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The impact of technology on Translation

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Abstract

Technology development has had a significant impact on translation. This research paper attempts to uncover the impact of technology on translation from translators and translation experts' perspectives. It explores how translators view the effects of technology on their profession as well as the difficulties they encounter when dealing with such machine tools. An eclectic method is followed in the study, viz., expert interviews and a survey of

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professional translators, to grasp the attitudes towards technology in the translation industry. The findings show that people in the field of translation inconsistently opine about the current situation and varyingly speculate about the future of the relation between translation and technology. The study reveals that the accuracy of machine translation, the requirement for ongoing learning and training, and some moral issues with the application of translation technologies are the major concerns among human translators.

Keywords: machine translation; technology in translation; impact of technology; future of human translators.

تأثير التكنولوجيا على الترجمة

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الـمستخلـص

كان للتطور التكنولوجي تأثيراً كبيراً على الترجمة إذ تحاول هذه الورقة البحثية الكشـــف عن تأثير التكنولوجيا على الترجمة من وجهة نظر المترجمين وخبراء الترجمة. وتســـتكشـــف كيف ينظر المترجمون إلى تأثيرات التكنولوجيا على مهنتهم بالإضـــافة إلى الصـــعوبات التي يواجهونها عند التعامل مع مثل هذه الأدوات الآلية. تم اتباع طريقة انتقائية في الدراســـة، أي إجراء مقابلات مع الخبراء واســتبيان للمترجمين المحترفين؛ لفهم المواقف تجاه التكنولوجيا في صــناعة الترجمة. تظهر النتائج أن الأشـــخاص العاملين في مجال الترجمة لديهم آراء غير متســـقة حول الوضـــع الحالي ويتكهنون بشـكل متفاوت حول مسـتقبل العلاقة بين الترجمة والتكنولوجيا. وتكشـف الدراسـة أن دقة الترجمة الآلية، ومتطلبات التعلم والتدريب المســـتمر، وبعض القضـــايا الأخلاقية مع تطبيق تقنيات الترجمة هي الاهتمامات الرئيسية بين المترجمين البشريين.

الكلمات الدالة: تأثير التكنولوجيا، الترجمة الالية .

Introduction:

According to Nimdzi (2021), there are already more than 700 language technology solutions available which gives translators many options in a way that allows them to choose the most suitable translation tool that meets their translation needs from rich diverse repository. Translation technologies have, controversially, revolutionised the field of translation. Computer-assisted translation (CAT), machine translation (MT), and translation memory systems (TMS) have made translation faster, easier, more accurate, and more accessible to a wider range of audience (O'Hagan, 2013).

The divergent views on how translation technology will impact the demand for human translators highlight the complexity of the relationship between technology and the demand for these professionals, which may depend on a number of variables, including the type of translation needed and the required level of quality. Depending on the specific circumstance, different types of translation may call for different kinds of technology or may profit more or less from its use. This encourages the variety in technology use for various translation types. Given the challenges in deploying translation technology, it is crucial to keep funding research and development to ensure that it keeps advancing to satisfy professional standards (Carl and Way (2003).

Technology has significantly impacted the translation market. According to Bowker and Pearson (2002), CAT tools can reduce the cost and time of translation, improve the quality of the translation, and increase consistency across translations. In other words, these technologies have various advantages, including enhanced consistency and precision, increased speed and efficiency, and lower prices. They do, however, have their limitations and cannot replace human translator's knowledge and imagination. It will be interesting to see how the translation industry and the role of human translators within it continue to change as technology develops. Technology's influence on translation has pros and cons. While there are numerous advantages, there are also many difficulties for translators and the translation business. The purpose of this study paper is to examine how technology

affects translation and the difficulties that translators have when utilizing technological tools.

2. Review of Literature

2.1. Historical background

Since the beginning of the recorded human history, translation has been a crucial component of communication (Schäffner, 2014). Traditionally, a text is translated from the source language into the target language by a human translator who must have thorough knowledge of both. The translator studies the original text, absorbs its content, and then creates a translation that truthfully transfers the original meaning. To achieve a high level of accuracy, the translator must consult dictionaries, glossaries, and other reference materials.

Early attempts to create machine translation date back to the 1950s; nevertheless, translation technology has developed through time (Hutchins, 2003). Since then, there have been a number of significant developments in translation technology, such as CAT tools in the 1980s and the development of the internet, which has aided in the development of online translation tools and resources.

The urge to connect across linguistic boundaries may be found in ancient cultures, which is where translation got its start. Without modern technologies, translation was essentially a labor-intensive manual procedure. Using their knowledge and linguistic expertise, knowledgeable linguists and scribes carefully translated texts by hand (Hutchins & Somers, 1992). The development of computing in the middle of the 20th century led to a revolution in translation technology. Machine translation (MT) systems were created as a result of the automation of translation operations made possible by electronic computers. The early MT systems relied on rule-based strategies and linguistic algorithms, such as the Georgetown-IBM project in the 1950s. However, these early systems' shortcomings—which frequently resulted in incorrect or absurd translations—highlighted the complexity of language and the need for additional innovation (Hutchins & Somers, 1992).

Statistical machine translation (SMT), a development in translation technology, appeared in the 1990s. Large bilingual corpora were used by SMT systems to create statistical

models, allowing for more precise translations. Although SMT had its own difficulties, this data-driven methodology represented a substantial divergence from rule-based systems and opened the door for further development (Koehn, 2010).

The field of translation underwent a revolution with the emergence of neural machine translation (NMT) in the late 2010s. Deep learning techniques are used by NMT, which is powered by AI, to process and produce translations. NMT models show better fluency, accuracy, and the capacity to capture contextual nuances by utilising enormous volumes of training data. These models, like Google Translate's Neural Machine Translation, have advanced significantly in terms of sophistication and have helped to close the language gap (Sutskever et al., 2014; Bahdanau et al., 2014).

Although AI-driven translation technology is still developing, there is an increasing understanding of the significance of A rising understanding of the value of human skill in translation is emerging even as AI-driven translation technology continues to progress. The use of hybrid strategies that incorporate the benefits of both human post-editing and machine translation has become more popular. By making suggestions and automating tedious processes, translation tools like computer-assisted translation (CAT) software help human translators and increase their productivity and efficiency (Popovi, 2015).

An important turning point in the history of translation occurred with the development of the printing press in the 15th century. The widespread production of books aided in the spread of information and produced grammars and dictionaries, which were helpful to translators in their work. In order to aid in the translation process, mechanical instruments such as the first translation machines and word-for-word translation tools arose (Hutchins & Somers, 1992).

In recent years, technology has had a big impact on the translation industry. The translation technology has been around for more than 50 years but only recently has its popularity increased.

2.2. Translation Technologies

Machine translation (MT)

The most well-known translational technology now in use is machine translation (MT). It involves converting text from one language to another using software or algorithms. The key benefit of MT is its efficiency and speed, which makes it perfect for handling massive amounts of text. In situations like online chat or email interactions, where a quick translation is all that is required, MT can also be helpful. However, MT shows frequently low quality, which might result in translation errors and inaccuracies. The intricacies of language and cultural context are another area where MT falls short, making it inappropriate for a variety of translations, including literary works and marketing materials.

Statistical MT, on the other hand, uses statistical models to generate translations. The system analyses a large corpus of bilingual texts to identify patterns and relationships between words in the source and target languages. The system then uses these patterns to generate translations. According to Koehn (2010), statistical MT is more flexible than rule-based MT and can handle languages with complex grammar structures. However, it requires a large corpus of bilingual texts to train the system. MT is the process of automatically translating text from one language into another using computer algorithms. Rule-based machine translation (RBMT), statistical machine translation (SMT), and neural machine translation (NMT) are the three primary methods used in machine translation (Koehn, 2009).

Rule-based Machine Translation (RBMT)

RBMT techniques use dictionaries and linguistic rules to produce translations. Language complexity and the requirement for substantial linguistic expertise to provide reliable translations can be limiting factors for RBMT systems.

Statistical Machine Translation (SMT)

SMT systems examine massive corpus of multilingual text to find patterns and produce translations. The effectiveness of the statistical models utilised, and the accessibility of high-quality corpora are both key factors in the quality of SMT translations.

Neural Machine Translation (NMT)

A cutting-edge method of machine translation called neural machine translation (NMT) uses deep learning and artificial neural networks to produce accurate translations. In contrast to conventional rule-based or statistical machine translation techniques, NMT models study enormous quantities of multilingual training data to develop translation skills. In NMT models, the source text is encoded into a continuous representation using an encoder, and the translated output is produced using a decoder based on that representation. In comparison to earlier methods, NMT models produce more accurate and fluent translations because they are excellent at catching complicated linguistic patterns, contextual complexity, and long-range dependencies. NMT models are extremely versatile and adaptable due to their capacity to learn from data and adapt to various language pairs and domains. NMT shows significant promise for removing language barriers, promoting international communication, and fostering cross-cultural understanding as it develops and gets better (Sutskever et al., 2014; Bahdanau et al., 2014).

NMT systems produce translations using artificial neural networks, more specifically deep learning methods. Compared to RBMT and SMT systems, they have demonstrated considerable increases in translation quality, but they also need a lot of training data and computational power (Bahdanau et al., 2014).

Computer-assisted translation (CAT)

Another technology used in translation is computer-assisted translation (CAT), which is a software used to assist human translators during the translation process. Tasks like terminology management, translation memory, and quality assurance can be aided by the program. CAT offers a number of benefits, such as greater production and efficiency as well as improved consistency and accuracy in translations. As it enables translators to work more quickly and consistently, CAT can also aid in cost savings. CAT does, however, have some restrictions. The software can only supplement some activities; it cannot take the place of a human translator's knowledge and imagination. The talent and expertise of the translator are still important factors in the translation's quality.

CAT tools are programmes that assist human translators in their work. They amplify and expedite the translation process rather than taking the place of human translators. CAT essential tools involve:

Translation memory (TM):

TM technology is based on a database where previously translated text and passages are saved so they can be reused in new translations, enhancing consistency and speeding up translation. The use of translation memory (TM), a potent tool for increasing accuracy and consistency in translation, is widespread nowadays. In essence, TM is a database that keeps track of previously translated sentences, phrases, and their accompanying translations. The TM programme automatically looks for matches between the source text and the saved segments when a translator is working on a new project, recommending previously translated material that can be reused. This not only expedites the translation process but also guarantees terminology and stylistic uniformity across various papers or projects. The TM can be updated and expanded by translators by adding new translations, becoming a useful resource for upcoming projects. Translators may increase productivity, maintain quality, and provide correct translations in a more streamlined and effective manner by utilising the power of TM (Popovi, 2015).

Quality Assurance Tools (QAT)

These include grammar and spelling checks, terminology checkers, and consistency checkers. They are helpful tools in locating errors and inconsistencies in translations. In order to make sure that translated content is accurate and consistent, quality assurance tools (QAT) are extremely important. QAT include a range of software tools and methods that help proofreaders and translators spot mistakes, inconsistencies, and other potential problems during the translation process. These programmes frequently have functions like spelling and grammar checks, terminology management, and analysis of style consistency. Using QAT, translators can find and fix mistakes instantly, enhancing the overall quality of the translated text. In order to ensure that the translated text complies with the client's preferences and industry norms, QAT can also assist in maintaining consistency in terminology usage. QAT enables translators to improve the calibre and dependability of

their work, ultimately providing clients with precise and polished translations (Popovi, 2015).

Terminology Management:

It is a method for keeping track of terminology to enable accurate and consistent translations. One of the most important parts of the translation process is terminology management, which aims to preserve accuracy and consistency in the usage of specialised terms and terminology across various projects and documents. It entails the development, management, and upkeep of a central database or glossary containing accepted and standardised terms unique to a given subject or domain. During the translation process, terminology management guarantees that translators have access to a trustworthy source of terminology, minimising ambiguity and enhancing the accuracy and quality of translations. Translators can improve the readability and comprehension of the target material by using consistent language, ensuring that the intended meaning is accurately communicated to the target audience. Additionally, terminology management promotes consistency and coherence in the translated text by enabling effective collaboration among translators working on the same project or within the same organisation (ISO 12616:2002).

2.3. Impact of Technology on the Translation Business

The truth is that human translators continue to be an essential element of the translation process, despite occasional claims to the contrary. This is especially true of developments in machine translation. Currently, colloquial idioms, cultural quirks, and other linguistic intricacies provide challenges for machine translation. So long as translations are to be accurate and of high quality, human translators will still be required (Doherty & Kenny, 2014). This is especially true for specialised domains like legal, medical, and technical translation.

The accuracy and consistency of translations have both improved thanks to translation technology. To preserve consistency and cut down on errors, translation memory, terminology management systems, and quality assurance tools are used.

The effectiveness and productivity of human translators have considerably risen as a result of the use of translation technology, such as CAT tools and machine translation. These

technologies let translators concentrate on more difficult parts of translation, such tailoring information to the target audience and guaranteeing cultural appropriateness, by automating monotonous activities and providing useful resources.

Access to translation services has been made more accessible by the broad availability of internet translation tools and resources. This has facilitated communication across language barriers and made translations available to people and organisations with low financial and technological potentials.

There are also some ethical issues associated with using technology in translation, i.e., data security and privacy, MT bias and intellectual property and copyright. Since translation technology makes extensive use of data, data security and privacy are thorny issues. Respecting the privacy rights of people whose data may be utilised in the development of translation technology is essential, as is ensuring the preservation of sensitive information and intellectual property. In terms of Bias, it happens because of the input training data which may occasionally be reflected and reinforced by machine translation systems. This may result in skewed translations, which could have detrimental effects on technology users and support the maintenance of prejudice and preconceptions (Caliskan et al., 2017).

The use of MT poses issues with copyright and intellectual property. It could possibly violate copyright holders' rights because translated works could be seen as derivative works. The makers of translation software may also assert intellectual property rights over the translations generated by their programmes.

Greater tool and resource integration within the translation workflow is probably introduced in the near future of translation technology. This might entail the creation of more sophisticated and specialised CAT technologies as well as more fluid communication between human and MT.

The translation industry has benefited from technology in many ways, including greater productivity, accessibility, and efficiency. While embracing the potential advantages that technology might bring to the area of translation, it is crucial to address the ethical questions and difficulties that might develop as it continues to advance. To continue

producing accurate, superior translations, it is crucial to achieve a balance between the application of technology and the unique human skills that translators offer.

Despite the various promising developments in translation technology, there may still be challenges and problems, such as the requirement for a significant amount of high-quality data to train MT systems, the possibility for bias to persist in translations produced by machines, and the requirement to handle ethical issues pertaining to data privacy, security, and intellectual property.

As artificial intelligence (AI) advances, we may expect improvements in machine translation quality and capabilities. Machine translation systems that are better equipped to interpret and imitate the nuances of human language may cause the difference between human and machine-generated translations to become considerably less.

However, there has been much debate in the translation industry about the accuracy of machine translation. Neves (2016) asserts that the quality of machine translation is still below that of human translation. Due to the risks involved in using machine translation for crucial translations, such as legal and medical documents, non-human translations have been discouraged. Therefore, human involvement is still required to guarantee the accuracy of the translated content. The incorporation of technology has also made it necessary for translators to continue their learning to keep up with the situation and improve their skills to utilise the machine translations most. O'Brien (2016) contends that in order to be competitive in the field, translators must stay up to date with advancements in translation technology. As a result, there is now more need for translation training and professional development programs. In a thorough investigation into how technology affects translation quality, O'Brien, Simard, and Specia (2019) discovered that, despite the many advantages it has brought, human creativity and knowledge remain crucial for producing translations of a high standard.

Lin and Hsieh (2018) studied the effects of technology on the translation process through a case study of a translation company. According to their research, computer-assisted translation technologies can increase productivity and efficiency but they cannot take the place of a human translator's expertise. Wang (2018) carried out a case study on the effect

of machine translation on the caliber of translations from English to Chinese. According to the study, although machine translation can be helpful for straightforward translations, it is still far from ideal, and human translators are required for producing translations of a high standard. Guerberof Arenas and O'Brien (2018) investigated how translation is impacted by speech recognition technologies. Despite the fact that voice recognition technology can be helpful in some situations, the study plainly state that it is not yet accurate enough to replace human translators.

A thorough assessment of the effects of technology on the translation industry is given by Pym (2016). The history of machine translation, advancements in computer-assisted translation tools, and effects of technology on the function of human translators are all covered in the paper. Olivieri (2016) investigated how translation memory tools affect the quality of translation. According to the study, while translation memory can increase consistency and decrease errors in translations, it can also result in a loss of creativity and high-quality translations.

The effects of machine translation on the translation industry were examined by Moorkens, Castilho, and Gaspari in 2015. The study showed that while machine translation has advanced significantly in recent years, according to their study, it is still a long way from fully replacing human translators. O'Hagan and Ashworth (2014) conducted a research on how professional translators think about and use technology in their work. The survey discovered that although though a lot of translators utilize machine translation and computer-assisted translation tools, they still believe that human creativity and knowledge are crucial for producing translations of a high calibre.

3. Methodology:

This study follows an eclectic method of enquiry and argumentation to explore the impact of technology on translation. An investigation was made into the opinions of professional translators regarding how technology has affected their line of work. That is, in order to learn more about the difficulties and opportunities related to integrating technology in translation, interviews with professionals in the field of translation technology were undertaken. Professional translators with at least three years of experience participated in the online survey.

The study included questionnaire about the application of translation technology, the accuracy of machine translation, and how technology has affected the work of translators. 100 replies in all were gathered. Six experts in the area of translation technology were interviewed. The professionals were chosen based on their backgrounds and technical knowledge in translation. The obstacles and opportunities related to integrating technology in translation were the main topics of the interviews.

4. Data Presentation

The translation professionals were asked ten open-ended questions related to the impact of technology on translation. When dealing with the data obtained from the survey, some statistics will reveal the contradictory opinions translators have with reference to the impact of technology on translation. Seventy-eight percent of the 80 translation experts who took part in the study said they used technology in their job with the CATs as the most often used translation technique, utilised by 82% of respondents. However, translation memory systems were used by 62% of respondents while MT was chosen by 43% of respondents only. The respondents listed a number of advantages of MT, but the most recurrent one was that of speed up of the execution of their tasks, 78%. On the other hand, 68% have stated that they think that MT is unsuccessful when considering legal or technical texts with elusive or subtle content.

Regarding the participants' opinion about how technology affected their translation tasks, there were conflicting beliefs. That is, 54% reported positive opinion while 46% went with the opposite. However, 40% of the participants reported that they joined training programs or looked for resources to better handle new translation technologies while 60% have used their personal skills including trail and errors strategy to adapt to new translation technologies.

According to 74% of the respondents, the role of human translators has changed because translation technology is used more frequently, and their role of editing MT translation is easier than before. However, 18% of respondents confirmed that they now spend more time

editing machine translations than they do translating from start. When asked whether the use of MT had a positive or negative effect on the demand for human translators, 52% of respondents said that the demand for these professionals had increased, 30% said there had been no change, and 18% said it had decreased. When asked whether they preferred translation technology for any particular sorts of translation, 46% of positive responses said that they thought that they used it for all types of texts, 30% said they utilised it in legal translations, and 22% said it suited best their creative translations.

There are 74% respondents who reported the challenge of ongoing learning and training, while 54% opined that integrating various technologies was the most challenge for translators in the future. 30% reported the requirement for specialist technical expertise as one of the challenges associated with the use of translation technology. According to the respondents, the pricing structure for translation services has changed as a result of the introduction of technologies in the field of translation. 28% responses indicated an increase in project-based charges while 60% reporting a decrease in per-word rates. When asked whether translation technology has improved overall translation quality, 42% of respondents said yes, 36% said no change had occurred, and 16% said it had decreased.

As a supporting method of collecting data on the topic of the impact of technology on translation, six experts were asked about the biggest changes they have noticed in the translation sector over the last ten years and how the use of technology has changed the process of translation. Moreover, they were asked to name a few advantages and disadvantages of MT in the translation profession. About their opinion with justifications, they gave their expectations about whether MT will ever be substitute for human translation and be totally independent. They were also requested to give some hints on the skills and knowledge crucial for translators in the current translation market and to show how significant ongoing learning and professional growth are in the translating field. The questions were directed to elicit their anticipation of the future influence of the MT and other translation software, like ChatGPT, their problems and solutions and general suggestions for new translators.

5. Data Analysis

The prevalence of technology use among translators shows that technology is playing a bigger role in the translation process. Many professionals are adopting technology to increase the productivity and consistency of their work mostly using CAT tools and translation memory systems. While MT has the potential to increase productivity and efficiency, the disadvantages mentioned by respondents imply that human intervention is still frequently required to assure correctness and consistency especially in some special texts.

The conflicting opinions on how technology affects translation quality imply that a number of variables, such as the difficulty of the translation, the language pair, and the particular technology utilized, may affect how effective translation technology is. According to the respondents' statements about the significance of training and professional development, ongoing support and education are required to make sure that translators have the knowledge and abilities needed to use and profit from translation technology. According to respondents, the role of human translators has changed, which emphasizes the necessity for translators to adapt to new technology and concentrate on the parts of translation that call for human competence, like cultural nuance and artistic expression.

The conflicting opinions on how translation technology will affect the demand for human translators point to the complexity of the relationship between technology and the demand for human translators, which may depend on a variety of factors, including the type of translation required and the level of quality required. Different types of translation may require different types of technology or may benefit more or less from the use of technology depending on the particular situation. This motivates the diversity in the use of technology for different types of translation. Given the difficulties in using translation technology, it is vital to continue investing in research and development to make sure that technology keeps improving to meet the demands of professionals.

From a different angle, the data obtained from the participants show that, pricing tactics and translation templates have changed as a result of the introduction of technology into the translation market. The conflicting opinions on how technology impacted the overall quality of translations imply that a variety of factors, such as the type of technology

employed and the particular translation context, may impact the output of a technology-based translation.

From the experts' perspective, MT enables translators to work in more speed and efficiency, which can help clients save money. Some intriguing insights into how technology impacts the translation profession have emerged from the interviews with the specialists in the subject. One of the main conclusions is that the adoption of technology has boosted output while lowering costs in the translation market. The advent of machine translation (MT) systems, which may offer suggestions for translations, spot faults, and automate some jobs for human translators, is mostly to blame for this. The experts referred to the AI translation that proved to be more accurate in a way that is based on deep learning of thousands of similar structures in different context in which the cultural references and the contextual and situational data are considered.

However, the experts in the field expressed some serious reservations about the accuracy of traditional MT that is not based on AI models of translation. Despite recent considerable advancements, MT still falls short of the accuracy, nuance, and style of human translation. This is especially true for writings that call for a high level of cultural sensitivity and subject-specific expertise, as well as for languages with complicated grammar and syntax. The expert asserted that MT, even in its AI-based version, is unlikely to completely replace human translation, and the demand for human translators will always exist.

The experts also emphasized the necessity of ongoing training and development for translators in order to keep up with the most recent advancements in translation technology, e.g., AI ChatGPT. To stay competitive and relevant in the field as technology develops quickly, translators must be able to adapt to new tools, platforms, and workflows. This could entail picking up new MT techniques, mastering new CAT tools, or gaining new abilities like post-editing or localization. Translation professionals should stay updated with these changes and retain their level of skill in the area by engaging in ongoing learning and professional development.

The integration of technology has benefited the translation sector greatly, increasing productivity and lowering costs, according to the interviews with specialists in the field of

translation technology. However, there are still many questions about the accuracy of machine translation, and it seems unlikely that robots will ever completely replace human translators. For translators to keep up with the most recent advancements in translation technology and maintain their competitiveness in the field, continual study and professional growth are essential.

6. Conclusion

The author investigates the effects of technology on the translation process and its implications for the future. The effect of technology on the translation market has generated different opinions among the participants in this study. The survey points out that although technology has benefited the translation sector greatly, it has also led to worries about job security and quality. This study offers insightful information on how people in the field of translation think about how technology has affected their industry and what they speculate about the future.

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