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Impact of Computer-Aided Translation Tools on the Product of Future Translators

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***Abstract*—Computer-aided translation (CAT) tools have been widely adopted in both professional translation settings and university translation programs. This study investigates the impact of CAT tools on future translators. Two instruments were administrated in this single-group experimental study. First, a pre–post test collected quantitative data to explore the impact of CAT tools on the translation quality and efficiency of future translators in the Bachelor of English Language and Translation program at Qassim University. Second, semistructured interviews explored students' perspectives on the use of CAT tools. The data from the pre–post test were analyzed via a paired samples t-test, while the qualitative interview data were thematically analyzed. The findings revealed significant evidence of improvements in both translation quality and efficiency (i.e., time required to perform translation tasks) for students using CAT tools. Most respondents reported significantly increased productivity as a significant benefit of CAT tools and expressed positive perspectives toward these tools. Furthermore, the findings revealed that CAT tools helped maintain consistency in terminology across translated texts. Nevertheless, students reported the following challenges: limited technological competence, inadequate training in CAT tools and issues related to text segmentation. The author recommends raising students' awareness of the importance of translation technology skills and postediting CAT-translated text. Moreover, it advocates the development of a comprehensive student training program in CAT tools.**

***Index Terms*—computer-aided translation, CAT tools, translation technology, machine learning, translation quality**

I. Introduction

A. Introduction

In today's rapidly globalizing world, with its ever-increasing demand for translation, translation processes have become more sophisticated and have increasingly involved new technologies. Consequently, there has been a growing reliance on computer technology to assist and optimize the process of translation (Vukalovi, 2021). Consequently, translation practices have been affected by the new technology and tools, changing both activities and standards in the field of translation, as stated by Newton (2002; as cited in Shallal, 2018). The integration of computer technology has recently emerged in the global translation market (Al-Jarf, 2017). The use of technology in translation began with the notion that machines could replace human translators. However, translation automation has faced significant criticism, leading to a growing consensus that technology should instead be used to assist, rather than replace, human translators (Taravella & Villeneuve, 2013). Today, advances in computer technology are essential tools for translators in the industry (Bowker, 2002).

Computer-aided translation (CAT) tools, defined by Bowker (2002) as "any type of computerized tool that translators use to help them do their job" (p. 6), are now widely used in translation. Bowker and Fisher (2010) noted that the improvements of computational linguistics during the late 1970s and early 1980s played a pivotal role in the development of current CAT tools, which were developed in the early 1990s to address the increasing demand of corporations and organizations to localize their products and services for diverse languages and markets (Garcia, 2014). CAT tools can significantly improve the translation process and help translators meet the increasing demands of the translation market (Peng, 2018). According to Odacıoglu and Kokturk (2015), CAT tools improve the efficiency of translation tasks, with the main objective being to achieve a high-quality translation that simulates the behavior of a human translator through man–machine interaction (Sin-wai, 2014). Translators are expected to be proficient in using CAT tools to remain competitive and meet industry demands (Xu & Wang, 2011). Consequently, translators are urged to adopt specialized applications and software systems, particularly those designed to support and enhance the translation process (Fulford & Granell-Zafra, 2005).

Translation has consistently been linked to the concept of quality, which has long been a key focus (Williams, 2004). Mahmoudian et al. (2011) defined the quality of translation as the appropriateness of words and sentences in terms of clarity, use of common language and content or meaning similarity. In contrast, House (1997) argued that assessing translation quality requires a theory of translation. Thus, different perspectives on translation lead to varying definitions of translation quality, resulting in various assessment methods. According to Rothe-Neves (2002), the main issues remain determining how to define and express quality and how to identify the appropriate criteria to evaluate the quality of a

translation. To sum up, the main goal of assessing translation quality is to ensure that the translation product achieves and delivers a defined quality standard (Doherty, 2016).

B. Statement of the Problem

English language and translation students at Qassim University complete various 3-hour credit translation courses throughout their academic program. One topic emphasizes translation technology, specifically CAT tools. When the author was asked to teach this topic to the English language and translation students at fourth year of study 'level eight', he found that students lack an understanding of the impact of CAT tools on the translator's product, i.e., translation quality.

CAT has increasingly become an essential topic in translation courses, translation programs and translator training programs in universities and private language institutes at the undergraduate and postgraduate levels (Olohan, 2011); however, understanding how CAT tools affect the quality of translations produced by future translators—here, English language and translation students at Qassim University, Saudi Arabia—and their perspectives on using CAT tools has not been documented in the literature. Thus, the current study seeks to contribute to the field of translation technology by filling this gap.

II. Literature Review

A. The Evolution of CAT Tools

The science and technology of translation have become a commonly discussed topic in the field of translation (Franco Aixelá, 2009; Wright & Wright, 1993). These translation technologies and tools offer various advantages, such as enhancing accuracy, increasing productivity and improving effectiveness (Dickins et al., 2016). CAT tools in particular have substantially transformed the translation industry (Al-Jarf, 2017; Alotaibi, 2014, 2020; Bowker, 2014, 2020; Kornacki, 2018; Sin-wai, 2014, 2023; Vela et al., 2019). Pym (2011) emphasized that using CAT tools in translation has become essential for several reasons: First, they accelerate the translation process; second, they ensure the consistency of terminology in the target text by integrating terminology databases; and finally, they allow translations to be stored for future use through translation memory.

Doherty (2016) noted that CAT tools positively impact translation by increasing translators' productivity and enhancing translation quality. However, these tools pose challenges for professional translators and the industry as well. Such challenges can be overcome by highlighting the need for greater awareness and technological competency.

The importance of integrating CAT tools into translation courses was emphasized by Erwen and Wenming (2013), who noted that students' effective use of this technology enabled them to overcome challenges in the translation process and produce high-quality translated texts. Kenny (1999) noted that incorporating CAT tools into university curricula can expand opportunities for new areas of research and pedagogy.

Students' perceptions of the use of CAT tools in translation is a key element to address. A study by Yao (2017) investigating the adoption of CAT tools in translation education in China revealed that 68.7% of the participants were not very familiar with CAT tools, 16.67% were familiar, 12.5% were very familiar, whereas 2.08% were unfamiliar with these tools. These findings indicated misconceptions in perceptions of CAT tools among many teachers. In the same vein, Çetiner (2018) investigated translation students' attitudes towards translation technologies and found significant statistical differences in test scores before and after the training.

Popova et al. (2021) examined the content of mastering CAT tools within future translators' training programs. The study analyzed the factors that contribute to effective use of CAT tools and, based on expert recommendations, proposed a specialized course titled "CAT Technologies in Translation Activities" focusing on the benefits and functionalities of the SDL Trados system. According to Popova et al., introducing such courses to translator training programs is crucial to equip students with the technological skills necessary to master CAT tools, enhance the effectiveness of training programs and prepare graduates to compete in the modern translation industry.

In Saudi Arabia, Alotaibi (2014) evaluated participants' attitudes and expectations regarding CAT tools. The findings revealed a significant correlation between the increased knowledge of CAT tools and a change in students' attitudes towards translation technology. Based on these findings, the study recommended integrating CAT tools into translation curricula to enhance translators' competencies and maximize their employment opportunities in the translation industry.

Omar et al. (2020) explored the opportunities and challenges associated with integrating translation software and modern technologies into translation pedagogy at Saudi universities. The study interviewed 37 translation instructors from nine universities in Saudi Arabia. The findings revealed that the adoption of translation software and translation technologies was lower than anticipated. Several factors contributed to this, including instructors' preference for manual translation over the use of CAT tools, the lack of translation technology resources provided by institutions and misalignment between course learning outcomes and the demands of the translation industry.

B. Translation Quality

Translation quality refers to the quality of the final translated text or "end product." There are three key aspects of translation quality (Gouadec, 2012): First, quality must be considered within the context of the translation profession's activities; second, the quality, efficiency and relevance of service delivery are interdependent with the quality of the end product; and finally, it is essential to develop a comprehensive model for assessing quality in both translation and the

translation process. Heltai (2014) noted that the quality levels of translation can be assessed based on the following factors: (a) the translator's competence, such as their linguistic and cultural proficiency in both languages; (b) the translational situation, such as the time available and the use of translation tools; and (c) the translation's shortcomings, such as mistranslations. Koby et al. (2014) argued that translation quality metrics must be based on a well-defined foundation that incorporates clearly defined concepts. However, House (1997) noted that it is challenging to create a definitive assessment of translation quality that meets the criteria of objectivity.

According to Çetiner (2021), translation quality has become crucial in translation projects. Many professional companies use translation technologies, specifically CAT tools, to enhance the consistency of their translation products, control the quality of the translation and allow product checks before submission to clients. Çetiner compared the quality assurance metrics of a CAT tool—Memsource—with the metrics used in the translation industry, focusing on error categories, the quality assurance (QA) metrics used in CAT tools are more limited than professional translation quality assessment (TQA) metrics. Additionally, TQA metrics are more comprehensive, whereas the QA metrics in CAT tools primarily address linguistic errors.

Stejskal (2009) established two methods for evaluating translation quality. The first method, *metrics*, depends on error counting, such as the LISA Quality Assurance model 3.1, ATA and ASTM, whereas the second, *holistic assessment*, utilizes evaluation rubrics. In contrast, Paprocka (2008) stated that translation quality assessment is based on two main criteria: (a) *form*, which refers to the correctness of the target language and (b) *meaning*, which refers to the accuracy of the translation.

Thelen (2008) examined various translation quality assessment approaches and argued that it is challenging to create a unified model that can evaluate all types of translation tasks and is adaptable to any translation context. Thelen also argued that different translation tasks require different quality assessment methods and that not all translators can be evaluated following the same set of criteria. Moreover, the study highlighted that establishing a quality management and quality control system to monitor all aspects related to translation is easier than developing a model aimed at measuring the quality of the product, i.e., the translation.

In a different study, Asiri and Metwally (2020) explored the impact of linguistic and cultural competence on translation quality. Their study adopted a selective analytical approach to examine translation students' mistakes. They found that students' lack of linguistic and cultural competence negatively impacted the quality of the translation. The study proposed a thorough teaching of translation strategies in translation courses and greater emphasis on students' awareness of cultural influence in conveying meaning from the source text to the target text during lecture activities to enhance their translation competence.

III. Methodology

A. Research Questions

The following research questions guide this study:

1. What is the impact of using CAT tools on the product of future translators?
2. What is the impact of using CAT tool on translation efficiency as indicated by the pre–post test?
3. What are future translators' perspectives on using CAT tools?

B. Research Hypotheses

The study aims to test the following hypotheses:

1. The posttest results show a significant improvement in the translation quality produced by English language and translation students at Qassim University.
2. The posttest results show a significant decrease in the time taken to complete a translation task by English language and translation students at Qassim University.

C. Subjects

The sample for this study were 17 eighth-level undergraduate male students in the Bachelor of English Language and Translation program at Qassim University, Saudi Arabia, who were enrolled in the course "Issues and Problems in Translation." The English Language and Translation program was established at Qassim University in the academic year 1991–1992. The program offers a diverse range of translation courses designed to equip graduates with the essential skills necessary for successful careers in translation. Participants were informed that participating in this study was voluntary and that they had the right to withdraw from the study at any time without any consequences. Their responses remained confidential. The ethical approval was obtained on 19 September 2024 from the Ethical Committee of the Deanship of Postgraduate Studies and Scientific Research, Qassim University, Saudi Arabia, with a reference number [24-05-03].

D. Instruments

The research design used in this study is a pre–post single-group experimental design with semistructured interviews. Pre and posttests are a typical design to evaluate a specific intervention (Alessandri et al., 2017), in this case, the impact of (not) using the Smartcat tool on the translation quality and efficiency of future translators. For qualitative data, interviews are the most prevalent method of data collection (Taylor, 2005), with the semistructured format being the most

commonly employed interview technique in qualitative research (DiCicco-Bloom & Crabtree, 2006). Consequently, semistructured interviews—featuring a flexible set of questions conducted by the author and audio recorded—were administered to gain qualitative insights into future translators' perspectives on the use of CAT tools. Quantitative data were collected separately through a pre–post test.

E. Data Collection Procedures

(a). Pre–Posttest Single-Group Experimental Design

The participants were asked to translate the same test twice to ensure that the translation tasks were identical in the pre- and posttests. The test selection was based on the author's expertise in teaching within the program and his knowledge of the translation students' capabilities. The test was adopted from *The Routledge Course on Media, Legal and Technical Translation: English–Arabic–English* (Altarabin, 2020). The test was translated once traditionally (i.e., the pretest without the use of the CAT tool) and the second time with the use of the CAT tool (i.e., the posttest). The researcher allowed an 8-week interval for participants to familiarize themselves with the CAT tool before conducting the posttest. To avoid bias, two independent experts in the field of Arabic–English translation evaluated the pre–posttest translations. To establish test validity, it was submitted, along with the evaluation criteria, to five students—who were excluded from the study—and three translation experts. They reported the test's validity and appropriateness for assessing students' translation quality in both the pretest and posttest.

1. Evaluation Criteria

The evaluation of translation quality lacks a singular set of criteria due to the differences in linguistic elements between the source language and the target language, differences in translators' acquaintance with the norms of both languages, as well as the diverse genres and purposes of the translated texts (Altarabin, 2020). Rubrics have several benefits, such as offering a reference outline for the evaluator to facilitate their decision-making via clear and familiar criteria, thereby reducing subjective assessment (Martínez Mateo et al., 2017). According to Colina (2008), various current scoring criteria for evaluating translation quality can be constructed on the basis of personal, professional experience and anecdotes. Thus, the author, along with experts in the field, established a rubric that aligns with the objectives of the study to evaluate the translation quality in the pre–posttest. This rubric covered the following criteria: *accuracy, coherence & cohesion, fluency, grammar & syntax* and *consistency*.

2. Evaluation Methods

The study recruited two translation experts to evaluate the quality of the participants' translations in the pre–posttest. A defining characteristic that sets an expert apart from others in a specific field is the extent of time the individual has dedicated to acquiring knowledge and understanding within that field (Murphy, 2005). The study established criteria to guide the experts in evaluating each criterion, which were rated on a 4-point Likert-type scale (4 = *Excellent*, 3 = *Good*, 2 = *Fair*, 1 = *Poor*).

(b). Semistructured Interviews

The semistructured interview method is well-suited for exploring individuals' perceptions and opinions (Barriball & While, 1994). Therefore, this study conducted semistructured interviews to gather insights regarding students' perspectives on using CAT tools. Because interviews often do not aim to "constitute representative samples of the population" (Saldanha & O'Brien, 2014, p. 169), the author conducted individual interviews with seven randomly selected participants. In alignment with Saldanha and O'Brien (2014), open-ended questions were adopted in these interviews, offering greater flexibility and allowing for changes in the sequence in which they are asked. The average time for each interview ranged from 10–15 minutes. The interviews were audio recorded and interviewees were assigned numbers for confidentiality, which were then used to report data.

F. Data Analysis

The study used paired samples t-tests to determine whether observed differences in translation quality between the pre- and posttests were statistically significant. According to Rietveld and van Hout (2017), a key strength of a paired-samples design is its ability to allow the author to compare data collected from two tests. In contrast, the study analyzed the interviews thematically to explore participants' perspectives on the use of CAT tools. Thematic analysis is a common method of qualitative data analysis that allows the author to identify data relevant to answering the research question and offer insights into the themes across the data (Braun & Clarke, 2012). Interviews were transcribed verbatim and the author took notes during the interview. Codes are regarded as the most basic element of data that can be meaningfully evaluated in relation to the phenomenon under study (Boyatzis, 1998). Thus, the researcher manually coded the interviewees' transcribed data, following the recommendations of Saldaña (2013) for small-scale research. From these codes, the author then constructed themes, i.e., implicit concepts that organize a set of recurring ideas within the data (Auerbach & Silverstein, 2003).

IV. Findings and Discussion

This section presents the results derived from the study instruments, including the corresponding statistical analysis and the findings from the thematic analysis, along with a discussion of the findings. The results are presented and discussed in accordance with the sequence of the research questions, as follows:

A. Impact of Using CAT Tools on the Translation Quality of Future Translators

To test the hypothesis (H1), a paired samples t-test was employed to compare the means of two related samples (Ross & Willson, 2017). The pretest scores examined the translation quality of the participants without using the CAT tool, whereas the posttest scores assessed the translation quality with the use of the CAT tool. The paired samples t-test provides a reliable measurement of whether the observed improvement in translation quality is significant and not attributed to chance.

Further, the assumption of normality was tested using the Kolmogorov–Smirnov (KS) and Shapiro–Wilk (SW) tests. The results Table 1 confirmed that the pre–posttest scores indicated a normal distribution, as the p-values for the pretest (KS = 0.200, SW = 0.562) and posttest (KS = 0.162, SW = 0.188) were greater than the significance level (0.05). These results validate the use of the paired samples t-test as an appropriate statistical method for analyzing the study's data.

Table 1
Normality Tests for Pre–Posttest Scores

Test	Kolmogorov–Smirnov			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	0.153	17	0.200	0.956	17	0.562
Posttest	0.177	17	0.162	0.914	17	0.188

Table 2

Criteria	Test	Mean	Std. dev.	R	t-value	Sig. (2-tailed)	df	Eta Squared (η^2)
Accuracy	Pretest	1.59	0.507	0.729	11.649	0.00	16	0.895
	Posttest	2.82	0.636					
Coherence & cohesion	Pretest	1.88	0.781	0.565	7.668	0.00	16	0.786
	Posttest	3.12	0.600					
Fluency	Pretest	1.82	0.529	0.601	9.500	0.00	16	0.849
	Posttest	2.94	0.556					
Grammar & syntax	Pretest	1.65	0.493	0.706	12.344	0.00	16	0.905
	Posttest	2.82	0.529					
Consistency	Pretest	2.12	0.697	0.665	6.983	0.00	16	0.753
	Posttest	3.06	0.659					
Total score	Pretest	9.06	2.304	0.756	15.361	0.00	16	0.936
	Posttest	14.76	2.016					

Paired Samples T-Test Results for Translation Quality (Pre–Posttest)

As shown in Table 2, the paired samples t-test results for *accuracy* revealed a notable translation quality improvement when participants used CAT tools. The mean score in the pretest was 1.59 (*SD* = 0.507), which increased in the posttest to 2.82 (*SD* = 0.636). The mean difference of -1.235 scores was statistically significant, with a t-value of -11.649 (*df* = 16, $p < 0.001$) and a 95% confidence interval ranging from -1.460 to -1.010. The correlation coefficient (r = 0.729) indicated a significant positive relationship between pre- and posttest scores, while the effect size ($\eta 2 = 0.895$) demonstrated a very large impact. These results highlighted the profound role of CAT tools in facilitating significant improvements in translation accuracy.

In terms of the *coherence & cohesion* criteria, the results revealed a significant improvement. The mean score in the pretest increased from 1.88 (*SD* = 0.781) to 3.12 (*SD* = 0.600) in the posttest, with a mean difference of -1.235 scores. As indicated by the t-value of -7.668 (*df* = 16, $p < 0.001$) and a 95% confidence interval between -1.577 and -0.894, this difference was statistically notable. The correlation coefficient (r = 0.565) revealed a moderate positive relationship, while the effect size ($\eta 2$=0.786) implied a large effect. Thus, CAT tools significantly contributed to enhancing the coherence and cohesion within the translated texts.

As for the *fluency* criterion, the paired samples t-test showed a statistically major improvement. The mean score increased in the pretest from 1.82 (*SD* = 0.529) to 2.94 (*SD* = 0.556) in the posttest, with a mean difference of -1.118 scores. The t-value of -9.500 (*df* = 16, $p < 0.001$) and the 95% confidence interval between -1.367 and -0.868 confirmed the reliability of such improvement. The correlation coefficient (r = 0.601) showed a moderate positive relationship, while the effect size ($\eta 2 = 0.849$) revealed a very large effect. Hence, CAT tools noticeably improved the naturalness and readability of the participants' translated text.

The findings of *grammar & syntax* presented a significant increase in the posttest's scores, highlighting improvements related to grammar and syntax when students used the CAT tool. The mean score in the pretest rose from 1.65 (*SD* = 0.493) to 2.82 (*SD* = 0.529) in the posttest, with a mean difference of -1.176 scores. The t-value of -12.344 (*df* = 16, $p <$ 0.001) and the 95% confidence interval between -1.379 and -0.974 supported the significance of such improvement. The

correlation coefficient (r = 0.706) reflected a strong positive relationship, while the effect size (η2 = 0.905) confirmed a very large impact. These findings indicate a significant contribution of CAT tools in improving the grammatical and syntactical structure of translated texts.

In relation to the *consistency* criterion, the paired samples t-test results revealed important progress. The mean score in the pretest increased from 2.12 (*SD* = 0.697) to 3.06 (*SD* = 0.659) in the posttest, with a mean difference of -0.941 scores. The t-value of -6.983 (*df* = 16, $p < 0.001$) and the 95% confidence interval between -1.227 and -0.655, revealing a statistically significant improvement. The correlation coefficient (r = 0.665) implied a moderately strong positive relationship, while the effect size (η2 = 0.753) showed a large impact. Accordingly, the CAT tool improved the consistency of the translated texts in the posttest.

Finally, the *total score* of the posttest demonstrated significant translation quality improvements. The mean score in the pretest increased from 9.06 (*SD* = 2.304) to 14.76 (*SD* = 2.016) in the posttest, with a mean difference of -5.706 scores. The t-value of -15.361 (*df* = 16, $p < 0.001$) and the 95% confidence interval between -6.493 and -4.918 confirmed the robustness of this improvement. The correlation coefficient (r = 0.756) indicated a strong positive relationship, while the effect size (η2 = 0.936) confirmed a very large impact. These findings offer strong indication of the significant impact of CAT tools on translation quality, as shown in Figure 1. This supposition aligns with the findings revealed by Sir Al Khatim (2022), who reported that students considered translation quality enhancement to be a merit of using CAT tools.

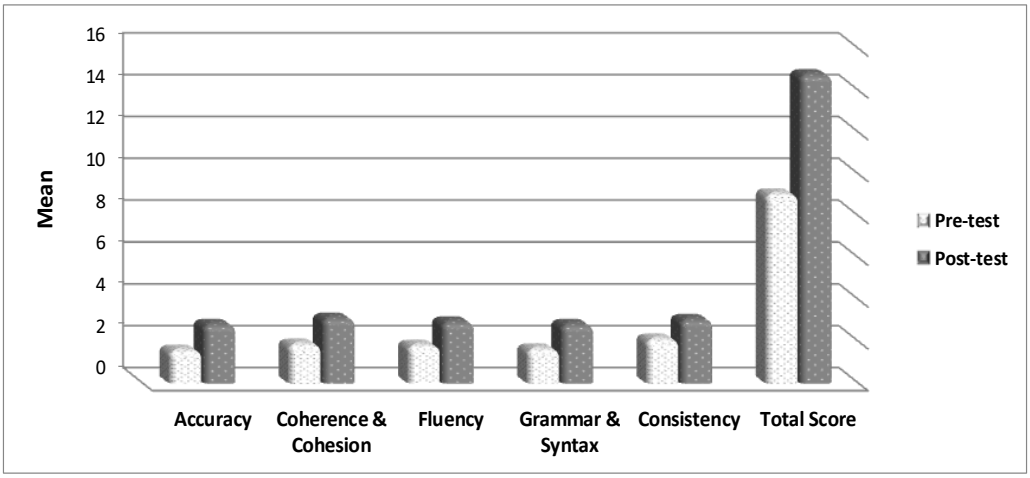

Figure 1. Impact of CAT Tools on Translation Quality: Comparison of Pre–Posttest Results

B. Impact of Using CAT Tools on the Translation Efficiency of Future Translators

To test the hypothesis (H2), a paired samples t-test was administrated. The pretest scores represented the time (in minutes) taken by the participants to complete the translation task without using the CAT tool, while the posttest scores denoted the time taken when using the CAT tool. The paired samples t-test allows us to assess whether the observed decrease in time is significant and not attributable to random chance.

Additionally, the assumption of normality was tested using the Kolmogorov–Smirnov (KS) and Shapiro–Wilk (SW) tests. The results Table 3 confirmed that the pre–posttest scores indicated a normal distribution, as the p-values for the pretest (KS = 0.143, SW = 0.090) and posttest (KS = 0.200, SW = 0.080) were greater than the significance level (0.05). These results validate the use of the paired samples t-test as an appropriate statistical method for analyzing the data.

TABLE 3
NORMALITY TESTS FOR PRE–POSTTEST SCORES

Test	Kolmogorov–Smirnov			Shapiro–Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Pretest	0.181	17	0.143	0.907	17	0.090
Posttest	0.163	17	0.200	0.904	17	0.080

TABLE 4
PAIRED SAMPLES T-TEST RESULTS FOR TRANSLATION EFFICIENCY (PRE–POSTTEST)

Measure	Test	Mean	Std. dev.	R	t-value	df	Sig. (2-tailed)	Eta Squared (η^2)
Translation efficiency (time taken)	Pretest	71.12	17.695	0.518	11.850	16	0.00	0.898
	Posttest	27.24	7.164					

As shown in Table 4, the paired samples t-test results showed a major decrease in the *time taken* by the study's participants to complete the translation task when using the CAT tool. The mean pretest time was 71.12 minutes (*SD* =

17.695), whereas the mean posttest time dropped to 27.24 minutes (*SD* = 7.164). The mean difference of 43.882 minutes was statistically significant, with a t-value of 11.850 (*df* = 16, $p < 0.001$). The 95% confidence interval for the mean difference ranged from 36.032 to 51.732, confirming the reliability of the translation efficiency increase. Furthermore, the correlation coefficient (r = 0.518) between pre–posttest scores revealed a moderate positive relationship, demonstrating that the participants who took more time in the pretest showed notable improvements in the posttest. The effect size (η2 = 0.898\eta^2) confirmed a very large impact, emphasizing the significant impact of CAT tools on increasing translation efficiency. These findings strongly support the hypothesis that utilizing CAT tools significantly minimizes the time required to perform translation tasks, as shown in Figure 2. This finding aligns with those of Li (2015), who argued that the use of CAT tools significantly reduces the time spent on translation.

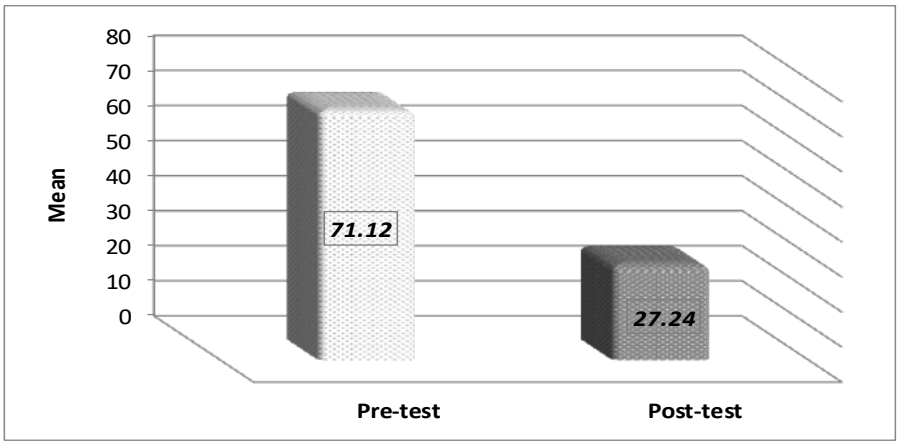

Figure 2. Impact of CAT Tools on Translation Efficiency: Comparison of Pre–Posttest Time Taken

C. Future Translators' Perspectives on Using CAT Tools

The present question aimed to explore participants' perspectives on the use of CAT tools through semistructured interviews. Open-ended questions were adopted and the analysis of responses evolved around three main themes: *CAT tool effectiveness*, *CAT tool challenges* and *participants' perceptions*. Subsequently, these themes were further categorized into subthemes.

(a). CAT Tool Effectiveness

The findings shed light on the benefits of the CAT tool used in this study, Smartcat, which captured the students' attention. Increased productivity was a significant advantage of the CAT tool reported by the majority of respondents. Student (1) stated "*with CAT tools, I can finish any translation in half of the time I often spent*," reflecting that the use of CAT tools decreases the time students must dedicate to translation tasks. Student (5) indicated that *machine translation (MT) and translation memory (TM), which are the two most important components of CAT tools, did most of the tasks that translators used to do in the past*, indicating that by automating translation and offering suggestions stored in the TM, the CAT tool allows translators to complete their translation tasks faster. This is consistent with Hartley (2009), who argued that by matching translated segments with existing translation units, TM increases productivity and with the findings of Läubli et al. (2013) that using TM typically results in a significant reduction in translation time.

Improved translation quality was another key indicator of CAT tool effectiveness identified by several respondents. Student (3) noted that the "*CAT tool enhanced my translation quality because everything is checked*," indicating that the quality checks performed by the CAT tool enhanced his translation quality. This finding is in line with Hartley (2009), who reported that quality assurance is among the core functions integrated into CAT tools. Moreover, student (7) argued that *the quality of my translation has improved as a result of the consistency provided by the use of TM*, implying that CAT tools help maintain consistent terminology in translated texts. These findings are consistent with Asare (2011), who argued that CAT tools increase the speed and productivity of the translation process and enhance the quality and consistency of the translated text, and Bowker (2005), who argued that TM has been recognized for enhancing translators' productivity. In contrast, student (2) argued that "*I am not happy with translation quality produced by the CAT tool*," which reflects the importance of the postediting stage when using technology in translation—a process this student failed to acknowledge. This supposition aligns with Alotaibi (2014), who argued that students should view postediting as a significant stage in the translation process when using CAT tools.

(b). Challenges of CAT Tools

Although the effectiveness of the CAT tool was a major consideration among interviewees, a number of challenges were also identified. A major challenge faced by a number of respondents was their lack of technological competence. For instance, student (6) stated, "*I am not familiar with using computer and I often struggle with translation tasks that we have to complete by using technology*." Some students view the integration of technology into translation as a challenge

that hinders their ability to effectively complete tasks that require technological tools. This concern was also raised by Rothwell et al. (2023), who argued that the widespread adoption of CAT tools has made the mastery of translation technologies a crucial professional competency in the translation industry for both translation graduates and professional translators.

The lack of CAT tool training was another key challenge reported by most interviewees. For example, student (2) noted "*to get the most advantage of CAT tool, I need to be trained on how to use it*," reflecting that students need training to develop their technological skills in the effective use of CAT tools. This assumption aligns with Sikora (2014), who noted that an extensive and well-structured training program in translation technologies is essential to adequately prepare students to meet the demands of the translation market. Further, Peng (2018) advised translator training programs to bridge the gap between traditional skills and technological proficiency in translation. Further, student (4) stated that *I need time to familiarize myself with the use of the CAT tool*, suggesting that students require time to become accustomed to using CAT tools. This response aligns with what Krüger (2016) referred to as learnability, which means the ease with which new users can familiarize themselves with a specific software.

Another significant challenge highlighted by the majority of the interviewees was the segmentation in the CAT tool, particularly when translating from Arabic to English. For instance, student (4) stated that "*the division of segments complicated the translation process, as these tools do not take context and syntactic differences into account*." Students encountered challenges in sentence segmentation when using the CAT tool because it fails to consider context when dividing segments; moreover, the complex syntactic structures of Arabic differ significantly from those of English. This finding is consistent with Shaalan (2004), as cited in Sir Al Khatim (2022), who reported that the syntactic complexity of Arabic presents significant challenges, as sentences often involve numerous grammatical relationships, different word orders and other factors. This finding also aligns with the work of Alanazi (2019), who reported that 69.2% of participants encountered segmentation issues when using CAT tools. Another challenge identified by some respondents was that certain features of the CAT tool are not offered for free. For example, student (3) stated that "*access to the advanced features of CAT tool requires a subscription to the software*," reflecting that students may consider the use of CAT tools to be financially costly.

(c). Participants' Perceptions

The findings of this theme shed light on the respondents' perceptions of the use of CAT tools. The majority of interviewees demonstrated positive perceptions. Student (5) stated that "*CAT tools have several advantages that assist translators*," while student (7) noted that *CAT tools facilitate teamwork on a shared project and enable the project manager to monitor progress.* This is similar to Alotaibi's (2014) findings that respondents positively viewed CAT tools by the end of the study and with the findings of Kornacki (2018), who revealed that a number of translators and translation agencies highlighted key advantages of CAT tools, such as improved consistency, more effective project management tools, reduced costs and other advantages. However, it runs counter to the findings of Abu Dayyeh (2020), who reported that the majority of participants in his study considered CAT tools to be unreliable.

While the majority of respondents in this study demonstrated a positive perception of CAT tools, a small minority expressed a negative perception. One interviewee, student (4), attributed this negative perception to MT and suggestions provided by the TM. He stated that *I found myself lost because of the suggestions from MT and TM, which shaped my translation and controlled my ability to have a creative translation*. The use of MT and TM within CAT tools may limit a student's creative translation, which aligns with the findings of Merkel (2016) that some translators have expressed concerns about the use of TM tools, which could lead to the loss of some creative aspects integral to the translator's role. According to Bundgaard et al. (2016), CAT tools are central in the translation process, helping the translator manage different kinds of challenges, including confusion caused by MT suggestions. While some participants' perceptions countered this assertion, it is possible that their negative perception was due to inexperience, as Alotaibi (2014) noted that as participants increased their engagement with CAT tools, their perceptions of these tools became more positive.

V. Conclusions and Implications

This study aimed at exploring the impact of CAT tools on the translation quality and efficiency of future translators in the Bachelor of English Language and Translation program at Qassim University. Two instruments were administered to gather data: Quantitative data were collected through a pre–posttest to explore the impact of a CAT tool on the product and translation efficiency of future translators, while qualitative data were collected through semistructured interviews to gather in-depth insights into students' perspectives on the use of CAT tools. The quantitative data were analyzed via paired samples t-tests, while the qualitative data were analyzed thematically.

The study presented significant evidence of improvements in translation quality when using CAT tools. Moreover, the findings strongly support the hypothesis that utilizing CAT tools significantly minimizes the time required to perform translation tasks. Increased productivity was a major benefit highlighted by most respondents, who also expressed largely positive attitudes toward the use of CAT tools. By automating the translation and providing suggestions stored in the TM, CAT tools enable translators to complete their tasks more efficiently. The results further indicated that CAT tools help students to maintain terminology consistency in their translated texts. Nevertheless, key challenges reported by the participants of the study included a lack of technological competence, insufficient CAT tool training and segmentation

issues. Some participants regarded the integration of technology into translation as a barrier that impeded their ability to effectively complete translation tasks that involve technological tools. Furthermore, a small number of students encountered challenges with sentence segmentation in the CAT tool, as the tool fails to consider contextual factors when dividing segments. Although the majority of respondents expressed a positive perception of CAT tools, a small minority indicated concerns, suggesting that the integration of MT and TM within CAT tools may restrict a student's creative translation.

Based on these findings, this study recommends raising students' awareness of the importance of translation technology skills and of postediting CAT tool-translated text. Furthermore, it advocates the development of a comprehensive training program for CAT tools.

It is important to acknowledge the limited sample size of this study, which should be considered in future research. The study's findings present the need for further investigation into the impact of CAT tools on translation quality on a larger scale. Additionally, future studies should explore the quality assurance tools implemented within the CAT, an area that has yet to be addressed in the literature. Another area for future research is the development of specialized training programs aimed at preparing students for the translation market, with a particular focus on enhancing proficiency in CAT tools.

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