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Research Paper

CAT Tools in Translation Proficiency Development: EFL Students' Perceptions in Focus

Zahra Sadat Khadem Olhosseiny[1], Mohammad Iman Askari[2]*

[1]*Department of English Language, Science and Research Branch, Islamic Azad University, Tehran, Iran*
zahrasadatkhademolhosseiny@gmail.com
[2*]*Department of English Language, Central Tehran Branch, Islamic Azad University, Tehran, Iran*
mi.askari@iauctb.ac.ir

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ABSTRACT

This research investigated the perceptions of Iranian EFL students regarding the use of Computer-Assisted Translation (CAT) tools and explored the aspects the tools that contributed to their proficiency development. An exploratory-descriptive qualitative design was adopted to fulfil the objectives of the study by concerning a focus-group interview and a self-report questionnaire for which a total number of 112 students majoring in translation studies were purposively selected. The participants, enrolled in translation programs at various universities across Iran, represented diverse backgrounds, language pairs, and levels of experience. The study commenced with focus group interviews with a subset of participants to gather in-depth insights into their experiences and attitudes towards CAT tools. Thematic analysis was applied to analyze the data collected from the interviews. With reference to the data gathered through the interviews, an adapted thematic-based Likert scale questionnaire was applied to assess participants' perceptions of CAT tools considering usage patterns, perceived benefits and challenges. The questionnaire was validated according to the first phase data analysis using Cronbach's Alpha. The findings revealed that students held a generally positive perception of CAT tools, recognizing their potential in enhancing translation proficiency development. CAT tools were identified as effective tools for increasing productivity and efficiency, ensuring improved consistency in translations, saving time and costs, enhancing quality assurance, and facilitating collaboration and teamwork. The study suggested pedagogical implications for translation education via integrating CAT tool training into the curriculum for a better preparation of the students to meet their proficient and professional demands.

Keywords: *Computer-Assisted Translation (CAT), Focus-Group Interviews and Questionnaires, EFL Students, Perceptions, Proficiency Development.*

INTRODUCTION

In today's more globalized society, where the need for translation is on the rise, and as a result of technical improvements, translations have grown more sophisticated and increasingly reliant on computer technology to ease the process. In today's globalized information era, computer translation is necessary for translators to efficiently translate enormous volumes of material.

Computer-Aided Translation (CAT) technologies are commonly used by translators to increase their productivity while preserving the quality of their translation services. CAT tools are defined by Bowker (2010, p. 60) as "any sort of computerized instrument that translators utilize to perform their duties." The purpose of these technologies is to help human translators in the translation process. In the early 1980s, the US company Automatic Language Processing Systems built the first commercially available CAT tools, the ALPS system (Garcia, 2005). This early version has a variety of features, such as multilingual word processing, an automatic dictionary, and terminology consultation. As a result of technology improvements and price reductions, increasingly sophisticated systems with enhanced functionality and affordable prices have been developed over time.

This is increasingly reflected in translator training courses offered by universities and organizations (Olohan, 2011), usually at both the undergraduate and graduate levels. In recent years, these technologies, which may be viewed as a single integrated system that permits a more efficient and consistent translation procedure, have flourished (Quah, 2006).

The functionality provided by CAT tools may vary, but they always contain Translation Memory (including alignment) or Terminology Management tools, or both. The structure and utility of the tools are improved at a higher level.

Contemporary translations are increasingly dependent on computers, with CAT and machine translation distinguishing computer-aided translations. CAT tools are the apps used by translators during the computer-assisted translation procedure. Thus, due to the overwhelming effects of these technological aspects in translation activities within both academic and professional contexts, the current study aims to investigate the perceptions of Iranian English-major students, as the potential TRLs, towards the use of CAT tools and the related aspect of such tools in their translation proficiency development tools.

A translator must be knowledgeable in several fields, and the use of specialized tools is essential for the completion of translation jobs. CAT technologies, which significantly simplify and speed up the translation process, have a unique position among Information and Communication Technology (ICT) in the translator's professional activity (Huang et al., 2013). Big translation agencies and freelance translators make substantial use of machine translation technology in the translation industry. The company PROMT estimates that CAT approaches can increase translation efficiency by up to 80%.

Yet, the ability to apply CAT tools is insufficient to perform a professional translation. The translator's expertise of industry-specific language and terminology will significantly improve the final product's quality. It becomes more difficult to edit a text translated with CAT software since the translator is somewhat disoriented in the lack of the necessary information.

Although, the reason behind such a matter might be rooted back in the infancy of CAT tools and lack of sufficient studies over the effective features of the tools in dealing with the related translational

processes and products, but such an interdisciplinary field, e.g., translation studies, might still seek for the best potential integration of humanistic attitudes and technological aspects for the best outcomes and practices. This is the point where highlighting the tool's features and effectiveness among the potential TRLs, i.e., students majoring in the related fields, become significant. Accordingly, the neglected point of discussion or the hidden problematic area in the integration of technologies and humans in translation activities might refer back to the lack of previous sufficient studies on the attitudes and perceptions of TRLs over the use and aspects of tech-based utilities in providing the translations featuring the required quality.

Accordingly, providing a deep understanding on the functions of technologies, notably CAT tools in translation studies, from the students and translators' perspectives, was beneficial in several ways:

To begin with, the findings of the study are fruitful for students and translators through familiarizing them with the application of new technologies, as the translation aids, and through making the translation processes easier, faster, and more efficient, i.e., that is leading to the best practices in translation activities at both academic and professional contexts.

Second, it is beneficial for university professors to get acquainted with the application of modern technologies in translation studies from the students' perspectives for the best pedagogical practices in teaching the potential future translators.

Thirdly, it is useful for curriculum designers to integrate the applications of such technologies in the related programs and courses in order to provide the most up-to-date instructions dealing with the current trends in translation studies.

Last but not least, as an attempt to fill the gaps between human resources and machines in translation activities, the findings of the study might receive further significance among corporations and organizations in dealing with these technological tools to save the time, money, and effort spent on translation products by their human resources.

To do so, researchers proposed the following questions to fulfil the objectives of the study:

RQ1: *What are the perceptions and attitudes of Iranian students in translation studies towards the use of CAT tools in their translation proficiency development?*

RQ2: *What aspects of CAT tools in translation lead to the proficiency development of Iranian students in translation studies?*

LITERATURE REVIEW

Evidences of the Technological Turn in Translation

As a result of the globalization of the economy, all multinational corporations, regardless of size, aspire to sell their products on a global scale, creating an enormous demand for multilingual document creation, including software development, localization, product brochures, and web pages, among others. Several global behemoths, such as IBM, Microsoft, Dell, and Oracles, had astronomical demand and require prompt response.

In the 1980s, relatively few people had heard of or were familiar with computer-aided translation technology. Over two hundred thousand major organizations demand the use of CAT technologies for language services. (Chan, 2013). Just 28% of the 391 freelancers polled by Fulford and Granell-Zafra

(2005) in the United Kingdom used CAT technologies like Trados, Deja Vu, SDLX, Transit, etc. And around half of them were unfamiliar with them. 75% of them were unaware of machine translation systems, whereas 5% used them. Just 2% of respondents used translation tools like Alchemy Catalyst, Passolo, and further related utilities.

According to Jared's (2013) 2013 survey of full-time professional translators from Proz.com, 88% of respondents use at least one CAT application for at least a percentage of their translation projects. Even among the remaining 12% of non-users, 68% had previously used or attempted to use a CAT tool, while only 32% had never used one. The significant growth in popularity of CAT technologies over the past eight years, from 28% to 88%, illustrates their widespread use in the translation industry.

In addition, translators' attitudes regarding CAT technology are altering. Also, the research done by Fulford and Granell-Zafra (2005) demonstrates that translators are less convinced of the value and benefits of CAT technology. Nonetheless, people who had previously utilized CAT tools been often more hopeful than those who hadn't. According to Jared's (2013) survey, virtually all CAT tool users agree that utilizing a CAT tool aids in more successful translation. This indicates that translators are becoming more aware of the advantages of the CAT technology, which may signal that more translators may adopt CAT technologies in the future.

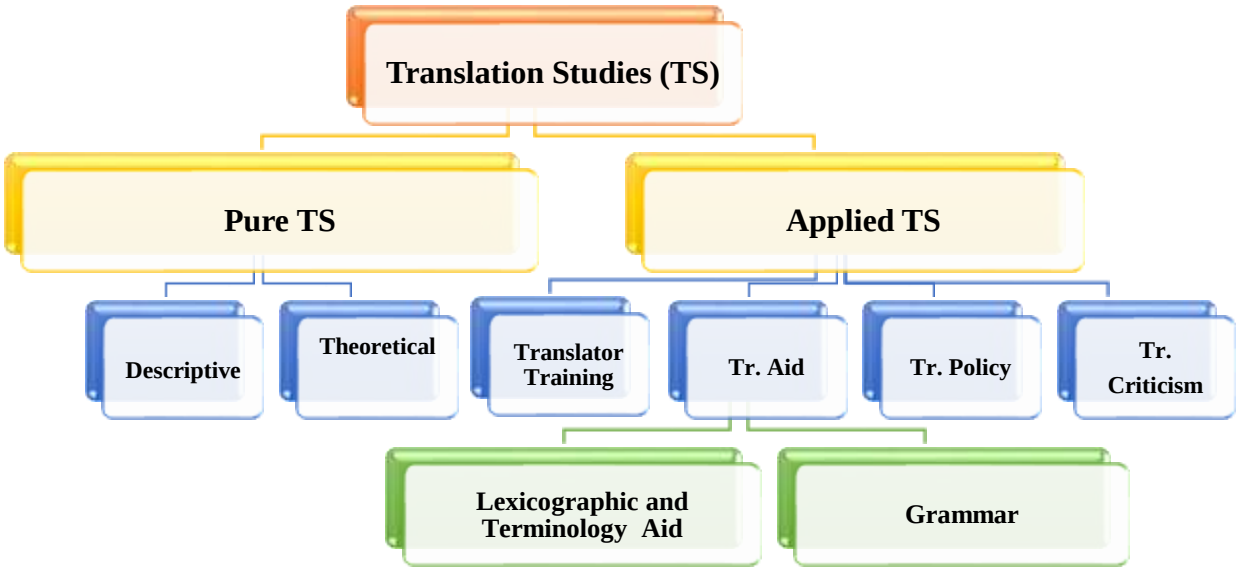
Influence of Technological Turn

A technical turn refers to a new field in translation studies that focuses on study connected to translation technology. It comprises a large array of academic fields, such as teaching CAT, translation memory, terminology management, translation quality assurance, translation project management, the translation business, etc., that are generally neglected or non-existent in traditional translation studies.

As shown in Figure 1, Toury (2001) produced a map of translation studies based on Holmes' (1988) definition, which contributes to the establishment of translation as a discipline.

Figure 1

Toury's Map of Translation Studies



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The map divides translation studies into two major branches: pure translation studies and applied translation studies. There is no translation technology in either of them. Toury (2001) categorized translation aids into only two categories: lexicographic and terminological support, and grammar, which is quite separate from the translation technology we use today. I n this figure depicts how Quah (2006) broadened Holmes' map of applied translation studies with an emphasis on translation technology, as provided in Figure 2.

Figure 2

Quah's Scheme of Applied Translation Studies

Quah (2006) changed "translation aids" to "translation technology" as a result of the fact that translation aids were no longer limited to Lexicographic & terminology assistance and grammar, as stated by the sub-branches. This change was intended to reflect the technological advances in the translation industry.

As the 21st century approached, CAT tools were becoming increasingly prevalent. It has substantially boosted translation speed and assisted in ensuring translation quality in creative methods, therefore responding to the globalization of the global economy and the ever-increasing market need. All translations produced nowadays were computer-assisted in terms of human contact (Chan, 2013). Without the internet, online resources, and a range of computer applications, freelance translators cannot conduct their work. Translations are no longer conducted manually with pen and paper. The day has come when both people and machines with CAT software and Internet access will conduct translation.

Moreover, IT redefined translation expertise. Historically, translation competence mostly related to multilingual and cross-cultural skills. When CAT becomes the primary tool in the translation industry, translators are required to have a deeper understanding of translation technology. The future of translation will be determined by two variables: how well you comprehend translation technology and how far translation technologies progress. A skilled translator must possess not just bilingualism, but also translation technology, which allows them to increase the quality and efficiency of their translations, hence boosting their productivity, income, and customer cost savings. This has a substantial impact on a number of aspects of translator training and education, including teaching objectives, teaching methodologies, curriculum design, evaluation, etc.

Computer-Assisted Translation Tools

Although computers have become necessary in many aspects of our life, translation is presently impossible without their use. Using a computer expedites and streamlines the translation process. Hutchins (2003) offers a variety of grounds for the use of computers in translation:

1. To reduce the amount of work for TRLs
2. Translating technical documents can be tedious for humans
3. Computers give consistency
4. Faster results
5. In the case of machine translation, certain translations can be completed entirely by a computer and do not require a human TRL
6. Cost savings

Computer-assisted translation and machine translation are the two varieties of computer-based translation. In computer-assisted translation, the translation is performed mostly by a human TRL, with the assistance of computer software for a portion of the process. This is the fundamental contrast between CAT and MT, both of which utilize computer translation extensively. Translation, according to Bowker & Fisher (2010, p.60), should be understood as a "continuum of translation options" with increasing degrees of human or machine assistance. Between human translation on one end of the continuum and machine translation on the other is computer-assisted translation (CAT).

The terms Computer-assisted Translation and Machine Translation may be confusing to non-specialists due to their close proximity. Computers are employed in the translation process for both types of translations. Craciunescu et al. (2004) observed, however, that CAT and MT are the product of distinct translation processes; they produce different outcomes and are not used in the same contexts.

In contrast to CAT, in which the TRL conducts the majority of the work with the aid of a computer, in MT the translation is conducted mostly by a computer, with possible human pre- or post-editing. (Bowker & Fisher 2010).

There was a tremendous lot of excitement around MT in the 1950s, with predictions of fully autonomous systems within a few years. Once the value of the human factor in translation became clear, the enthusiasm diminished within a few years. At the request of proponents of MT, the National Science Foundation formed the Automated Language Processing Advisory Committee (ALPAC) in 1966. ALPAC concluded that MT was more expensive, slower, and less accurate than human translation. Although being deemed ridiculous, ALPAC's influence successfully halted MT research in the United States for over a decade (Hutchins, 2007). According to Garcia (2015), research into MT was paused due to a lack of processing capacity, but then resumed when computing capabilities increased.

There is a new type of MT available today that uses neural networks to find correspondences between SL and TL. Neural networks have the advantage of utilizing data to comprehend complex relationships between natural languages, rather than depending on difficult-to-design human hand features (Srivastava, Shukla & Tiwari, 2018).

In the 1990s, attempts were made to augment CAT with automation from MT, but the software available at the time was insufficient. In 2006, Lingotek launched a web-based MT-integrated CAT. Trados and several more CAT tools followed it. The inclusion of MT with CAT enables CAT tools to continue operating in the normal fashion, accepting, amending, and rejecting exact, fuzzy, and no matches, or to employ MT solutions to fill in no matches, which may then be accepted, revised, or rejected. Unfortunately, this technique is still in its infancy, and it is questionable if it will result in speed and quality benefits in translation (Garcia, 2015).

According to Craciunescu et al. (2004), the most distinguishing feature of computer-assisted translation is the use of a variety of tools that make the TRL's task more efficient and accurate. These tools are also referred to as CAT tools, although being known by a number of different names, which causes some terminological ambiguity. Garcia (2015) notes that CAT tools have been referred to by a variety of names in industry and in the literature. Translation environment tools are sometimes referred to as CAT software, CAT systems, "TM (translation memory), TM tools / systems / suites, translator workbenches / workstations, translation support tools, and more recently translation environment tools (TETs) (p. 69). Importantly, translation memory is also one of the key components of computer-assisted translation (CAT) software. Additionally, the terms Translation Environment Tool (TET) and computer-assisted translation (CAT) tool are sometimes used interchangeably. CAT tools refer to all the tools and software TRLs use when translating, whereas TET refers to specialized program that unifies all tools into one (Barois, 2018).

In order to avoid confusion with other tools and software used by TRLs, Bowker and Fisher (2010) propose that the name CAT tools should only be applied to translation-specific software. This definition excludes electronic mail, spelling checks, and word processing software. Microsoft Word is not a CAT tool, despite being a word processor with a spell check capability, according to this definition.

According to Garcia (2015), the industry of CAT tools is fairly new, by which two key eras for the related tools are recognizable. The classic era from 1995 to 2005 and the current era from 2005 to the present. The classic period started when CAT tools were fully created and made commercially available in the middle of the 1990s, with the subsequent decade focused on stability and processing power. The current time is characterized by an increase in the number of prospective CAT usage scenarios.

According to Garcia, "a more sophisticated approach to text reuse has emerged" and "the amount of addressable data has grown" (p. 69). The introduction of cloud computing and the simplicity of user interfaces have made CAT tools accessible to a larger audience and permitted the integration of TMs with MT. Ultimately, the Internet enabled translation aficionados from all over the world to cooperate on projects, substantially reducing translation timelines.

Although though CAT tools were refined in the middle of the 1990s, their development began much earlier. According to Bowker and Fisher (2010), the evolution may be traced back to the 1960s, when term banks were constructed, allowing for the storage of huge quantities of structured data on computers. Although computers could retain structured information, the technology was not yet sophisticated enough to be used for translation purposes, and human translation was still considered the more efficient alternative. In the 1960s, TRLs employed typewriters and kept hard copies of their work for future reference.

One of the key reasons for the development of CAT tools was the frustration of machine translation developers, who wanted to build a product that would allow the production of faster and less expensive translations that could be used. The ALPAC (Automatic Language Processing Advisory Committee) report of 1966 was critical of machine translation but in favour of funding Computational Linguistics, particularly machine-assisted human translation, citing reports showing that the use of tools such as electronic glossaries can both increase productivity and reduce errors. (Garcia, 2015).

According to Bowker and Fisher, the breakthroughs in computational linguistics throughout the late 1970s and early 1980s were crucial to the development of modern CAT techniques (2010). These developments enabled not just the storage and retrieval of information on computers, but also its search and retrieval. With the advent of the personal computer, typewriters quickly became relics of the past, which was essential to the development of computer-assisted translation. Personal computers made it possible to save documents as digital copies and facilitated their search. Two German TRLs, Jochen Hummel and Iko Knyphausen, established Trados (Translation & Documentation Software) as a language services provider (1984-1989) in 1984, possibly foresee the future relevance of computers for translations (Garcia, 2005). Eventually, Trados will become the most common CAT tool.

During the mid-1980s, Automated Language Processing Systems (ALPS) in Utah developed the first prototype of a CAT tool known as the Translation Support System (TSS). The TSS was outfitted with a multi-word processor and a terminology management system, allowing access to previously translated sections. Nevertheless, the technology was insufficient for ALPS to profit from its software, and in the late 1980s, TSS was pulled from the market (Garcia, 2005).

Early in the 1990s, technological advancements allowed for the commercialization of CAT instruments. Technologically adept TRLs with an entrepreneurial spirit grabbed the opportunity when competition suddenly escalated. In 1990, Trados released their terminology database, Multi Term. In 1992, the first version of Translator's Workbench TM was launched. Likewise, IBM Deutschland's Translation Manager and STAR AG's Transit were introduced in the same year. With the notable exception of Déjà vu, which was released in 1993 and is still in use today, a number of further CAT tools were developed in the years that followed, only to be abandoned shortly thereafter. In large part as a result of successful bids filed to the European Commission in 1996 and 1997, Trados has become the industry standard for such initiatives. As previously mentioned, features that existed in the mid-1990s

were standardized on the most advanced tools and stayed essentially unmodified for the next decade (Garcia, 2015).

In 2005, the modern era of CAT tools began. In the same year, SDL (Software and Documentation Localization), a worldwide services business with headquarters in the United Kingdom, acquired Trados. The release of SDL Trados Studios 2009 in 2009 signalled the beginning of a trend toward consolidating all functions into a single, proprietary interface. The first web-based tool, Lingotek, was released in 2006. In 2009, Google launched a web-based Translation Toolkit for non-professional users. Current CAT tools have recognized the value of STs and the supply side of translation and "begun developing writing tools with the same consistency and reuse advantages" (Garcia, 2015, p.79). According to Garcia, if the classic age of CAT tools was distinguished by the quantity of computer processing power and connectivity, the current era is characterized largely by cloud computing and Web 2.0. Nowadays, all data is stored remotely, online, due to cloud computing, which makes local storage and processing irrelevant. Web 2.0. is a more interactive and collaborative kind of the Internet, with a focus on "social interaction and collective intelligence," encompassing social media websites such as YouTube, Myspace (now superseded by Facebook), and others (Murugesan, 2007, p.34). This indicates that consumers are now playing a more active role in CAT tools, and that user experience and feedback have gained importance (Garcia, 2015).

This review indicated that CAT approaches have swiftly changed over the past few decades, paralleling the rapid development of technology. Esselink in 2000 and Lagoudaki in 2006 (as mentioned in Bowker & Fisher, 2010) concluded that CAT tools have become more accessible, popular, and affordable, as well as a prerequisite for TRLs in today's global information age, in order to translate massive amounts of text more quickly. Simultaneously, the process of computer-assisted translation has become simpler as more recent CAT systems have combined many components, such as term bases and translation memory, and made their interfaces more intuitive.

About CAT Tools

Bowker and Fisher (2010) offer a more technical description of the operation of TMs. They specify that TM databases store both ST and TT as bitexts (bitexts are a collection of aligned texts, source and target, that are considered equivalents of each other). According to Garcia, the texts are divided into segments, which are often sentences but can also comprise "a title, caption, or the content of a table column" (2015, p. 71). Then, each section of the source text is linked to its corresponding section in the translation. While translating a new text, the TM divides the new text into segments and compares those segments to those recorded in the database. Pattern matching is used to identify if any portion of the text has already been translated as part of a text from the database. When a match is found, the TM presents it to the TRL, who can accept, modify, or reject it. According on the degree of similarity between the two segments, various types of matches are offered. In the same line, Garcia found three key kinds of matches as follows (2015):

- Exact match (or 100% match): a source segment from the database matches the active segment that has to be translated exactly. The TRL must still determine if the translation may be utilized or if minor revisions are required.

- Fuzzy match: a source segment partially matches the active one. The degree is presented as a percentage and is computed based on the Levenshtein distance, which examines the number of insertions, substitutions, or deletions necessary for an exact match. To eliminate distractions, only parts with a matching percentage of 70% or more are typically presented, but Bowker and Fisher (2010) remark that thresholds often range between 60% and 70%. Depending on the proposed section, the TRL can determine whether to utilize it or to start from scratch.
- No match: the TM was unable to identify source segments that surpass the match criteria (often 70%), hence no match is presented.

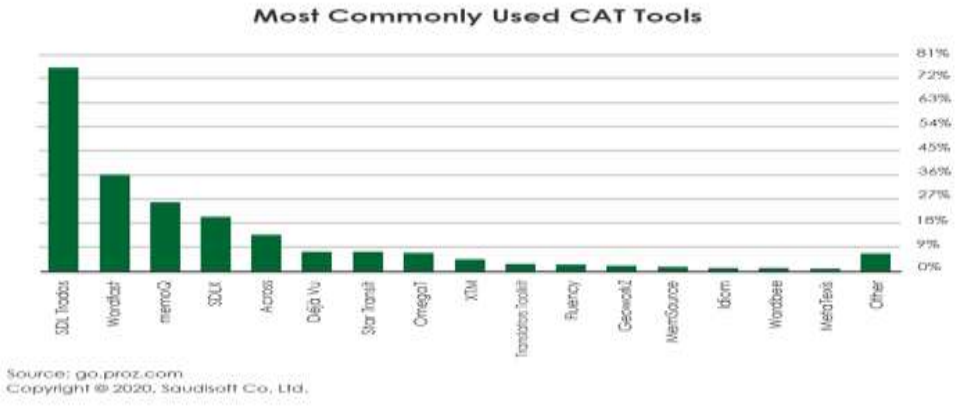
It should be emphasized that editors, TM, term bases, and other tools are interrelated. A Terminology Management System is commonly used by CAT tools to store and retrieve terminology information from the word base (TMS). In addition, TMs and term bases can be linked to automate the translation procedure (Bowker & Fisher, 2010).

Current Trends and Future Developments

In 2019, ProZ, the most prominent translation-focused website, launched a research to examine the attitudes of TRLs about CAT technology. TRLs were questioned on, among other things, the CAT tools they used to measure market share. According to the data, over 80 percent of TRLs utilized SDL Trados. It was followed by the Hungarian-developed CAT program Word Quick, which has gained importance over the past decade. Proz surveyed full-time professional translators who utilize CAT programs to determine which ones are the most popular (2019). They also demonstrated the efficacy of CAT instruments. This is seen by the graph below:

Figure 3

CAT Tool Usage in 2019 (Proz, 2019)



The market for translation is developing constantly, and CAT is expanding in tandem. In 1997, just 1,125,709 pages were translated in the EU translation market, according to Kui (2010). In 2007, the number reached 1,762,773, and it has likely risen much more since then, as more freelance TRLs are hired to translate as EU's TRLs get overworked. This means that CAT will continue to exist.

Bowker and Fisher (2010) envision the future of CAT as one of expanding opportunities, with CAT continuing to improve rapidly in tandem with technological progress. Several of the options entail

additions to TMs, such as the inclusion of language analysis and the present capability of some TMs to analyze the context of matched segments. In addition to recognizing the differences between fuzzy matches, TMs may in the future be able to designate which sections of the target segment must be updated or maintained. In addition, the standardization of translation-exchange goods will improve the distribution of translations. The Internet also enables crowdsourcing and collaborative translations, links TRLs from across the globe, and allows them to share their skills, which will undoubtedly help to the improvement of CAT tools.

The expansion of machine translation has spurred the development of a second service: post-editing machine translation (PEMT). This is where a professional translator works to improve the quality of the machine-translated text. It is a method that combines the advantages of utilizing computers to translate (particularly, speed and price) with the nuance and expertise that only people can provide.

Previous Studies on CAT Tools

Several researches have examined the use of different CAT techniques. In an effort to encourage user-centred software design that takes into account user requirements, these studies examined the merits and downsides of CAT tools from the translators' point of view.

Asare (2020) performed an ethnographic research of translators' perspectives on the application of CAT techniques in translation agencies. Observations and interviews with fourteen professional translators in diverse organizational settings were done. Although translators had positive evaluations of translation technology, they were unsatisfied with the user interfaces, perplexing features, and inflexibility of these tools, according to the poll. Several elements can influence the translation process and result in discontent. The findings suggest an urgent requirement for optimizing translator workstations and enhancing translation environment tools.

LeBlanc (2013) conducted a second ethnographic study on the merits and downsides of utilizing TMs in the workplace in three Canadian translation companies. Through interviews and shadowing, the translators' thoughts on technology-enhanced work settings were acquired. The majority of research participants stated that CAT technology enhanced translation consistency and reduced repetitive effort. Yet, their discontent concentrated on the instrument's conception or design.

Vargas–Sierra (2019) conducted a usability study to determine how students see SDL Trados Studio (SDL plc, Berkshire, UK), a popular desktop CAT program. Using the SUMI questionnaire, the researcher questioned 95 translation students to evaluate the software's efficacy, impact, usability, control, and learnability. The results revealed that student ratings of the software's global usability were within the average range, however its learnability was below average. The sole above-average scale was the attribute act scale. According to the study, greater emphasis must be focused on the design of this CAT tool in order to meet the actual needs of translators.

In the context of Arab translators, Alanazi (2019) conducted a study to evaluate translator perceptions of CAT technologies and potential barriers to their adoption. The researcher conducted an online poll and an observational experiment with 49 translators. Arab translators have a strong tendency to encourage and support the utilization of CAT technology notwithstanding the difficulties. This involves segmentation, grammar, and spelling issues. The conclusion of the study was that there was no

association between the challenges faced when utilizing CAT technologies and the level of enjoyment reported.

Previous Studies on Perceptions and Attitudes of Translators towards CAT Tools

Moore and Benbasat (1991) explored how the views of potential users impact the adoption of an information technology breakthrough. Based on ideas of innovation diffusion, they present a critical instrument for studying the adoption and spread of information technology breakthroughs. According to Moore and Benbasat (1991), "innovations disperse due to the accumulation of individual adoption decisions. So, it is not the potential adopters' impressions of the innovation itself that determine its diffusion, but rather their perceptions of employing the invention (p. 196). Next, Dillon and Fraser (2006) utilized a streamlined version of the aforementioned tool to investigate the perceptions of UK-based translation experts regarding Translation Memories (TMs). They address the same eight constructions using just 24 sentences this time. They argue that:

1. Younger translators and those relatively new to the translation industry have a more positive general perception of CAT tools than experienced translators;
2. Translators who use CAT tools have a more positive general perception of it than translators who do not; and
3. Perceived computer proficiency correlates positively with translators' perception of the significance of CAT tools.

In the literature on CAT system assessment, two studies are frequently cited: Rico (2001) and Höge (2002), both of which underline the significance of a user-oriented approach for context-based evaluation. The former presents a thorough evaluation process that takes context into consideration and specifies a variety of pertinent characteristics along with their relative weights. Despite this, it is evident that the model is completely theoretical and has no application. Höge (2002) also emphasizes the significance of an evaluation framework's reusability.

McBride (2009) investigated translators' perspectives on the utilization of TMs by analyzing posts on translators' discussion boards and email lists in addition to vendors' promotional materials. LeBlanc (2013), on the other hand, performed an anthropological case study in three distinct Canadian translation businesses based mostly on translator interviews. In spite of the unanimity among his participants on the benefits of CAT tools, he notes that they are dissatisfied with the design and construction of the tools. Starlander and Vázquez (2013) investigated the evaluation of CAT tools by graduate students using Eagle's (1999) seven-step evaluation procedure. But, according to the authors, this system has to be simplified as it is very complex and thorough.

Abotaibi (2014) performed one of the pioneering researches on attitudes towards CAT tools in the Arab world by examining the expectations and attitudes of female Saudi translation students towards this technology. An apparent disadvantage of the research is that it depends exclusively on publicly accessible internet services and video lessons of the program, as opposed to the software itself, which may not provide an accurate depiction of users' opinions about real hands-on use.

METHOD

Research Design

Methodologically the study consisted of two sections: (a) Phase I: Focus Group Interviews, and (b) Phase II: Self-report Questionnaire. An exploratory-descriptive qualitative design was adopted to fulfil the objectives of the study. An interview with a focus group was used as the instrument in the first phase. The second phase of the study used a questionnaire to assess the level of knowledge and familiarity of Iranian students in translation studies regarding the advantages and uses of translation technology .The participants, instruments, data collection and analysis of the two phases are provided in the following sections.

PHASE I

Participants

On the basis of purposive sampling, 12 students in translation studies were chosen. The participants were all chosen from different universities, studying Translation Studies and they all are working as translators. The curriculum of the program was the same in all universities and higher education institutions in Iran. The students participating in the focus group were expected to have a sufficient grasp of translation principles and to had sufficient experiences in the typical translation activities, as a part of their coursework. Thus, the researcher would be able to gather the needed data out of the student's experiences in the related field which is, according to Singh, suitable in such a qualitative study (2008). In other words, the researchers could consult with real samples of students as trustworthy experts to develop the items required in the second phase (Creswell, 2003). The interview was done through the google meet and the interviewees were well informed that their responses to the questions kept confidential and they were asked to declare their consent on the participation.

Instrument

An interview with a focus group was used as the instrument in the first phase. The focus group technique was used because "interaction within the group can yield high-quality data by generating a synergistic environment that leads to a meaningful and insightful debate" (Dörnyei, 2007, p. 144). The interview questions presented were designed to elicit a wide range of information on the participants' knowledge and abilities regarding translation processes and the related CAT based instruments. The following open-ended questions were asked during the interviews in the focus group keeping the moderator's role as the interviewer to preserve the procedure as close as possible to the topic and moving ahead to provide an overview of students' perceptions and attitudes towards the role of CAT tools in translation:

1. How familiar are you with CAT tools?
2. Have you used any CAT tools before? If so, which ones?
3. In your opinion, what are the benefits of using CAT tools in translation?
4. What are the limitations of using CAT tools in translation, in your opinion?
5. How do you think CAT tools can enhance your translation skills?
6. In your experience, how do CAT tools affect the quality of translation?
7. What challenges do you foresee in using CAT tools for translation?
8. How do you think CAT tools can be integrated into the translation curriculum?
9. What strategies do you use to enhance your translation skills?

10. How important do you think it is to learn CAT tools for translation?

Data Collection and Analysis

The participants' general understanding about translational concepts and the needed practical CAT tools are focused in the data collection of the first phase. Here the aim of the researchers was to grasp a primary understanding of Iranian translation studies major students' knowledge and skills in terms of their familiarity with and extent of using translation technologies.

During the initial contact with the participants, the nature of the study was explained. The participants were informed that the current study would be performed in English and their answer upon the questions would be transcribed and audio-recorded, while keeping confidential, for the needed data analysis. In order to preserve accuracy, reliability and validity of the responses, students were also informed about the possibility to ignore the invitation to the focus groups. Accordingly, the students were free in making their own decision to become a participant in the study.

Further to the principles of grounded theory, data analysis and the following data reduction steps, such as coding and synthesis, were undertaken in an iterative manner which is the process of breaking data into units of analysis and coding each unit concurrently (Calloway & Ariav, 1995). Meanwhile, depending on the type of data provided through the interview, the two main approaches to qualitative analysis, i.e., inductive and deductive approaches, with respect to the related procedures of thematic content analysis and narrative analysis were applied. In this respect, the gathered data consisting of transcripts of the audio recordings of the focus group interview was examined to reach the components needed to develop the questionnaire applied in the second phase. To do so, the data acquired during the focus group interview was categorized and separated into componential sections. The link between the various components was then identified so that they were organized into more inclusive ideas. In addition to the analysis needed in the first phase, the extracted categories were helpful in the possible justification and adaptation of the items included the questionnaire, as an instrument applied in the second phase of the study. Thematic analysis as the most widely used type of analysis in qualitative studies was applied to analyze interviews' answers via the following a step-by-step guide:

- Familiarization: Begin by reading and re-reading the interview transcripts to become familiar with the data. Take note of interesting points, recurring ideas, and patterns that emerge from the participants' answers.
- Initial Coding: Start coding the data by assigning descriptive labels or codes to meaningful units of text. These codes should capture the essence of the content and represent the main ideas or themes present in the answers. It's recommended to use an inductive approach, allowing themes to emerge from the data rather than imposing preconceived categories.
- Collating Codes into Themes: Review the codes and look for connections or similarities between them. Group related codes into broader themes or sub-themes that reflect the underlying concepts or patterns in the data. This step involves organizing the codes into meaningful clusters.
- Reviewing and Refining Themes: Evaluate the themes and sub-themes to ensure they accurately represent the data. Review the coded extracts within each theme to check for consistency and

coherence. Refine and revise the themes as needed, making sure they capture the richness and nuances of the participants' answers.

- Defining and Naming Themes: Provide clear and concise definitions for each theme. The definitions should capture the essence of the content and reflect the patterns and meanings found within the data. Assign descriptive and meaningful names to the themes that accurately represent their content.
- Generating an Analytical Narrative: Develop a coherent narrative that explains and supports each theme. Write a description or summary for each theme, illustrating it with relevant quotes or examples from the interview data. The analytical narrative should provide an in-depth understanding of the themes and their significance within the context of the research.
- Mapping and Interpretation: Step back and examine the relationships between the themes. Analyze how the themes interact with each other, identifying connections, contrasts, or patterns that emerge. Interpret the themes in light of the research objectives, theoretical frameworks, and relevant literature. Consider the implications and significance of the themes, and generate meaningful insights from the data.
- Reporting: Present the findings in a clear and structured manner. Write a comprehensive report that includes a description of the research methodology, a summary of the participants' characteristics, an overview of the themes, and a detailed analysis of each theme with supporting evidence from the interview data.

In this respect, the gathered data consisting of transcripts of the audio recordings of the focus group interview was examined to reach the components needed to adapt the questionnaire applied in the second phase. To do so, the data acquired during the focus group interview was categorized and separated into componential sections. The link between the various components was then identified so that they were organized into more inclusive ideas.

PHASE II

Participants

The statistical population needed for the second phase of the study consisted of students studying at different universities of Iran in the field of translation. Accordingly, based on the purposive sampling procedures, 100 students bearing the sufficient acquaintance with the use of technology and tools in translation tasks were selected as the participants. The participant were the students of the researchers' in different classes of translation courses in academic years 2022-2023. The students were informed about the features of the questionnaire and the trustworthiness of participation in the study were explained to them. Meanwhile, they expressed their satisfaction for participation as the end user of the CAT tools in the field of translation.

Instrument

A Likert scale questionnaire was utilized to determine the level of the translation studies students' familiarity and knowledge about the technology-based translation and CAT tools. The questionnaire was adapted to fulfil the objectives of the study based on the information gathered in the first phase of the

study, which was utilized to determine the level of the students' familiarity and knowledge about the technology-based translation and CAT tools. The reliability and validity of the items included in the questionnaire was examined using piloting and statistical procedures as well as expert judgments.

The questionnaire was basically formed based on four major components including demographic information, CAT tool use, attitudes towards CAT tools, and benefits and drawbacks of using CAT tools. However, with reference to the thematic analysis in the first phase of the study, the study considered the following components and items to gather the needed data in phase II:

- Demographics: This section collects information about the translator's age, gender, and educational background.
- Attitudes towards CAT tools: This section collects information on the translator's attitudes towards CAT tools under 4 categories which were collected based on the interview themes of the results, which are limitations, benefits, effects on quality of translation and challenges of the CAT tools.
- Benefits and drawbacks of using CAT tools: This section collects information on the translator's perceptions of the benefits and drawbacks of using CAT tools, including their impact on productivity, consistency, and creativity in translation.

As a key feature, the questionnaire covered a wide range of CAT tools, including popular tools such as SDL Trados, MemoQ, and Wordfast, as well as lesser-known tools. The feature made the instrument a comprehensive tool for assessing the use of CAT tools in translation practices.

Another important aspect of the questionnaire was providing both closed-ended and open-ended questions to allow for a more nuanced understanding of translators' experiences with CAT tools and their attitudes towards them.

Data Collection and Analysis

After providing the necessary information to the participants of the second phase over the objectives of the study and the components forming the items of the questionnaire, the students were asked to provide their viewpoints over the items. After the initial examinations on the usable completed questionnaires, the responses provided by the participants in the second phase were coded and modified descriptively. Frequencies and percentages as well as summary of responses, were extracted to provide the needed descriptions and analysis.

Integration of Data in Phase I and Phase II

In the initial phase of the study, an interview was employed as a means to obtain comprehensive information about CAT tools from students who have practical experience as translators and familiarity with such tools. The interview questions were carefully designed to elicit a wide range of insights pertaining to the participants' knowledge and proficiency in translation processes, as well as their understanding of related CAT-based instruments.

Data analysis of the interview responses enabled the identification of key thematic content. These extracted themes were subsequently utilized to assess and validate the suitability of the Likert scale questionnaire within the given context of the study, which cantered on CAT tools among students.

However, recognizing the potential limitations of solely relying on one data collection method, triangulation was employed to incorporate diverse perspectives. While the interview aimed to uncover qualitative information to elicit a wide range of insights pertaining to the participants' knowledge and proficiency in translation processes, as well as their understanding of related CAT-based instruments, the questionnaire aimed to gather data on translators' use of CAT tools, their attitudes towards CAT tools, and their perceptions of the benefits and drawbacks of using CAT tools in translation. This methodological combination allowed for a more comprehensive exploration of the participants' views and experiences.

Through interviews, researchers could gain a deeper understanding of participants' thoughts, motivations, and reasoning behind their experiences with CAT tools. It also allowed for follow-up questions to clarify responses and explore into specific areas of interest.

By utilizing both the interview and the questionnaire, researchers could obtain a more comprehensive and well-rounded understanding of the topic at hand. The qualitative data from the interview provided rich details and context, while the data from the questionnaire provided a broader perspective. The combination of these methods allowed researchers to triangulate the findings, cross-validate the data, and draw more robust conclusions.

RESULTS

Data Analysis of Phase I

The participants' general understanding about translational concepts and the needed practical CAT tools were focused in the data collection of the first phase. Here the aim of the researchers was to grasp a primary understanding of students' knowledge and skills in terms of their familiarity with and extent of using translation technologies.

The following questions were asked during the interviews in the focus group keeping the moderator's role as the interviewer to preserve the procedure as close as possible to the topic and moving ahead. The steps to analyse the transcription of the answers were consisted of Familiarization, Initial Coding, Collating Codes into Themes, Reviewing and Refining Themes, Defining and Naming Themes, Generating an Analytical Narrative, Mapping and Interpretation, and Reporting.

1. How familiar are you with CAT tools?

The answers regarding the familiarity with CAT tools provided the researchers with the varying levels of knowledge and experience among the students. The responses ranged from complete unfamiliarity to different degrees of familiarity and proficiency.

The diversity emerged as the students' answers demonstrated a spectrum of familiarity with CAT tools. Some students had never encountered or used CAT tools before (Not at all familiar), while others have limited exposure or occasional encounters with them (Rarely familiar, Slightly familiar, Infrequently familiar). There were students who possessed a moderate understanding and experience with CAT tools (Moderately familiar).

2. Have you ever used any CAT tools before? If so, which ones?

The answers highlighted the variety of CAT tools mentioned by the students, such as SDL Trados, memoQ, and MateCat. Each tool represented a unique software solution designed for computer-assisted translation, with its own features, functionalities, and user interfaces.

By mentioning specific CAT tools, the theme represented the students' familiarity and, to some extent, their proficiency with these tools. Some students mentioned multiple tools, indicating a broader exposure and experience, while others mentioned a single CAT tool, suggesting a more focused or limited usage.

3. In your opinion, what are the benefits of using CAT tools in translation?

The responses highlighted the various ways in which CAT tools can enhance translation work and contribute to better outcomes. The summary of the Thematic Analysis for Benefits of CAT Tools is shown in Table 1.

Table 1

Thematic Analysis for Benefits of CAT Tools - Focus Group Interview's Q3 Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Benefits of CAT Tools	Increasing Efficiency and Productivity	Automation of repetitive tasks Cost Savings
	Consistency and Accuracy in Translations	Reuse of translated segments Effective terminology management Quality assurance features
	Improving Collaboration and Teamwork	Facilitating collaboration among multiple translators Sharing of resources Exchange of suggestions or comments
	Versatility in File Management	Handling of different file formats

4. What are the limitations of using CAT tools in translation, in your opinion?

The answers to the question about the limitations of using CAT tools in translation revolved around the challenges and drawbacks related to the use of these tools. The responses highlighted various aspects where CAT tools might fall short or encounter difficulties. The summary of the thematic analysis for limitations of the CAT tools is shown in Table 2.

Table 2

Thematic Analysis for Limitations of CAT Tools- Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Limitations of the CAT Tools	Challenges with Handling Language Complexity	Difficulties in translating idiomatic expressions Challenges with translating cultural nuances

		Issues with handling complex sentence structures
	Over-reliance on Pre-existing Materials	
	Limitations in Creativity and Nuance	
	Maintenance and Technical Issues	Software updates and compatibility problems Learning curve for new software versions Technical glitches and software crashes
	Compatibility Issues	Difficulties in working with specific file formats 2. Incompatibility with certain operating systems or devices 3. Challenges in integrating CAT tools with other translation tools or systems
	Expense and accessibility	

5. How do you think CAT tools can enhance your translation skills?

The main extracted themes according to the analytical steps on how CAT tools could enhance translation skills were provided in Table 3.

Table 3

Thematic Analysis in Enhancing Translation Skills via CAT Tools- Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Enhancing Translation Skills via CAT Tools	Benefits of CAT Tools in Translation	1. Consistency and Accuracy 2. Terminology Management 3. Efficiency and Automation
	Enhancing Translator Skills and Collaboration	Collaboration and Collective learning Error Identification and Learning Exposure to Translation Techniques Reflection and Continuous Improvement
	Supporting Translators' Workflow and Organization	Personal Translation Databases Quality Assurance Organization and Time Management Access to Reference Materials

6. In your experience, how do CAT tools affect the quality of translation?

The answers to the question about how CAT tools affect the quality of translation revolved around the potential impact of these tools on various aspects of translation quality. The summary of the data is shown in Table 4.

Table 4

Thematic Analysis for the Quality of Translation via CAT Tools- Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
CAT Tools Affecting Quality of Translation	Consistency and Accuracy	Use of TMs Use of Glossaries Real-time Suggestions Error-checking Features
	Streamlining the Translation Process	Efficient Proofreading Quality Control

7. What challenges do you foresee in using CAT tools for translation?

The extracted themes to the question about challenges in using CAT tools for translation revolved around the potential difficulties and obstacles that participants might face when working with the related tools. The analysis revealed several common challenges in using CAT tools, including the need for training and adaptation, the quality of translation memories, data management, privacy and confidentiality concerns, customization options, inaccuracies in suggestions, suitability for different text types, consistency of terminology, complexity of grammatical structures, network connectivity, cost, and the potential loss of control over the translation process. These findings provided insights into the complexities and considerations that translators encountered when utilizing CAT tools. The summary of the data is Table 5.

Table 5

Thematic Analysis in Challenges of Using CAT Tools- Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Challenges of Using CAT Tools	Challenges in Using CAT tools	Training and Adaptation Quality of TMs Data Management Privacy and Confidentiality Concerns Customization Options
	Accuracy and Suitability in Translation	Inaccuracies in Suggestions Suitability for Different Text Types Consistency of Terminology Complexity of Grammatical Structures
	Technical Considerations	Network Connectivity Cost
	Loss of Control over the Translation Process	Potential loss of control

8. How do you think CAT tools can be integrated into the translation curriculum?

The analyzed themes for integrating CAT tools into the translation curriculum revolved around providing practical and comprehensive training to students, enabling them to effectively use these tools in their future professional practice. The summary of data is shown in table 6.

Table 6. *Thematic Analysis for Integration of the CAT Tools into Translation Curriculum- Focus Group Interview's Item Analysis*

Interview Item	Analysed Main Themes	Analysed Sub Themes
Integration of the CAT Tools into Translation Curriculum	Integration of CAT Tools into Translation Curriculum	Dedicated Training Courses Translation Technology Courses Modules Specifically Focused on CAT Tools Translation Methodology Courses Dedicated Course on CAT Tools and Translation Technology Creating a Separate Course or Module Incorporating CAT Tools into Existing Translation Courses Technology-oriented Courses CAT Tools and Their Application in Translation Projects Practical Translation Courses

9. What strategies do you use to enhance your translation skills?

The thematic analysis of the data for the strategies to enhance translation skills among students is provided in Table 7.

Table 7

Thematic Analysis for Strategies to Enhance Translation Skills - Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Strategies to Enhance Translation Skills	Continuous Learning and Self-Improvement	Extensive Reading Utilizing Online Resources Continuous Professional Development Seeking Feedback Self-reflection and Self-Assessment Language Proficiency and Specialization
	Cultural Exposure and Sensitivity	Cultural Immersion and Exposure to Native Speakers Intercultural Competence Cultural Awareness and Sensitivity
	Collaboration and Networking	Consulting Experts and Mentors Engaging in Translation Communities Collaboration in translation projects Networking with Translation Professionals
	Adaptability and Flexibility	Navigating to Evolve in Translation Landscape Embracing Technology and Multimedia Resources

		Emphasizing Innovation and Experimentation
	Passion and Dedication	Persistence and Dedication in Pursuing Translation Career Self-motivation and Perseverance

10. How important do you think it is to learn CAT tools for translation?

The result of the thematic analysis on learning CAT tools for translation task were provided in Table 8.

Table 8

Thematic Analysis for the Importance of Learning CAT Tools - Focus Group Interview's Item Analysis

Interview Item	Analysed Main Themes	Analysed Sub Themes
Importance of Learning CAT Tools	Benefits of CAT Tools	Productivity Enhancement Accuracy Improvement Consistency Assurance
	Enhancing Productivity and Efficiency	Automation of Repetitive Tasks Integration of Translation Management Features
	Ensuring Consistency and Accuracy	Utilization of Translation Memory Glossaries and Terminology Management
	Translation Memory and Terminology Management	Leveraging Previously Translated Content Maintenance of Consistent Terminology
	Features and Advantages of CAT Tools	Translation Memory Glossaries Alignment Tools

Data Analysis of Phase II

At this point, the researchers moved on to phase two by integrating the interviews' thematic analysis as the validating procedure to consider the appropriateness of questionnaire applied to gain a more comprehensive understanding of the participants' attitudes towards CAT tools in translation. In other words, Phase II of the study focused on synthesizing the findings from both the interview data and the questionnaire responses by examining the consistencies and inconsistencies between the data. Thus, the researchers provided a cross-validating results to robust the data analysis in the second phase. This integration of data sources allowed for a more nuanced understanding of the use of CAT tools via grasping the students' attitudes and reflections using a Likert scale questionnaire. The instrument was utilized to determine the level of the students' familiarity and knowledge about the technology-based translation and CAT tools. Based on the purposive sampling procedures, 100 students in translation studies bearing the sufficient acquaintance with the use of technology and tools in translation tasks were selected as the participants.

To estimate the reliability and validity of the previously developed questionnaire, the item analysis with Cronbach's alpha, as the measure of internal consistency, was administered. The item analysis results helped the researchers to further adapt the instrument according to the construct and objectives of the study. To do so, the reliability of the questionnaire's items was examined based on the data gathered from the pilot study with 10 participants and computed through SPSS software. Accordingly, the items resulting in a lower reliability coefficient (lower than .7) were removed. The overall Cronbach's alpha reliability coefficient of the questionnaire was 0.901 before ignoring the items related to the problematic component. After removing the mentioned items estimating the Cronbach's alpha coefficient reached to

0.942. Meanwhile, since the questionnaire was originally developed with respect to the use of CAT tools, validity of the questionnaire was assured in different aspects using experts' judgments. The findings on the reliability estimate of the original and adapted questionnaire are provided in the following tables.

Table 9

Scale statistics of the Items in the Original Questionnaire

Mean	Variance	Std. Deviation	N of Items
80.36	399.891	20.00	20

Table 10

Reliability of Items in the Adapted Questionnaire-Total Statistics by Removing 5 Items

No. of Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
5 Items in "the Usage of CAT Tools" Component of the original Questionnaire	81.42	390.111	.314	-	.942

Table 11

Cronbach's Alpha Estimates for the Original and Adapted Questionnaire

Number of Items	Cronbach's Alpha Based on Standardized Items	Final Cronbach's Alpha
15	.901	-
10	-	.942

Component I: Demographic Information Analysis

A total of 55 males and 45 females responded to the questionnaire, comprising the 100 students surveyed. The detailed description for the demographic information of the participants in the second phase is provided in Table 12.

Table 12

Participants' Features in Phase II

Gender	Number	Age (Range)	Education Level/Mastery
Male and Female	40	20	Bachelor
	40	24-26	Master
	20	26-28	Ph.D.
Total No. of Participants	100		

Component II: Summary of the Student's Attitudes towards the Use of CAT Tools Analysis

The findings revealed diverse viewpoints on various statements related to the effectiveness, usability, time-saving potential, suitability for different types of texts, accuracy compared to human translators, preference over traditional methods, potential for replacing human translators, and impact on overall translation skills.

Meanwhile, the open-ended questions indicate that CAT tools offer several advantages in translation, including increased productivity, consistency, time and cost savings, enhanced quality assurance, and improved collaboration. However, there are also perceived drawbacks, such as a learning curve, compatibility issues, over-reliance on technology, cost of licenses, and dependence on internet connectivity. Overall, students had positive experiences with CAT tools, recognizing their benefits and expressing interest in further exploration. Summary of the student's attitudes is provided in Table 13.

Table 13

Students' Attitude Towards the Use of CAT Tools Questionnaire (Phase II)

No.	Items	Percentages of Answers to Likert Scale Items				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I think that CAT tools are helpful for improving translation accuracy.	**15%**	**20%**	**10%**	**40%**	**15%**
2	I think that CAT tools save time in the translation process.	**10%**	**15%**	**8%**	**55%**	**12%**
3	I think that CAT tools are easy to use.	**15%**	**20%**	**10%**	**40%**	**15%**
4	I think that CAT tools are useful for translating technical or specialized texts.	**8%**	**12%**	**5%**	**45%**	**30%**
5	I think that CAT tools are suitable for translating literary texts.	**20%**	**25%**	**20%**	**20%**	**15%**
6	I think that CAT tools are more accurate than human translators.	**25%**	**30%**	**20%**	**15%**	**10%**
7	I prefer to use CAT tools over traditional translation methods.	**15%**	**20%**	**10%**	**25%**	**30%**
8	I think that CAT tools can replace human translators.	**35%**	**30%**	**5%**	**20%**	**105**
9	I think that CAT tools can improve my overall translation skills.	**10%**	**20%**	**15%**	**25%**	**30%**
10	I think that CAT tools are more efficient than traditional translation methods.	**5%**	**15%**	**15%**	**25%**	**40%**

Confirmatory Analysis of Data

Data Coding and Categorization for the Confirmatory Analysis

Regarding the first step in the confirmatory analysis of the data the dominant themes identified in the questionnaire were as follows:

- Perception of CAT tools in improving translation accuracy (55% agreement)
- Perception of CAT tools in saving time in the translation process (55% agreement)
- Ease of use of CAT tools (55% agreement)
- Suitability of CAT tools for translating technical or specialized texts (75% agreement)

- Suitability of CAT tools for translating literary texts (no clear consensus)
- Accuracy of CAT tools compared to human translators (55% disagreement)
- Preference for CAT tools over traditional methods (55% agreement)
- Potential for replacing human translators with CAT tools (65% disagreement)
- Impact of CAT tools on overall translation skills (55% agreement)

The answers to the open-ended questions indicated that CAT tools offer several advantages in translation, including increased productivity, consistency, time and cost savings, enhanced quality assurance, and improved collaboration. However, there were also perceived drawbacks, such as a learning curve, compatibility issues, over-reliance on technology, cost of licenses, and dependence on internet connectivity. Overall, students had positive experiences with CAT tools, recognizing their benefits and expressing interest in further exploration.

Data Comparison for the Confirmatory Analysis

Areas of Convergence:

1. Increased efficiency and productivity: Both the interviews and the questionnaire highlight the benefits of CAT tools in improving translation efficiency and productivity. This includes automation of repetitive tasks, reuse of translated segments, effective terminology management, and cost savings.
2. Consistency and accuracy in translations: Both sources emphasize the importance of CAT tools in ensuring consistency and accuracy in translations through features like translation memories, glossaries, and quality assurance tools.
3. Improved collaboration and teamwork: Both the interviews and the questionnaire recognize the role of CAT tools in facilitating collaboration among multiple translators, sharing resources, and enabling the exchange of suggestions or comments.
4. Challenges with handling language complexity: Both sources acknowledge the difficulties in translating idiomatic expressions, handling cultural nuances, and dealing with complex sentence structures.

Areas of Divergence:

1. Limitations in creativity and nuance: The interviews discussed limitations in creativity and nuance when using CAT tools, while the questionnaire does not specifically address this aspect.
2. Maintenance and technical issues: The interviews mention challenges related to software updates, compatibility problems, and technical glitches, whereas the questionnaire does not focus extensively on these issues.
3. Expense and accessibility: The interviews touch on the cost of licenses and the dependence on internet connectivity, whereas the questionnaire does not directly address these factors.
4. Perception of CAT tools replacing human translators: The questionnaire indicates a disagreement regarding the potential for replacing human translators with CAT tools, while the interviews do not provide explicit insights on this topic.

Triangulation for the Confirmatory Analysis of Data

Based on the provided data, it seemed that the identified themes from the interviews mainly focus on the advantages and challenges of using CAT tools in translation, including automation of repetitive tasks, quality assurance, collaboration and teamwork, maintenance and technical issues, benefits of CAT tools, challenges in using CAT tools, and integration of CAT tools into translation curriculum. On the other hand, the percentages from the questionnaire suggested that participants generally agreed on the perception of CAT tools in improving translation accuracy, saving time in the translation process, and ease of use, while there is no clear consensus on the suitability of CAT tools for translating literary texts, the accuracy of CAT tools compared to human translators, and the potential for replacing human translators with CAT tools. The open-ended questions also reflected the advantages and disadvantages of using CAT tools, as perceived by the participants.

Identifying Consistencies and Inconsistencies for the Confirmatory Analysis of Data

Via an overall perspective, the consistent findings across both data sources enhanced the validity and credibility of the study's conclusions since the common extracted themes were provided the robust evidences on benefits of CAT tools in improving translation efficiency, ensuring consistency and accuracy, as well as enhancing collaboration.

The results of the confirmatory analysis indicated the convergence of opinions and perceptions regarding the benefits of using CAT tools in translation. In addition, the consistent findings across both data sources confirmed that CAT tools contribute to increased efficiency and productivity, consistency and accuracy in translations, improved collaboration and teamwork, as well as challenges with handling language complexity.

However, there were some areas of divergence in the findings, such as limitations in creativity, maintenance of nuances and technical issues resulted in different perceptions of CAT tools as a replacement for human translators. These inconsistencies suggested that there may be varying perspectives or contextual factors influencing participants' responses.

The results of the confirmatory analysis supported the initial findings that CAT tools have significant advantages in the translation process, including efficiency, accuracy, collaboration, and addressing language complexity. The inconsistent findings highlighted the need for further exploration and investigation in order to better understand the factors contributing to these discrepancies and to obtain a comprehensive view of the impact and limitations of CAT tools in translation.

DISCUSSION

The present study aimed to investigate the use of computer-assisted translation (CAT) tools among Iranian students majoring in translation studies. An exploratory-descriptive qualitative design was adopted, utilizing a two-phase method consisting of focus group interviews (Phase I) and an Attitude Towards the Use of Computer-Assisted Translation (CAT) Tools Questionnaire (Phase II).

Via addressing the research’s questions, the findings emphasized the importance of recognizing these limitations and implementing strategies to mitigate them. This included providing training for beginners, establishing effective quality assurance processes, and addressing compatibility and technical issues.

Furthermore, the analysis highlighted that the use of CAT tools significantly improves translators' skills by enhancing terminology management, streamlining tasks, and allowing for faster and more efficient work.

In addition, the collaborative environment provided by CAT tools could foster knowledge sharing and collective skill improvement among translators. As mentioned by the participants, CAT tools also encourage critical thinking, problem-solving, and continuous improvement in translators' skills along with quality assurance features and access to reference materials contributing to the accuracy and extensive subject knowledge. While the majority of students recognized the positive impact of CAT tools on translation quality, some common identified challenges were also mentioned such as the need for training and adaptation, data management concerns, customization options, accuracy of suggestions, consistency of terminology, network connectivity, and cost considerations. The analysis showed that CAT tools offering advantages such as efficiency improvements, cost savings, collaboration, and flexible file managements via automating the tasks, ensuring consistency and accuracy, and facilitating the teamwork. However, the limitations of applying CAT tools should be concerned that consisted of the challenges with language complexity, overreliance on existing materials, creativity constraints, technical issues, compatibility concerns, and cost accessibility.

Although, students recognized the positive impact of CAT tools on quality CAT tools like enhancing translation skills, promoting reflection and problem-solving, and providing extensive reference materials, but challenges like training, data management, privacy concerns, and adapting to different text types should be concerned in dealing with the tools.

Based on the analysis of the identified themes and key insights, it can be concluded that CAT tools offer numerous benefits, including enhanced productivity, increased efficiency, improved consistency, and better-quality control. In addition, the use of CAT tools ensures consistency and accuracy in translations by utilizing translation memory and terminology management features since the translation memory enables translators to store and reuse previously translated content, reducing manual effort and allowing for a faster and more accurate translation process. In this aspect, terminology management features the maintain consistent terminology throughout translations and resulting in a better translation quality is of obvious importance. In this regard, glossaries and alignment tools also assisted the translators in maintaining accuracy and consistency. Generally speaking, the advantages of using CAT tools are significant for translation professionals by resulting in an improved productivity and output quality.

The analysis of the students' responses implied that Computer-Assisted Translation (CAT) tools could offer several significant benefits, including increased efficiency, cost savings, improved collaboration, and flexibility in file management. The automation of repetitive tasks and the ability to reuse previously translated segments and manage terminology effectively contributed to higher productivity levels. CAT tools could also ensure consistency and accuracy in translations, leading to high-quality outcomes.

Additionally, the analysis highlighted that CAT tools can enhance translators' skills through terminology management, streamlining tasks, and faster work and the collaborative environment provided by CAT tools fosters knowledge sharing and collective skill improvement among translators. Furthermore, the accessibility of quality assurance features and reference materials further contributed to accuracy and extensive subject knowledge.

However, it is important to acknowledge the limitations of CAT tools identified in the study. These include challenges with language complexity and nuance, potential constraints on creativity due to overreliance on existing materials, and maintenance and technical issues that may disrupt the translation process. In addition, compatibility issues with certain software or systems and concerns related to expense and accessibility are also notable. It is noteworthy to mention that inconsistencies in perceptions of students on the efficacy were remained, particularly in terms of creativity and nuance in translation and concerns about maintenance and technical issues. The study highlighted the need for further research studies on the development of CAT tools to address the remaining challenges as well as the concerns and reservations for the remaining sceptical issues.

The findings of the study were aligned with previous research conducted by Moore and Benbasat (1991), Dillon and Fraser (2006), Rico (2001), Höge (2002), McBride (2009), LeBlanc (2013), Starlander and Vázquez (2013), and Abotaibi (2014).

In this view, Moore and Benbasat (1991) emphasized the importance of individuals' perceptions of employing an innovation rather than their impressions of the innovation itself in determining its diffusion. The issue represented a positive perception of CAT tools' benefits as expressed by the Iranian students, via recognizing improvements in efficiency, productivity, consistency, and collaboration.

In addition, Dillon and Fraser (2006) found that younger translators and those new to the industry had a more positive perception of CAT tools which is also corresponding with the findings of the current study via identifying a positive correlation between perceived computer proficiency and the perceived significance of CAT tools as supporting the notion that proficiency in using technology impacts users' perceptions on the related tools' significance.

Studies conducted by Rico (2001) and Höge (2002) also highlighted the importance of user-oriented evaluation and context-based assessment for CAT systems. The suggestions provided by the Iranian students regarding training programs, quality assurance processes, customization options, and data management resonate with the need for user-centred approaches in evaluating and improving CAT tools.

McBride (2009) and LeBlanc (2013) explored the perspectives of translators on the utilization of TMs and CAT tools. In the same line, the satisfaction of the Iranian students with the benefits of CAT tools, despite some dissatisfaction with design and construction, is aligned with the findings of these studies.

Starlander and Vázquez (2013) emphasized the need to simplify complex evaluation procedures for CAT tools, which echoed the suggestions made by the Iranian students for streamlining the evaluation process.

Abotaibi (2014) conducted research on attitudes towards CAT tools among female Saudi translation students. Although focusing on a different region, their study, like the current study, recognize the importance of understanding student expectations and attitudes towards the technology.

By utilizing CAT tools, students benefited from increased efficiency, enhanced consistency and accuracy, improved collaboration, access to reference materials, and skill development. These aspects significantly contributed to their proficiency development in the area of translation.

It is noteworthy to mention that the results of the current study on CAT tools in translation were also aligned with some previous studies in terms of the benefits and perceptions of using the tools.

Similar to Dillon and Fraser (2006), who found that younger and less experienced translators had a more positive perception of CAT tools, the current study also tries to emphasize to the notions related to

skills development as one of the benefits and regular use of CAT tools helping students to develop various skills related to translation, such as software proficiency, managing terminologies, and analyzing and revising translations.

The aspect of efficiency and time-saving highlighted in the current study was consistent with Moore and Benbasat (1991), who emphasized the impact of individual adoption decisions on the diffusion of innovation. In other words, the automation of repetitive tasks through CAT tools allowed students to work more efficiently, handle larger volumes of work, and meet deadlines effectively.

Consistency and terminology management, identified as a benefit in the current study, was aligned with the findings of Rico (2001) and Höge (2002), who emphasized the significance of a user-oriented approach and context-based evaluation in CAT system assessment. CAT tools enabled students to maintain consistency throughout their translations by storing previously translated segments and terminology databases.

The aspect of collaboration and teamwork mentioned in the current study was in line with the findings of McBride (2009), who analyzed discussions among translators on forums and email lists. CAT tools facilitated collaboration by allowing multiple translators to work on the same project simultaneously and enabled them to have an efficient coordination within a translation team.

Access to reference materials, another benefit identified in the current study, is in the same line with the emphasis on the significance of a user-oriented approach and the evaluation of CAT tools with reference to the studies by Rico (2001) and Höge (2002). CAT tools provided students with extensive reference materials, such as online dictionaries and parallel texts, which assist in researching and verifying the accuracy of translations.

CONCLUSION AND IMPLICATIONS

Based on the findings, the study draws several conclusions regarding the place of CAT tools in the development of translation proficiency among students in translation studies. The study reveals that students hold a positive perception of CAT tools, acknowledging their numerous benefits. They appreciate how these tools enhance efficiency and save time by automating repetitive tasks. Features like translation memory and terminology management enable students to handle larger volumes of work within tight deadlines. The findings implied that while CAT tools offer numerous advantages for translation professionals, there is a need to mitigate the identified limitations and continually improve these tools to enhance their effectiveness and usability.

CAT tools also contribute to the development of consistent and accurate translations. Students value the ability to maintain consistency in terminology, thanks to features that store previously translated segments and provide access to terminology databases. Real-time spell-checking and grammar checking tools help students improve accuracy by identifying and correcting errors promptly.

Furthermore, CAT tools foster collaboration and teamwork among students via facilitating knowledge sharing and peer review. Project managers can assign specific tasks and track progress, ensuring efficient coordination within translation teams.

Access to extensive reference materials is another beneficial aspect of applying CAT tools. Students can utilize online dictionaries, terminology databases, and parallel texts to research and verify the

accuracy of their translations. This helps improve language proficiency and the overall quality of translations.

Regular use of CAT tools also contributes to the development of essential translation skills. Students become proficient in using the software interface, navigating translation memories, and managing terminologies. They also develop the ability to analyze and revise translations effectively, enhancing their overall translation competence.

In conclusion, the study highlights the significant role of CAT tools in the translation proficiency development of students. These tools are perceived positively and offer various benefits, including increased efficiency, enhanced consistency and accuracy, improved collaboration, access to reference materials, and skill development. Further improvements in CAT tool functionality could optimize their potential in translation education. pedagogically, the findings resulted in the implications for integration of CAT tools in developing translation curriculum for the needed emphasis on efficiency and productivity, fostering consistency and quality assurance, promoting collaboration and teamwork, addressing challenges and concerns, and continuous professional development.

The study on the use of CAT tools among Iranian students in translation studies has several pedagogical implications that can inform translation education and practice as follows:

1. Integration of CAT Tools in Translation Curriculum: The positive perception of CAT tools among students suggested the importance of incorporating CAT tool training in translation curriculum. Educators should consider including specific courses or modules that introduce students to different CAT tools, their features, and their effective utilization in translation workflows. This integration can better prepare students for the demands of the industry and enhance their employability.
2. Emphasizing Efficiency and Productivity: The findings highlight the perception that CAT tools contributed to increased efficiency and productivity. This implied that translation programs should place emphasis on teaching students how to effectively use CAT tools to optimize their workflow and output. Training on features like translation memory, glossary management, and project organization can help students maximize the benefits of CAT tools in terms of time-saving and productivity.
3. Fostering Consistency and Quality Assurance: The recognition of CAT tools as tools for ensuring consistency and improving translation quality suggested the need to address these aspects in translation education. Educators can emphasize the importance of maintaining consistent terminology, utilizing translation memories, and utilizing quality assurance features within CAT tools. This can help students develop a strong attention to detail and produce high-quality translations.
4. Promoting Collaboration and Teamwork: The acknowledgment of the collaboration features of CAT tools implied the importance of fostering collaboration and teamwork skills in translation education. Educators can encourage students to work together on translation projects using CAT tools, facilitating knowledge exchange and providing opportunities for peer feedback and learning. This can prepare students for collaborative work environments in the translation industry.
5. Addressing Challenges and Concerns: The study identified challenges such as the learning curve, compatibility issues, and concerns about over-reliance on technology. These challenges should be addressed in translation education to help students overcome barriers and develop the necessary skills to navigate and troubleshoot CAT tool-related issues. Training on CAT tool selection, troubleshooting

techniques, and critical evaluation of machine-generated suggestions can enhance students' ability to effectively use CAT tools.

6. Continuous Professional Development: The perception of CAT tools as tools for continuous learning and skill development suggested the importance of promoting lifelong learning among translation students and professionals. Educators can encourage students to explore new CAT tools, stay updated with industry trends, and engage in professional development activities related to CAT tools. This can help students adapt to evolving technologies and enhance their translation proficiency throughout their careers. By considering these pedagogical implications, translation educators can better equip students with the necessary skills and knowledge to effectively use CAT tools, thereby enhancing their translation proficiency and preparing them for successful careers in the translation industry.

With respecte to the mentioned implications, further studies for various comparative or longitudinal studies focusing on user interface and usability with optimized training and pedagogical approaches to consider the possibilities of applying the tools on the translation quality and the related ethical considerations in integrating machines are suggested.

DECLARATION OF CONFLICTING INTERESTS

There is no conflict of interest to declare.

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LIST OF ABBREVIATIONS:

Computer-Assisted Translation (CAT)
Machine Translation (MT)
Translation Memories (TMs)
Translation Environment Tools (TETs)
Technology Readiness Levels (TRLs)

APPENDICES

Interview Protocol Form

Institutions: Islamic Azad University
Interviewee: EFL Students in Translation Studies
Interviewer: Researchers
Major Topic of the Interview: General understanding about the practical use of CAT tools in translation
Minor Topics of Interview:

1. How familiar are you with CAT tools?
2. Have you used any CAT tools before? If so, which ones?
3. In your opinion, what are the benefits of using CAT tools in translation?
4. What are the limitations of using CAT tools in translation, in your opinion?
5. How do you think CAT tools can enhance your translation skills?
6. In your experience, how do CAT tools affect the quality of translation?
7. What challenges do you foresee in using CAT tools for translation?
8. How do you think CAT tools can be integrated into the translation curriculum?
9. What strategies do you use to enhance your translation skills?
10. How important do you think it is to learn CAT tools for translation?

Confidentiality and Consent for the Participation:

To facilitate our note-taking, we would like to audio tape our conversations today. Please sign the release form. For your information, only researchers on the project will be privy to the tapes which will be eventually destroyed after they are transcribed. In addition, you must sign a form devised to meet our human subject requirements. Essentially, this document states that: (1) all information will be held confidential, (2) your participation is voluntary and you may stop at any time if you feel uncomfortable, and (3) we do not intend to inflict any harm. Thank you for your agreeing to participate.

Duration and Procedure:

We have planned this interview to last no longer than one hour. During this time, we have several questions that we would like to cover. If time begins to run short, it may be necessary to interrupt you in order to push ahead and complete the line of questioning.

Likert Questionnaire Form

A: Demographic Information

B: *Students' Attitude Towards the Use of CAT Tools Questionnaire*

No.	Items	Percentages of Answers to Likert Scale Items				
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1	I think that CAT tools are helpful for improving translation accuracy.					
2	I think that CAT tools save time in the translation process.					
3	I think that CAT tools are easy to use.					
4	I think that CAT tools are useful for translating technical or specialized texts.					
5	I think that CAT tools are suitable for translating literary texts.					
6	I think that CAT tools are more accurate than human translators.					
7	I prefer to use CAT tools over traditional translation methods.					
8	I think that CAT tools can replace human translators.					
9	I think that CAT tools can improve my overall translation skills.					
10	I think that CAT tools are more efficient than traditional translation methods.					

Biodata

Zahra Sadat Khadem Olhosseiny, M.A. Student, Department of English Language, Science and Research Branch, Islamic Azad University, Tehran, Iran. Research Interest: Translation Studies and Computer-Aided Tools

Email: *zahrasadatkhademolhosseiny@gmail.com*

Mohammad Iman Askari, Assistant professor , Department of English Language, Central Tehran Branch, Islamic Azad University, Tehran, Iran. Research Interest: Translation Studies, Teaching Methodologies, and TEFL
Email: *mi.askari@iauctb.ac.ir*