and companies around the globe. However, a free trial for 30 days is available.

Working with Memsourse Interface

The Cloud-based Translation environment of Memsourse enables users to create an account to proceed with the translation process. (See Figure 3). Users need to specify the source language and the target language. Creating a job on the cloud enables users to upload a file with a source text in different formats. Moreover, users need to create a translation memory and terminology database and reference to facilitate

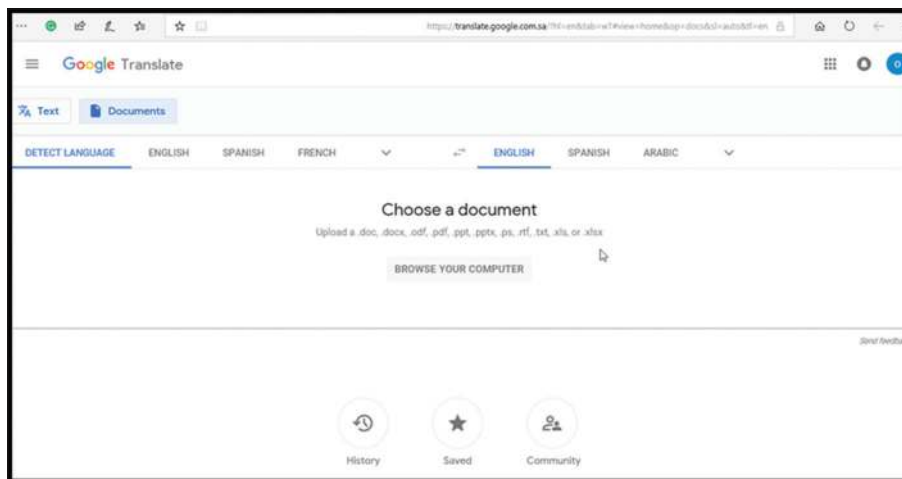


Figure 1. Google Translate Interface

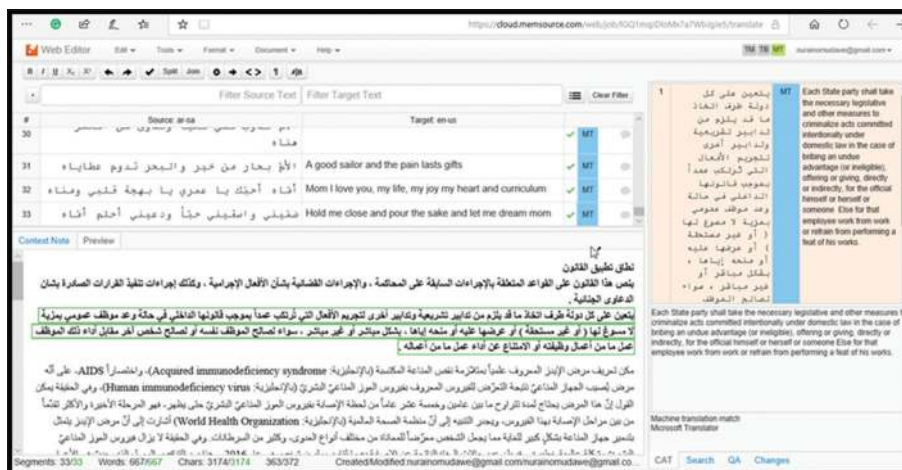


Figure 2. Web editor integrated into Memsourse

the translation process. The translation of the source texts is based on breaking the text into different segments. (See Figure 4). Translators have various options to use MT translation, and suggestions given by the software represented in the symbol 101. A translator may use the web editor to fix the translation of each segment manually and then confirm the segment upon his satisfaction or the team participated in the manual editing of the segments.

METHODOLOGY

The study employs a comparative approach in order to examine, analyze, and scrutinize the functional property of the quality of the translation. MT, CAT, and TMS are employed to translate a text from Arabic to English. The text is taken from Wikipedia, and it is about King Abdullah Economic City in Jazan, Saudi Arabia. Using MT, a human Translator and TMS called Memsourse translated the text. The purpose of the experiment is to consolidate the idea of using these types of technology in ramping the future of translation studies by exploring functionality and productivity in translating and assisting the translation of texts from Arabic to English. The paper adopted the comparative approach to examine, analyze, and scrutinize the two translated versions of different genres of texts translated by using two distinct approaches and mechanisms to determine their similarities

and differences. In order to obtain numerical data, a rubric has been developed to examine the translation output across many parameters that are included in the rubric and applied to the two versions of translation.

Questions of the Study

The study addresses the following questions:

- 1) What are the potentials of MT, CAT, and TMS in to ramp the future of translation studies?
- 2) To what extent does the translation outcome consider to be reliable and accredited in terms of fluency, accuracy, and overall quality compared to human translation?
- 3) How does technology-enhanced translation influence the translation industry worldwide?

Instrument

The study implemented some instruments in carrying out translation tasks:

- 1) Google Translate as one of the most popular types of MT.
- 2) Memsourse; one example of TMS.
- 3) Grammarly: the most popular and widely used software for editing and revising English texts.
- 4) An Arabic text extracted from Wikipedia.

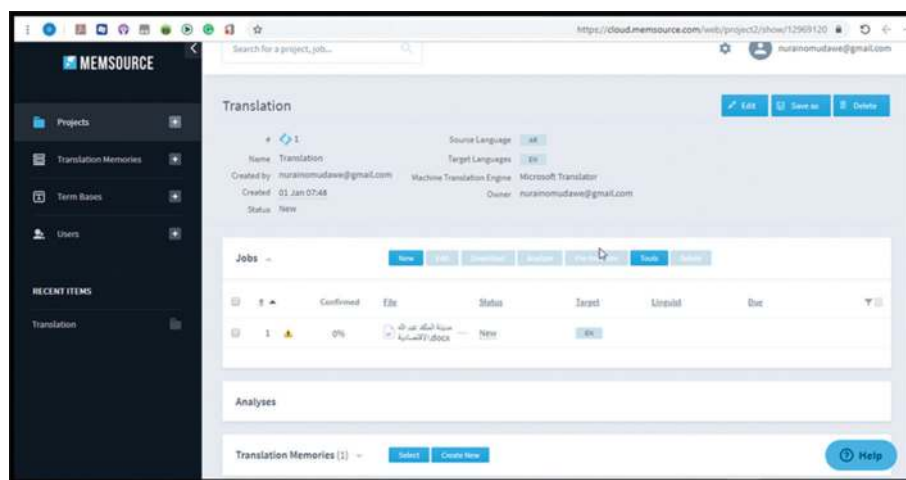


Figure 3. Memsourse main interface

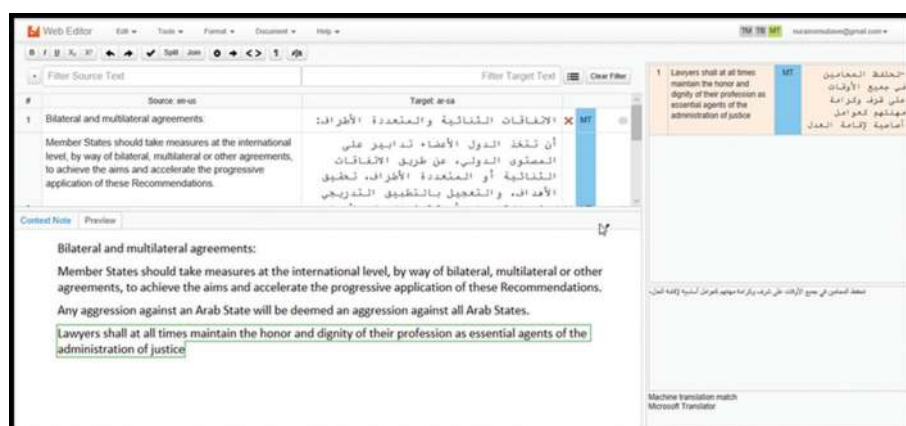


Figure 4. The breaking of the source text into segments in Web editor.

Procedures

The objectives of the research are designed, and questions of the research are formulated to specify the procedural steps to achieve the objective of the research that is the examination of the quality of translated version of a text translated by human experts and the same text is re-translated by using Google Translator. The study confined its scope and dilata-tion to a text that is originated in Arabic Language (Source language) and translated into English. The Arabic text was extracted from Wikipedia and pasted in Word Document. Google translated the text. A professional translator translated the same text manually. Both translated versions of the text were analyzed using Grammarly, one of the most popular editing software.

Data Analysis

The data analysis was carried out automatically by using Grammarly at the level of sentences translated to identify the errors associated with contextual spelling, Grammar, style, clarity, vocabulary enhancement, and lexical choice.

Evaluation

The evaluation of the two generated versions was carried out based on a linguistics-drive evaluation where the elements of syntactical, lexical, and grammatical are built-in Grammarly.

RESULTS

To achieve the research objectives and find persuasive answers to the research questions, the distinct versions of the translation are analyzed by Grammarly to assess the quality of each type in terms of accuracy, clarity, and consistency.

The Arabic Text. (The source text)

مدينة الملك عبد الله الاقتصادية، مدينة سعودية مستحدثة ذات طابع اقتصادي أعلن عن إنشائها خادم الحرمين الشريفين الملك عبد الله بن عبد العزيز عام 2005 وتقع في منطقة مكة المكرمة في القضيبة وصعير تبلغ تكلفة مشروع المدينة 100 مليار دولار أمريكي حوالي 375 مليارات ريال سعودي، وتنفذه شركة إعمار المدينة الاقتصادية والرئيس التنفيذي لشركة مدينة الملك عبد الله الاقتصادية فهد الرشيد. تعتبر مدينة الملك عبد الله الاقتصادية أكبر من مدينة واشنطن عاصمة الولايات المتحدة الأمريكية تتولى شركة إعمار المدينة الاقتصادية مهمة تطوير مدينة الملك عبد الله الاقتصادية، وهي شركة عقارية مدرجة في البورصة السعودية تداول، وتتركز بالدرجة الأولى على تخطيط وتطوير المدينة. وقد حققت إعمار المدينة الاقتصادية إنجازاً تاريخياً عندما طرحت أول اكتتاب عام أولي لها في يوليو عام 2006 حيث شهد هذا الطرح اكتتاب أكثر من نصف المواطنين السعوديين. تُدار الشركة من قبل إعمار العقارية وعدد من المستثمرين رفيعي المستوى في المملكة. هيئة المدن الاقتصادية هي الجهة التنظيمية الوحيدة لمدينة الملك عبد الله الاقتصادية، ويقع مقرها في مدينة الملك عبد الله الاقتصادية. تقدم الهيئة للمستثمرين والمقيمين مجموعة شاملة من الحوافز والمزايا في مجالات متنوعة مثل الملكية الأجنبية بنسبة 100% للشركات والأفراد، وتنظيمات الميناء البحري ومنطقة البضائع، وسهولة الحصول على التصاريح والترخيص المتعلقة بالإقامة والعمل والشؤون التشغيلية، وملكية وإدارة العقارات
المصدر: ويكيبيديا

The translated version into Arabic by using Machine Translation (MT) Google Translate

Here Google Translate is used to translate an Arabic text into English (See Figure 5). The translation outcome is analyzed by Grammarly to determine to what extent does the translated version seems to be reliable and fit language standards.

The Automated translated version of the text.

King Abdullah Economic City, an innovative Saudi city of economic character, announced by the Custodian of the Two Holy Mosques King Abdullah bin Abdul Aziz in 2005 and located in the Makkah area. In Al-Qudaimah and Saber, the cost of the city project is US \$ 100 billion about SR 375 billion, Emaar Economic City and CEO of KAEC. King Abdullah Economic City is larger than Washington, DC, the capital of the United States Emaar Economic City is developing King Abdullah Economic City (KAEC), a real estate company listed on Tadawul, focusing primarily on city planning and development. Emaar, the economic city, achieved a historic milestone when it launched its first public offering in July 2006, with more than half of Saudi nationals participating. The company is managed by Emaar Properties and a number of high profile investors in the Kingdom. EEC is the sole regulator of King Abdullah Economic City (KAEC) and is based in KAEC. The Commission provides investors and residents with a comprehensive range of incentives and benefits in a variety of areas such as 100% foreign ownership of companies and individuals, maritime and cargo area regulations, easy access to declarations and licenses related to residence, employment and operational affairs, property ownership and management.

Source: Wikipedia

The Analysis of the translated version by using CAT software (Grammarly software).

The result of the analysis shows that 83 % in terms of performance. The software detects the following issues.

The analysis of MT outcomes using Google Translate shows 83% of accuracy and clarity as analyzed by Grammarly editing software. The intervention of the human translators could do the remaining 17% through post-editing. The results show significant potentials of Google Translate to translate a bulk of pages and documents in one click which in fact makes it the most frequently used MT. Google translate primarily works through a matching pair of languages database and generate the most reliable linguistic match (See Table 1). This strategy might not work correctly with many source texts if the database lacks the perfect equivalent, especially when dealing with texts with specialized terminology. However, Google translate successfully generates, if not a semi-perfect translation, a gist of the meaning of the source text and allows human intervention through post-editing to overcome the pitfalls of the machine. Similarly, Google Translate is not equipped with any sort of artificial intelligence technology to analyze the content required to translate to determine the proper words, phrases and expressions.

Manual Translation

A human translator, without any intervention of MT or any utilization of CAT tools, translates the Arabic text manually. The following is the final product of the translated version.

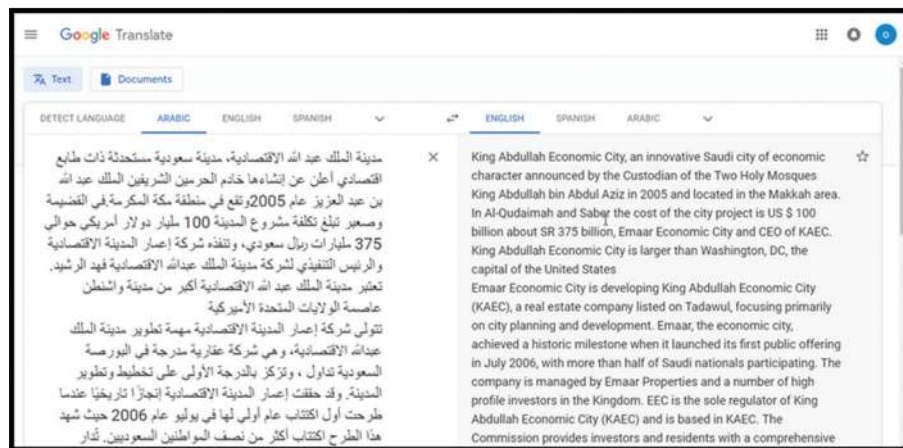


Figure 5. Google Translate interface for the Arabic text

Table 1. The analysis of the translated version by using cat software (grammarly software)

Evaluating criteria	No.	Mistakes detected	Observation
Punctuation	2	-In Al-Qudaimah and Saber - Saudi city of economic character	Correct missing and misuse of punctuation.
Grammar	2	cost of the city project is US \$ 100 billion about SR.	Correct grammatical errors.
Fluency	1	the economic city,	Check for natural phrasing and proper word choice.
Style/ Consciousness	1	Properties and a number of	Eliminate wordiness and redundancy. The phrase a number of maybe wordy. Consider changing the wording.
Clarity	2	- The company is managed by - and is based in	Use of passive voice
Vocabulary	1	The city is larger than Washington	Weak words. Synonyms are suggested, such as more extensive, more substantial, more massive, and more significant.
Sentence Structure		King Abdullah Economic City, an innovative Saudi city of economic character, announced by the Custodian of the Two Holy Mosques King Abdullah bin Abdul Aziz in 2005 and located in the Makkah area.	This appears to be an incomplete sentence. Consider rewriting the sentence or connecting the fragment with another sentence.

The Manual Translation of the text

King Abdullah’s Economic City (KAEC) is an innovative Saudi city of economic style. It has been established by the Custodian of the Two Holy Mosques, King Abdullah Bin Abdul-Aziz in 2005. It is located in Mecca Region in Al-Ghodaima and Sa’eer. The cost of the city project reached US\$ 100 billion, which is about SR 375 billion. It has been implemented by I’mar Al-Madinah Economic Company. The Chief Executive Officer (CEO) of the City is Fahd Al-Rasheed. KAEC is bigger than Washington, the capital of the USA. I’mar Al-Madinah Economic Company, the real estate company, which undertakes the responsibility of developing the City, has been registered in Saudi Stock Exchange Tadawul and essentially concentrates on planning and developing the City. I’mar Al-Madinah Company achieved a historical accomplishment when it had launched its first general underwriting in July 2006. More than half of the Saudi citizens witnessed this offer.

The Company is managed by I’mar Real Estate Company and a number of investors of high levels in the Kingdom.

The Authority of Economic Cities is the only organizational authority of KAEC. Its headquarters is in KAEC. The Authority provides the investors and residents a comprehensive set of incentives and advantages in various domains such as foreign property in a percentage of 100% for both companies and individuals, the Organization of Sea Port and Cargo Zone. It offers the facility of obtaining licenses, work, employment affairs, and ownership of real estate management.

Source: Wikipedia.

The analysis of the translated version done by the human translator

Based on Grammarly analysis, the overall score of the translated version done manually by a human translator is 90% performance. Some issues were detected as explained in Table 2.

Google Translate Vs. Human Translator

Even though Google translate has become a prevalent type of Machine Translation, evaluation of its reliability could be a daunting task. However, Google translate experience a persisting development in the mechanism used

Table 2. The analysis of the manual translated version by using cat software (grammarly software)

Evaluating criteria	No.	Mistakes detected	Observation
Punctuation	2	-In Al-Qudaimah and Saber - Saudi city of economic character	Correct missing and misuse of punctuation.
Grammar	2	cost of the city project is US \$ 100 billion about SR.	Correct grammatical errors.
Fluency	1	the economic city,	Check for natural phrasing and proper word choice. Suggestions for using industrial instead.
Style/ Consciousness	1	Properties and a number of	Eliminate wordiness and redundancy. The phrase a number of maybe wordy. Consider changing the wording.
Clarity	2	- has been established. - It is located. - Is Managed	Use of passive voice
Vocabulary enhancement	0	Nothing is reported	Nothing is suggested
Sentence Structure		All sentences structure are acceptable	No suggestions

in translating different genres of texts. Google translate outplayed human translators when it comes to the time taken to translate a massive number of documents. On the other hand, human translators require much time to translate a single document. Not only the time constraint but also the cost of human translators is highly rated. (Randhawa, Ferreyra, Ahmed, Ezzat, & Pottie, 2013; Turner, Bergman, Brownstein, Cole, & Kirchoff, 2014).

That's why Google Translate is used as a reliable tool for big companies with thousands of documents for translation. Regarding using a proper vocabulary based on the translated content, Google Translate lacks sorting strategies to provide equivalents based on the meaning of the content. Professional human translators establish emotional connections with the texts that a machine can never do. This is true in alignment with the traditional approach to translation "word vs. sense" as demonstrated by Newmark (1998). In contrast, the translated version of the text using Google shows some issues related to the readability of the text. The information translated into English seems to be awkward and does not have the natural flow of ideas that would help readers to grasp the meaning of the translated text. (Agarwal et al. 2011; Balk et al. 2013; Chimsuk, 2010). On the contrary, Google translate is not fully equipped with any sort of artificial intelligence technology to deal with cultural-oriented texts and some specialized texts. These types of texts are challenging even for human translators, especially those who are far behind the awareness of English spoken by natives as it embraces idiomatic expressions, cultural references, metaphors, and slang language for instance. Google translate did not recognize proper Arabic nouns as we observed in the texts. For example, google translated it as Al-Qudaimah, whereas human translator translated it as Al-Ghodaima, which is more accepted. Likewise, the sentence

مدينة الملك عبد الله الاقتصادية، مدينة سعودية مستحدثة ذات طابع اقتصادي أعلن عن إنشائها خادم الحرمين الشريفين الملك عبد الله بن عبد العزيز عام 2005

Translated by Google as economic character announced by the Custodian of the Two Holy Mosques King Abdullah bin Abdul Aziz in 2005. Announced here in the text does not comply with the Standard English language as established is the proper translation. However, the meaning in Arabic could be understood. There are redundancy and long sentences in the Arabic version with only a few punctuation marks that creates confusion for google to look up the database looking for equivalents. Google translate cannot create any reduction without affecting the meaning of the source text. It has been observed that short sentences in Arabic are translated with more efficient and clarity. Moreover, some lexical choice, semantical, grammatical issues are often becoming a problematic area for Google to translate. This may be endorsed to the complexity of Arabic syntax and morphology that develop ambiguity in the meaning of the translated text into English.

تتولى شركة إعمار المدينة الاقتصادية مهمة تطوير مدينة الملك عبد الله الاقتصادية

Google Translation of the sentence within the paragraph
Emaar Economic City is developing King Abdullah Economic City (KAEC)

Google Translation of the same sentence separately from the text.

Emaar Economic City is responsible for the development of King Abdullah Economic City.

The sentence alone is translated correctly, and all aspects of clarity and intelligibility exist that make the translation acceptable.

To sum up the cons and pros of each type, there is a belief that Google translator should work hand in hand with professional translators through post-editing practices to overcome the discrepancy of the machine capabilities in translating some specialized texts. CAT tools are efficient and effective in assisting human translators in the post-editing process of automated translation versions of texts.

DISCUSSION

Question No. 1

The Potentials of MT, CAT, and TMS to ramp the future of translation studies

Globalization and the diffusion of technology have dramatically changed the current practices of the translation industry. These advancements, innovations, and persisting improvements to the trends and inclination of translation worldwide have deeply affected by the appearance of Machine Translation (MT), Computer-Assisted Translation (CAT), and recently

Translation Management System (TMS). These genres of technology-enhanced translation have started playing a critical role in reshaping the future of translation through numerous advantages (See Table 3). However, there are still uncertain assumptions about the actual role of these types of technology in fostering the spread of knowledge and cultural components across the globe. That could be attributed to the fact that their full potentials have not been yet discovered or partially discerned as a driving force that might immensely change many aspects of translation practices. Another reason might be associated with the lack of theoretical and practical applications in the field.

Table 3. The potentials of mt, cat, and tms for enhancing translation studies

Type	Features	Functionality Mode of Translation	Examples
MT	-Predefined language pairs patterns in the SL & TL. Mainly bilingual -Translation Memory	Full Automatic Translation (Primary responsible for doing the translation task)	Google Translate Skype Translator Translation Apps. Transtext. Babelfish
Potentials			
<ul style="list-style-type: none"> -It translates a vast bulk of documents. (Texts in different formats including PDF, web pages, documents, videos). - Google Assistant’s new interpreter mode is launched in 2019 supporting 27 languages in real-time. It supports the interpretation of spoken languages and conversation. -It involves a word for word-based, Rule-based, and statistical-based function in the translation process. - It Applies different approaches and strategies in the translation process. For instance, direct strategy, transfer strategy, and pivot language strategy. -It has the capacity to translate a text in multiple languages. -It provides the gist of meaning and allows for post-editing. -It is user-friendly. -It has free accessibility at no cost. -Speed 			
CAT	-Reference Tools -Thesaurus -A linguistic corpus -Concordance -Editing Software	Assist human translation through the translation process especially post-editing and revising	SDL Trados MemoQ Wordfast Fluency Rian
Potentials			
<ul style="list-style-type: none"> -It organizes translation products in different file formats and different web pages. -It assists translators in translating a document promptly and efficiently. -It has repository for storing previous translation tasks in vast database and translation memories. -It supports translators throughout the stages and the process of translation, starting from the analysis of texts, post-editing, and the production of the final version of the translated text. -It provides word count and frequently used words in a text. -It handles technical and specialized texts effectively through glossaries and terminology database. 			
TMS	-Multi-languages -Glossaries and Terminology. -Translation Memory -Project Management -Translation editor -Quality is enhanced.	Use Both MT and CAT tools for refining the translation product.	Memsources Smartling Transifex SDL Trados Word be translator SDL Worldserver Google Translator Toolkit memoQ
Potentials			
<ul style="list-style-type: none"> -It has repository system where the database is stored for further translation tasks -The same sentences do not have to be translated again. -It Monitors the whole translation process. -It has a ready file templates and formats. - The teamwork of translators and freelancers can collaborate on the translation tasks. - Many translators can work simultaneously under the direct supervision of the project manager. 			

Moreover, the technical expertise knowledge and awareness of translators, vendors, clients around the globe might not be cognizant of the potentials of all these types of technology-enhanced translation. Accordingly, this part of the paper tries to reveal the myth of using MT, CAT tools and resources, and MT to enlighten translation practitioners and clients with the impact it may create in the field. The following table explains in detail the potentials of all these types of technology.

Question No. 2

Quality of the translation outcomes

Evaluating the quality of automated translation is a complex process, which entails many parameters to be involved in arriving at a conceptual framework for the scope of evaluation itself. The complexity of automated translations evaluation lies at the heart of ensuring the effectiveness of the translation tools and software and improving performance to fit into the expectation of the global translation industry. Therefore, tremendous approaches and methods are involved in the evaluation process. There are two categories of the evaluation process:

- 1) Evaluation Metric such as Bilingual Evaluation Under study (BLEU), National Institute of Standards and Technology (NIST), Ngram EVALuation (NEVA), Translation Edit Rate (TER) and Word Accuracy for translation (WAFT) and some other techniques are used to determine the quality of automated translation.
- 2) Manual evaluation

Here comes again the intervention of the professional human translators to judge the quality of the automated translated versions subjectively. Professional translators adopt many parameters to examine the clarity, adequacy, and accuracy of the texts being translated automatically. Furthermore, the whole system is also evaluated. This approach seems to be reliable for most of the practitioners. However, high cost and time consuming are among the factors that hinder the application of the strategy on a large scale.

Assessing the quality of Translation approaches represents another dimension of complexity. This complexity has been discussed in many kinds of research and studies. (Popovi'c and Burchardt, 2011; Lapshinova-Koltunski, 2013; Miguel and Jim'enez-Crespo, 2009; Besacier and Schwartz, 2015). Likewise, House (2001) has contributed to the evaluation of translation products: "Translation quality is a problematical concept if it is taken to involve individual and externally motivated value judgment alone. Obviously, passing any "final judgment" on the quality of a translation that fulfills the demands of scientific objectivity is very difficult indeed."

Throughout the history of the application of MT in translating different genres of texts, judging the quality of the automated translation has become more complex. However, desperate attempts have been carried out to involve accuracy and fluency parameters to judge the quality of the translated version. These assumptions are based on the idea that even sophisticated MT such as Google Translate still produces errors at different syntactical and lexical, to name a few, leads

to violation of the clarity as it brings in more ambiguity. Human translation intervention through post-editing and revision would tackle the pitfalls of the machine.

The use of Grammarly, the editing software, to judge the quality of translation revolves round the linguistic evaluation of the generated text. However, the software has ignored some of the issues that are related to coherence, intelligibility, Fidelity, and acceptability.

Question No. 3

The impact of technology-enhanced translation on the translation industry worldwide

Until recently, the field of translation studies has been entirely neglected as an academic discipline with authoritative theoretical and practical backgrounds. This marginalization of translation has led to minimizing its potentials for global knowledge sharing. Translation from one language to another seems to be solving only the issue of the language constraints and barriers associated with multi-language world communication. The fact is that the role of translation is now being recognized as an interdisciplinary field with an unlimited contribution to cross-cultural communication and global connectivity. Globalization and the advancement of technology have given a new dimension in rethinking translation studies as an academic discipline. There has been a high tendency to use Technology-enhanced translation to meet the ever-persisting demand for massive translation bulk of documents and papers required for global contact. The diffusion of technology-based Translation has created new possibilities for translators and practitioners, which in fact, are more daunting and complicated in nature. The traditional role is to translate numerous texts manually without any intervention of MT. However, some translators tend to use Google translate to take the grab of meaning and then work on post-editing to fix the shortcoming of the automated translated version. Whether the translators use MT or even make use of the CAT tools to assist in polishing the final product, still the whole process seems to be time-consuming. On the other hand, translators need some computational skills to deal with file formats and templates to keep the consistency of work. Nevertheless, TMS keeps automatic formatting and filing on the system that eliminates the hassle associated with a high level of computer competency.

Keeping an eye on the translation industry around the globe and how it is thriving, it requires human translators to be more flexible and up-to-date to reconsider what technology might offer to keep abreast with the market demand. Through the traditional scenarios, a company hires some internal translators to handle any translation issues required by the top management. That is not the case with big companies where the demand for translation is rapidly increasing. Some companies hire external translators through their TMS with various job responsibilities to work on specific projects.

To wrap up, the future of the translation industry is evolving swiftly, and more challenging opportunities are made available for translators to participate in flourishing the industry. Every single moment a job is posted online, translation projects are launched, and freelance services

are offered online. Therefore, it is high time to get rid of traditional norms and accept the new practices of applying all these techniques for faster, convenient, and high-quality translation outcomes.

CONCLUSION

The study is conducted on a minimal scale that is the use of Google Translate to translate An Arabic text. The overall performance (83% compared to 90% manual translation) as rated by Grammarly indicates that Google Translate has deep potentials in translating Arabic texts. However, the study uses google to translate an informative text. Hence, the results could not be generalized to indicate the same efficiency while translating different types of texts, such as literal texts, scientific texts, and legal texts. According to the evaluation scale based on linguistic elements, the finding does not assume that the sample used and the evaluation scale are sufficient to jump to a definite conclusion about the potentials of MT in translating Arabic texts. However, the role of MT in increasing productivity and efficiency can not be ignored regardless of how good is the translation outcomes.

Beyond any doubt, Technology has remarkably altered how the global market demands translation and localization of contents makes it accessible in multi-languages to reach every corner of the globe. Companies and enterprises require translation services to advertise their products through fliers, catalogs, onsite presentations, and manual guide. These practices cost a fortune as the price of translating a bulk of documents by human translators' cost colossal money and take much time. Therefore, using TMS seems to be the perfect solution to meet the ever-persisting demand for translation to satisfy the target market.

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