Modern Technology in Translation Practice and Research: Scope and Attitudes of Users

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Abstract:

In translation studies and research, there is a general motivation today to integrate some aspects of scientific observations and to employ electronic tools in all stages of research, including data collection, description, analysis, presentation, and inference. Electronic methods are now used to test well-established hypotheses in translation or enrich the discipline with new paradigms. The main aim of this paper is to measure the attitudes of different sections of the translation community towards translation tools and resources in translation practice and research using a questionnaire and a structured interview. The paper reports the responses of 111 translators, instructors, and students of translation from different areas and universities in KSA to explore their attitudes toward translation tools and resources in translation practice and research. The findings of the study indicate that instructors and translators are more skeptical about translator tools and resources than students. Another finding shows that there is no difference between men and women in using technological tools and resources in translation practice and research.

Key words: Modern Technology, Google Search Engine, Electronic Dictionaries and Glossaries, Electronic Methods in Translation Studies.

التكنلوجيا الحديثة في ممارسة الترجمة: مجالات واتجاهات المستخدمين

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الملخص:

هنالك توجه جديد في دراسات الترجمة والبحث العلمي لدمج الجوانب العلمية وتفعيل الأدوات الإلكترونية في الأبحاث العلمية بما في ذلك جمع البيانات ووصفها وتحليلها وتقديمها واستنتاجها. وتستخدم الوسائل الإلكترونية لاختبار الفرضيات الثابتة في الترجمة وإثراء المجال العلمي بنماذج جديدة. إن الهدف الأساسي من هذه الورقة العلمية هو قياس موقف ونظرة الشرائح المختلفة من مجتمع الترجمة تجاه أدوات الترجمة ووسائلها باستخدام الاستبانة والمقابلات. وتتطرق الورقة العلمية إلى ردود ١١١ من مترجمي ومدرسي الترجمة من مناطق وجامعات مختلفة في المملكة العربية السعودية لمعرفة نظرتهم تجاه أدوات ووسائل الترجمة واستخدامها في ممارسة الترجمة والقيام بالأبحاث فيها. وتشير النتائج إلى أن المعلمين والمترجمين أكثر شكًّا في أدوات الترجمة ووسائلها من الطلاب. كما تظهر نتيجة أخرى أنه لا يوجد فرق بين الرجال والنساء في استخدام الأدوات التكنولوجية في ممارسة الترجمة وأبحاثها.

الكلمات المفتاحية: التكنولوجيا الحديثة، محرك بحث قوقل، المعاجم الإلكترونية، الأساليب الإلكترونية في دراسات الترجمة.

Introduction

Using modern technology in humanities is a flourishing business today and has become one of the main concerns of companies, institutions, and universities. They aim to find ways to make translators and humanities scholars in general get on board and join the digital community. Technology is now reshaping our life and redefining all sciences and practices, including humanities disciplines; it has become an inescapable method in language, translation, literature, education, sociology, history, philosophy, logic, art, music, etc. Therefore, it is gaining ground day in and day out and changes our lifestyles and the way we communicate. In translation practice, translators and everyone interested in keying texts, in general, use many technological tools to get things done fast and consistently. For instance, the widely used MS Word, with its useful functions that include spelling and grammar checkers, revision functions, etc., is now essential in academia and all professions that require producing a written material like in written translation. Another tool that is used on a large scale is the internet search engines which are widely used for data mining, communication, entertainment, translation, among many other things. These well-known tools can be used by all users in all disciplines, but they are more pivotal in translation. All in all, technology not only influences the translation practice but also translation research (Moorkens, 2017; Olohan, 2017). However, translation technology is not integrated in most Arab universities that

offer programs in translation, leaving students sceptical about the effectiveness of translation tools and resources until they go to the labour market.

Although the tools and resources discussed in the paper are open sources and many others make their way to the translation labour market, they are considered unreliable among professional translators as well as instructors of translation. Therefore, this paper tries to see how far the available translation tools and resources are used by translators and students of translation. It aims to give an overview of these tools and resources which might not be commonly known among all translators by exploring the distinctive features of some important tools and by examining the attitudes of translators towards using them.

1.1. Translation Studies Map: A niche for technology

According to Holmes (1988), translation studies can be divided into pure and applied as shown in Figure 1 below. The former focuses on the theoretical and descriptive sides of translation, dealing with the nature and phenomena of translation, in addition to the interrelation with other disciplines, while the latter addresses the ways of training or assisting translators, or provides methods for evaluating translation products.

Translation Studies

'Pure' — Applied

Theoretical — Descriptive

General — Partial — Product Oriented — Process Oriented — Function Oriented — Translator Training — Translation Aids — Translation Criticism

Medium Restricted — Area Restricted — Rank Restricted — Text-Type Restricted — Time Restricted — Problem Restricted
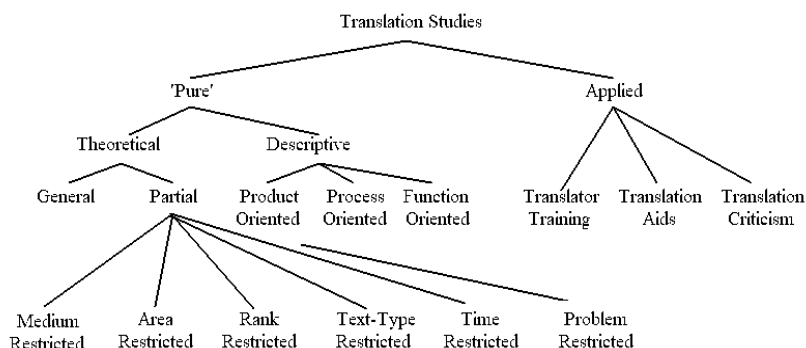
Figure 1: Holmes' classification of Translation Studies

Holmes' classification of translation studies was further developed by Toury (1995) to connect the two subareas of "pure translation studies", making the two areas complement each other. He argues that the input obtained from the descriptive branch (within the pure areas of translation research) informs the first field, i.e. translation theory.
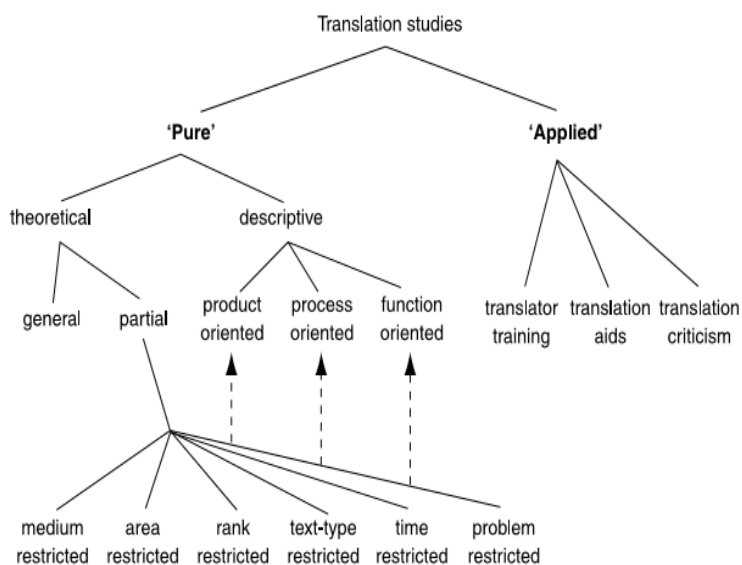
Figure 2: Toury's representation of Holmes' map of Translation Studies

Quah (2006) subdivided translation aids mentioned in the above classification of applied translation into two further branches: MT (machine translation) and CAT (computer-aided translation tools) as shown in Fig. 3.

Translation Studies

Pure   **Applied**

Translator teaching   **Translation**   Translation   Translation
& training   **technology**   policy   criticism

MT systems   CAT tools

          Linguistic tools   Localisation   TM
                                        tools

Language   Language   Project   Document
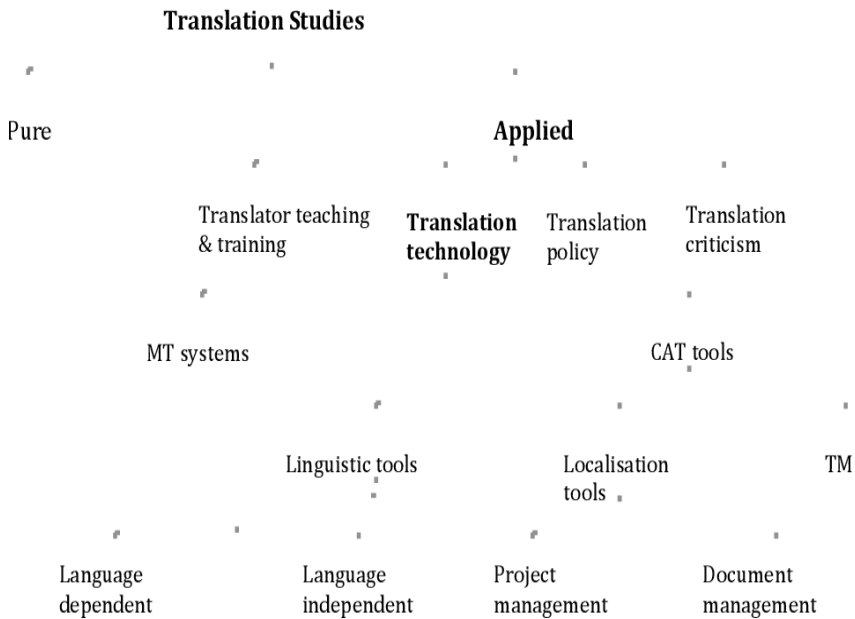dependent   independent   management   management

Fig. 3: Quah's scheme of applied translation studies

The second area of translation studies, according to Holmes' framework, addresses the practice of translation. He mentioned three subareas in this context: (1) translator training (2) translation aids, and (3) translation criticism. This area informs the modus operandi of the first one and is influenced by the other branches, in turn. Although Holmes' classification is proposed before the invention of the World Wide Web, it can be expanded to include modern technology and approaches. Munday (2016, p. 19) noted, "the divisions are still flexible enough to incorporate developments such as the technological advances of recent years".

Translation practice or research has succumbed to technology advances in recent years due to the fast pace of life and the increasing workload in the labor market. However, many translators and researchers of translation still do not fully trust the output for the current unresolved problems of machine translation or the scarcity of electronically trusted human translation.

Technology changed translation as a process and the way translators work. Practically all translators use computers before, during and after the process of translation. Even some translation companies require that translators should have competence of some computer applications like translation memories (TM), terminology management, etc. "[T]ools can be used in every stage of translation or localisation projects ranging from the client's initial request for quotation, pre-job planning, analysis of the source material and capacity planning to quality checks and project post-mortem, i.e. the process of analysing a finished project and determining the lessons learned" (Heinisch and Iacono 2019). Hugh Keith (1989, p. 169) argues, "Probably the most useful contribution to the translation profession made by computers in recent years has been the development of various aids which fall short of actual fully automated machine translation".

Kenny (2020) noted, "There is broad consensus in the literature that anyone who wishes to become a professional translator of pragmatic and technical texts should acquire an understanding of, and an ability to use and critically appraise, contemporary translation

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technologies". The use of modern technology in humanities is one of the main concerns of companies and universities. They are aiming "to analyse the ways in which humanities scholars can exploit advanced computing methods in working with language, literature, history, philosophy, logic, art, music, and so on" (de Smedt et al. 1999, p. 6). In the field of translation, some scholars call for the necessity of formulating universal rules of translation like those that are now globally recognized in the field of linguistics. This is not a far-fetched vision simply because "on the basis of contrastive analyses of translations and their source texts, a number of features considered common to all languages now clamour for the status of universals" (Long 2007, p. 67). Therefore, formulating universal translation rules and employing modern technology would enable us to automate some descriptive processes in language worldwide.

According to (Alanazi 2019, p. 28) a great deal of research needs to be done on CAT tools by Arab linguists as they are more likely to determine weak points and suggest possible solutions. Today, many translation tools and resources are commonly used by translators, be them professional or beginners to keep pace with the fast demand on translation in the market. Therefore, some translation companies make technical proficiency, particularly with CAT tools, a perquisite in their recruitment criteria. Translation tools can be divided into two categories: computer assisted translation tools (CAT) and machine translation systems (MT). CAT tools may be offered offline or

online software like SDL Trados and MemoQ that can be offered in multiple platforms, desktop-based, sever-based or web-based, individually or collaboratively. Some CAT tools are available online for free like MateCat and SmartCat. The second category of translation tools include fully automated translation systems that may be offered freely like Google Translate or licensed like Systran.

On the other hand, translation resources include websites that provide translated materials or aids like translation memories, terminology database, or corpora. Resources also include translator platforms that allow a section for forums where translators can share their ideas about translation or discuss translation problems that they may experience. The most famous translator online platforms include ProZ.com and Translatorscafe.com.

In practice, translators use many tools in almost every stage of the translation process, before, during and after the process of translating. They use internet search engines, MS word functions like word count, track changes, translation memory and terminology management (in some projects), etc. However, they are not aware of the different functions of these tools highlighted below (1.1). For instance, in addition to the useful features of MS Word in writing and editing in general (like spelling and grammar checkers), it is particularly important during and after the process of translation. For example, one of the basic tools in MS Word is a thesaurus that provides the translator with lists of synonyms, antonyms, or related words. The editing options could offer useful functions in translation

as well. The "replace option" not only enables the translator to find and replace a word/ phrase but also to capture all instances of similar formatting for further analysis. Furthermore, researchers in translation can use this function to explore a certain pattern in translation. For example, one can easily identify proportions of exoticism and explicitation by counting the hits in italic or bold font. Glosses between brackets can also be captured. Another useful function in MS Word that is not employed by translation researchers which allows researchers to compare two translations of one original text. When comparing the two texts, the different items in each file will appear in different colours. This enables the translator or researcher to spot the similarities or discrepancies in translating the same text. Another important feature in MS Word is the function of "Compare Files" that one can employ to examine the richness of vocabulary in either file by counting the infrequent items. Customarily, the first step to take when comparing two texts or corpora, is to create Word Lists by any concordance program to identify similarities and differences. Then the two lists can be analysed once more by the same concordance program to make a unified word list. Interestingly, the output can be analysed easily in a combined list in MS Word because the frequency of all items will be either 1 or 2. All the hits that occur once in the new combined word list mark the unique items in either file. To identify the additional items in the first text or corpus which go beyond the scope of the second text or corpus, we can use this useful function in MS

Word, i.e., "Compare files". Comparing the two files, the unique items in each file appear in different colours. Then, the unique items of each text can be easily counted to identify instances of translation variation.

1.2. Related Works

There has always been a relation between translation and technology in its broadest sense (Kenny 2020, p. 5). Translation often adapts and interrelates with other disciplines and tools. It is an amalgam of cognitive disciplines employed for human communication. It combines elements of all disciplines related to language in general, the distinctive features of the text to be translated and the technical approach used in the process of representation and organization. About two decades ago, most translators were either still presenting their work typewritten or in handwritten. Today, everything is digitized, and Machine Translation and other technological tools are used in a wider scale worldwide for personal use, communication, social media networks, traveling, etc. Access to Machine Translation has become a commonplace, not restricted to the elite or specialist sectors (Drugan 2013, p. 5). However, machine translation is still not reliable with many problems unsolved. Other tools could develop a mode of interaction between man and machine where the translator can intervene to improve the translation product using electronic tools (like electronic dictionaries, databases) or his/her own preferences. "As a development of this type of system, the nature of

interaction with the translator may be extended, so that the user provides information during the translation process to resolve ambiguities" (Whitelock & Kilby 1995, p. 12). To this end, O'Brien (2012, p. 103) argues that translation is "a form of human-computer interaction". In this respect, translators and editors of translated works, for the sake of productivity, speed and cost use many tools in almost every stage of the translation process: internet search engines, MS word features like word count, track changes, translation memory and terminology management (in some projects), etc.

Although the number of tools and resources in this area is growing constantly, translators may not be aware about their functions or effectiveness. They may consider them unsuitable when translating some genres of text materials (Cadwell et al 2017). They may even claim that it is not efficient when translating between two languages that do not belong to the same family like Arabic, a Semitic language, and the Germanic English. This paper intends to give an overview of these tools and resources that could benefit translators in the Arab World and to measure the attitude of translators towards them in translation practice and research. "The exploration of the relationship between technology and translation is leading to a fresh examination of contemporary translation benefitting not only translators as users of technologies but also those who develop and research translation technology" (O'Hagan 2019). Even researchers in translation studies may utilize technology throughout the different stages in their research, namely data

collection, description, analysis, presentation, and inference, to meet the requirements of experimentalism maintained in other scientific fields. Beside the basic uses of technology in translation practice, researchers started to harness some modern tools that can inform their research and make it more empirical such as corpus analysis whether through data-based or data-driven approaches. The use of these tools can also help in improving the productivity and quality of the translation (Alotaibi 2020). In light of the above, the present study explored Saudi translation community members' attitudes towards translation tools and resources in translation practice and research. First of all, we are going to explore some common tools that can be used in translation practice and research. The increasing number and wide use of translation tools /resources in the recent years have motivated many researchers to explore their effectiveness. For instance, Bowker (2005) investigates the impact of translation memories on both translation speed and quality. Findings of her pilot study indicate that users of translation tools may focus on speed more than quality. On the other hand, Guerberof (2009) argues that translators can maintain more speed and quality with machine-translated texts than with translation memories. Findings of both studies may reveal that translators may become less critical when working with translated segments retrieved from translation memories that are fed by other human translators.

More interestingly, Jiménez-Crespo (2009) compares the translated texts using translation tools to the texts produced

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manually. He found out that those CAT-based translated texts are significantly different from their comparable original texts in the same genre. However, the CAT-based translations are more consistent than those produced manually in terms of lexical choice and use of verb tenses between English and Spanish. Heinisch and Iacono (2019) explores the attitudes of professional translation vs. students towards using translation tools and resources. She finds out that the former are more skeptical about translation tools in general, while students have positive attitude towards the effectiveness of translation tools. Experienced translators find machine translation tools and post-editing ineffective and poor (Läubli & Orrego-Carmona 2017). There are several studies that analyze the views of students and professional translators about translation tools with respect to one or two platforms such as translation memories and/or machine translation. This paper covers a wider range of translation tools and resources and adds gender to the tested variables. The main research questions are as follows:

1. How familiar are students, instructors and translators of technology?
2. What are their attitudes towards the effectiveness of technology in translation practice and research?

2. Method

As one of the main goals of this paper is to measure the students' attitude towards translation technology, a questionnaire is designed to test the translators' attitudes and familiarity of

translation resources and tools. The questionnaire, as shown in the appendix, consists of 11 items addressing two categories:

1- Familiarity of translation tools and resources in translation practice and research

2- Translators attitudes towards translation technology.

To test the translators' technical proficiency, the most common tools and resources are listed in the questionnaire and the interviews, where respondents are asked about how familiar they are with these tools and resources. The list of tools and resources includes the following:

1. Almaany.com: It is across-lingual information retrieval tool that provides translators and language users with many important tools such as dictionaries, thesauri, and contextual translation. The word meanings are classified by genre like medical, legal, economic, among many others.

2. BabelNet is a multilingual encyclopaedic dictionary that provides definitions of concepts and terms in many languages. It is constantly enriched with online databases like Wikipedia, Wiktionary, and even users' input. It currently contains about 15 million entries connected with large amounts of semantic relations (such as synonyms) to express the meaning in a range of different languages.

3. Concordancers: These tools are used by translators, or language users in general, either with free corpora made available online or special corpora collected for a given purpose in order to obtain more reliable results. These software can turn the online or electronic texts

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into databases that can be searched by translators or language users with more authenticity in terms of mode, speakers/writers, register, etc. Many concordancers are designed for this purpose such as antconc, Monoconc, etc. There are also some online corpora that can offer the translator access to massive corpora and advanced concordancers such as COCA (Corpus of Contemporary American English), Sketchengine and www.Lextutor.ca.

4. Cross-language information retrieval tool: 2lingual is powered by Google to facilitate search in language pairs. It supports 37 languages including Arabic. 2lingual collects search results from Google in any two specified languages, showing the top results of Google for the search term presented side-by-side in the two languages. So, it could be regarded as Cross-language information retrieval tool.

5. Google Translate: More than 15 years ago, Google Translate was used for jokes among translators. To make fun, students and translators would visit the website and paste any lines to use the output for humour. In 2007 Google used a new system which is statistically-based and kept SYSTRAN for other related languages. Large amount of data are now examined by Google Translate to find equivalent forms and patterns. Since the end of 2016, Google Translate has adopted Neural Machine Translation System operated by machine learning algorithms.

6. MS Word: There are many useful features in MS Word program that could enhance the process of translation, in addition to the most common features of spelling and grammar checkers, and "compare files" (See 1.1. above). Like Google Translate, MS Word offers the same features and employs the cutting-edge technology of machine translation.

7. Mymemory: It is an online Translation Memory program, but it is 100% free of charge. It is based on authentic materials from the European Union and United Nations. The data are retrieved from available translation repositories and web pages. Such data are translated by professional translators and enterprises. Mymemory functions as a linguistic search engine where one can look up translated segments (word, phrase or sentence) in any language pair.

8. Phraseup: It is a very useful program for putting words together. It helps the translator, the language learner or anyone produces a written material to fill in the gap or complete an idea structurally. The wildcard sign "*" used with concordancers can also be implemented here with Phraseup to let the program complete the possible missing items and polish the linguistic structure. It suggests possible combination of words or sentence fillers that one cannot remember or retrieve at the moment.

9. Proz.com: It is an online platform that is dedicated for translators' community, where they can communicate about the state-of-the-art programs and solutions. They can also seek advice from other

translators. Proz.com is a well structured platform and is designed according to the needs of translators, where they can search for jobs, benefit from a directory of glossaries updated by users.

10. Reverso.net: Reverso.net provides many features like dictionaries, machine translation, and translation in context where translators can find varied translations and examples for a word or an expression to see how typically a word (or an expression) is used in the target language.

11. Translation memory databases: TAUS Translation memories, like Trados and Wordfast programs, are tools that enable translators to use stored authentic translated segments (words, phrases or sentences) that can be retrieved when repeated partially or fully in the text. TAUS, the language data network, offers an online repository of stored translations that can be accessed online in chunks or segments along with their Source text segments by translators, language users, or researchers. Users can upload their own TM or use the free translation memory database that contains billions of words in many languages including Arabic into English (and vice versa) in addition to French, German, Italian, Japanese, Korean, Russian, Spanish, among many others.

12. WebCorp: It contains more than one billion word classified as follows: Synchronic English Web Corpus, Diachronic English Web Corpus, Birmingham Blog Corpus, Anglo-Norman Correspondence

Corpus, Novels of Charles Dickens. These corpora can be searched for single words or phrases, including patterns, wildcards and POS (part-of-speech). The WebCorp Search Engine employs the same

13. World Wide Web: Besides the multi-purposes of the internet in translation, online dictionaries, machine translation systems, and so on, we can make use of search engines like "google and explorer" to naturalize our translation output and search for the typical use of a given word, phrase or a clause. For instance, in google search engine, translators can try to find anything related to their search term (a proper name, a phrase that always appears in close proximity, etc.), using Boolean search functions.

14. wordrefrence.com: In addition to the online dictionaries, Wordreference offers translators with a common forum to share their views about translation, usage of words and terms, and language-related topics.

Presumably, the attitude of translators who are familiar with the above tools and resources may be more positive than those who never used them. Dillon and Fraser (2006) used a questionnaire to explore the attitude of UK-based professional translators towards translation memories and found that it is more positive than non-users.

The criteria for selecting the participants apply to all students and instructors in colleges of languages and translation or colleges that offer degrees in the English language in Saudi universities.

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Therefore, the questionnaire is sent to a section of my contact list that includes all the three specified categories, students, instructors and translators.

2.1. Instruments

Two instruments are used to examine the perception of students and translators towards translation technology: a questionnaire and a structured interview. The questionnaire and the interview items described in the next section were initially sent to a number of participants representing the different chosen categories of the population for pilot feedback and to attain validity and reliability of the instruments. Their suggestions of modification and addition of new items were integrated.

2.2. The Questionnaire

The questionnaire addresses personal (age and gender), demographic (university and location) and professional information (student, translator, instructor). The total number of the respondents is 111 including 57 students (51. 4%), 38 instructors (34. 2) and 16 translators or translation business owners (14.4). Men accounted for 51.4% (57 respondents) and women for 48.6% (54) of the sample. They have been informed about the nature and purpose of the research and they agreed to participate. Later, six of them have been contacted and briefed about the interview that is described below.

The questionnaire consists of 12 items divided into two sections. The first section focuses on familiarity of translation tools and resources in translation practice and research and the second on

respondents' attitudes towards translation technology. A Likert 5-point scale is used to present the different options ranging from "strongly disagree" to "strongly disagree". The arrangement of the 5-point scale is mixed; it is reversed in the first section of the questionnaire starting from the negative and the other way round in the second. Some respondents may be so familiar with one type of items order that they may not pay attention to the content. They may mechanically tick all the items of the questionnaire haphazardly without reading them carefully. Therefore, negative options are fronted in the first list of items to make them read all items carefully from the very beginning. Even though, some may have continued reading the items in the most common order starting from the positive. "These items work as cognitive 'speed bumps' and can cause a slower, more careful reading" (Josza and Morgan 2017). Therefore, the validity and reliability of the internal consistency has been tested. To estimate the reliability of the questionnaire, Cronbach's Alpha Coefficient was used. It showed a strong internal consistency for the total items (0.93), and (0.82) and (0.76) for the two subsections respectively.

2.3. Interviews

Although the open-ended question included in the questionnaire gives a room to the participants to write about any translation tool or resource they like the most, it does not handle their emotions, views or personal experiences with these tools and resources. Therefore, a structured interview is used as a complementary qualitative method

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to remedy the inherent drawbacks of the questionnaire (a quantitative method) and to elicit the implicit data about attitudes towards translation technology. Similar to the structure and nature of the questionnaire, no information about the translation tools or resources are provided before or during the interviews to elicit consistent results. Two persons representing each category of the respondents are chosen for the interview (students, instructors and translators). Although the sample is not representative of the entire population of students, translators and instructors of translation in Saudi Arabia, it can give some indications of the common attitude towards translation technology. In the first place, they were selected to cover the pre-set variables (age, gender, occupation). Secondly, they are chosen from different universities and locations in Saudi Arabia.

A number of questions were prepared to cover the three study variables in addition to the three research questions related to the use of translation tools and resources. A set of questions are used as prompts to elicit comparable results. Some open-ended questions are related to the usefulness of translation technology in general and a set of closed questions focused on the different translation tools and resources used in the questionnaire. The questions explore their attitudes about the CAT tools and resources to complement the quantitative data. Each interview lasted for about 15 minutes, and the total duration of all interviews was about 1.5 hours. The data was

then analysed to know their perceptions about translation technology in practice and research.

3. Results and Discussion

The study aims to measure the participants' familiarity with technology in translation, access to translation tools and resources, and their attitudes towards the effectiveness of technology in translation practice and research. The questionnaire in itself lists a number of tools and resources that could be utilized by translators to speed their work if used professionally. This could draw the attention of translators to the importance of available translation applications in translation practice and research. Then they could look at the output of these tools critically to either adopt, adapt or abandon.

Having analysed the responses, we found out that all respondents are well familiar with three translation tools and resources namely: Google Translate (38%), Almaany.com (36.40%), World Wide Web (29.10%), without being introduced to such tools or resources. The least common tools and resources include: tausdata.org, (7.20%), WebCorp (7.30%), and Proz.com (8.20%). The qualitative interviews and quantitative survey are comparable in terms of the results. Findings show that the more engaged the respondents in translation practice and research the less satisfied with translation tools and resources.

When the respondents were asked about the translation tools or resources that they use the most, their responses were not comparable to the above figures. Out of the total respondents (90

person) 26 (29%) have chosen Google Translate, almaany.com 21 (23.3%), and World Wide Web 3 (3.3%). Divergence of evaluation in the two sections of the questionnaire may indicate a different order of priorities. In other words, when they are given freedom to write their favourite translation tools, they ranked them differently and suggested more resources than those listed in the questionnaire as shown in Table 1.

Table 1: The most frequently used tools and resources according to the participants

Perc.	Freq.	Tools/Resources	Rank
29%	26	Google Translate	1
23.3%	21	almaany.com	2
21.1	19	Dictionaries	3
18.8	17	reverse.net	4
8.8	8	Trados	5
5.5	5	Microsoft Word	6
3.3	3	www	7

In Table 1, we can notice that the two most frequently tools and resources are Google Translate and Almaany.com, confirming the results of the questionnaire items about them in particular. The interviewees unanimously were familiar with the effectiveness of translation technology in general. They even used some translation

tools and resources in translation but not in research. When asked about the advantages of technology in translation practice or research, they all emphasized some technical features like speed and standardization, but they all mentioned the poor quality of electronically translated literary or religious texts. One of the noticeable remarks about their familiarity with translation resources is that they mainly avoid wasting time to browse translator platforms. They were not aware of the advantages of websites like Translatocafe.com or proz.com. Only two interviewees knew about (Proz.com) but they are not registered members and do not know the translators' forums.

3.1. Participants' Attitude toward Translation Practice-based Tools

Most respondents showed positive tendencies towards the effective use of translation tools and resources; (97 out of 111, i.e. 87.4%) agreed or strongly agreed that using online resources for translation practice is very effective, while 105 respondents (i.e. 95%) confirmed that they are interested in learning new translation tools. A closer look at the internal differences among the categories of respondents, i.e. students vs. instructors/translators and male vs. female, may reveal more insights about the different inclinations of the respondents as shown in Table 2 and represented in Figure 4.

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Table 2: Negative attitudes of participants towards the effectiveness of translation tools in practice and research

	Students	Instructors	Translators
Translation tools and resources are useful.	15.7%	10.5%	0
Translators should have an access to various types of technology.	28.7%	34.2%	25%
Using translation software must be a requirement in translation careers.	29.8%	26.3%	25%
Translation tools are easy to use.	12.3%	39.5%	0
Using content resources improves translation products.	12.3%	34.2%	31%
Research in translation is far better with technology.	17.5%	34.2%	6.2%
Using technology in translation research ensures accuracy and precision.	8.7%	2.6%	0
I am interested in learning new tools in translation.	15.8%	5.2%	18.7%

Using online resources for translation practice is very effective.	5.2%	5.2%	6.2%

Figure 4: Inclinations of respondents towards translation tools and resources

Translation Tools & Resources

Frequency of Use

	Google Translator	Reverso	Word refrence	www	Proz.com	Concordancers	TAUS	almanany.com	corpora	Web Corp	Mymemory	Phraseup	2lingual	Babel NET
Never Used it	3.60	38.2	40%	20.9	58.2	57.3	57.2	23.6	50.9	61.8	50.9	61.8	56.4	59.1
Not Useful	10.9	3.60	5.50	4.50	10%	3.60	9%	4.50	4.50	7.30	5.50	3.60	8.20	7.30
Not Sure	30.9	20.9	14.5	18.2	17.3	12.7	16.3	14.5	19.1	16.4	14.5	14.5	16.4	20.9
Useful	38.2	19.1	25.5	27.3	6.40	15.5	6.40	20.9	14.5	7.30	17.3	10.9	10%	8%
Extremely Useful	16.4	18.2	14.5	29.1	8.20	10.9	7.20	36.4	10.9	7.30	11.8	9.10	9.10	4.50

In table 2 above one can notice that instructors have more negative attitude towards translation tools and resources than students and professional translators. This has been observed during the interview sessions as well. Instructors are not satisfied with translation technology, recalling their early experience of translation

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tools that were not as advanced as today. They also mention the poor quality of Machine Translation Systems in the beginning of this millennium. In fact, "translation, as a practice that relies principally on reading and writing, is simply inconceivable without technology (Cronin 2003), including Machine Translation, which is considered by some translators, who have no scientific background, a waste of time and cannot be improved in the future and won't replace the human translator. They argue that translation is not a one-to-one correspondence, since some language features require manipulation of words like figures of speech, puns, idioms, etc. On the other hand, the state of the art of Machine Translation is in fast-moving areas; it combines many linguistic and computational sciences. In the words of Whitelock & Kelby (1995, p. 2):

> Machine Translation (MT) system design combines elements of lexicography generative linguistics, computational linguistics, (i.e., the implementation of linguistic descriptions as algorithms), LSP (textual studies of special purpose of languages, particularly those of science and technology) and Artificial Intelligence approach to knowledge representation and organization, as embodied in a variety of Intelligent Knowledge-Based Systems.

Therefore, it is too early to judge Machine Translation; it is improving progressively. Another reason for their negative attitudes toward Translation technology is that work in Arabic computing did

not start as early as European languages. Attempts have been made, but due to some technical problems with Arabic script (orthography) and grammar there is far less development than in English and languages written with the Roman alphabet. This is because 'the native Arabic grammar [which is produced by early Arab linguists], although one of the most sophisticated systems of linguistic analysis ever devised, was developed by scholars who lacked the concepts of consonant, vowel, and syllable' (de Smedt et al. 1999, pp. 162-63). This raises some problems of digitising Arabic which require laborious work of computation.

3.2. Participants' Attitude toward Translation Research-oriented Tools

Most respondents agree about the usefulness of translation technology in research as reflected in the questionnaire, but the interviewees are not aware of the different features of commonly used tools in this area. They use tools and resources for searching in terminology databases and bilingual resources like electronic dictionaries and translation memories, rather than monolingual resources and corpora handling tools like concordancers.

The majority of respondents (57%) never used research-oriented tools particularly concordancers. They even did not know what they are during the interview sessions. These tools may be used for translation practice as well, but it is daunting and time consuming for translators to find relevant texts and upload them in the program for processing before they can use them in translation. However,

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there are some readymade corpora that are available online free or with some restrictions. Although these resources could be used for both directions to enhance translation products and research, instructors have more negative attitudes than other respondents about their effectiveness in translation research. 34% of instructors think that technology do not enhance research in translation, while the negative attitude of students was 17.5% and translators 6.2%. In addition, they were surprised about the possibility of using some features in MS Word program, as shown above in 1.1, for research purposes.

Finally, the relationship between gender and the use of technology is examined to see whether male or female translators are more inclined to using technology in translation practice and research. Looking at the answers of male and female respondents, one can easily tend to believe that male respondents have more negative attitudes about using technology in translation practice and research than female participants. However, this argument should be tested further before coming to this conclusion. To do this, Chi-Squared test can be used to calculate statistically the significance of their responses. It is one of the statistic tests that compare the observed values with the expected frequencies to identify whether the answers of males or females occurred due to chance or not. To illustrate further, the answers given by male respondents may seemingly differ from the null hypothesis that there is no difference between men and women in using technological tools and resources

in translation practice and research. We found out that the percentages of the negative responses are higher in the male side, emphasizing that men are less inclined to the use of technology for translation practice and research, contrary to the null hypothesis. To test the significant differences statistically, the Chi-squared test is used. It could highlight values above the chance level: p=0.05; i.e. the results did not occur by chance. This could enable us to prove the validity of the Null Hypothesis and argue that there are no statistically significant differences between men and women in using modern technology in translation practice and research.

4. Conclusions

This paper explored the scope of modern technology in translation, reviewing a list of tools and resources that can be used in both translation practice and research. The attitudes of users towards the effectiveness of technology in the field of translation were measured by analyzing a questionnaire administered among three categories of users of technology for translation purposes: students and instructors in colleges of languages and translation, in addition to translators or translation business owners. Another variable related to gender and the use of technology in translation has been tested in this study as well. As to the internal differences between the three categories of the respondents, it is noticed that instructors are less interested in using technological tools or more skeptical about the effectiveness of modern technology in translation practice and research.

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Findings show that all participants are aware of popular tools and resources that are commonly used by the public like Google Translate and almaany.com, but the majority have never used profession-specific tools and resources like TAUS (Translation Automation User Society) and Mymemory. This could be traced back to their unawareness about the availability of these tools and resources or lack of training workshops in translation technology in general. In this respect, many interviewees confirmed that modern tools and resources are not explored in translation practice and research in their universities. Although one can find some programs that involve modules on machine translation or TMs but they do not teach students how to make use of any software in the real business of translation or research.

Another important issue that is clearly observed is that older instructors of translation rely more on their long experience in this field when they used to look up paper dictionaries and present their translated products in handwriting. They always discredit the use of technology in translation. This could have influenced their instruction of students who, following their instructors, seem to look skeptically to technology in translation practice. Therefore, this paper tries to explore the usefulness of these tools and resources in translation research and practice as well as the attitudes of users. To make the findings of this paper more general, further studies could explore a larger sample of the population in different areas, different language pairs and different disciplines. Finally, our paper shows a

mistrust to translation tools and suggests that instead of ignoring these tools for their current presumed shortcomings, users could either find enhanced output informed by similar evaluation or they could themselves offer their own evaluation so that computer scientists and designers of existing translation tools and resources could remedy the shortcomings and advance relevant translation technology.

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Appendix

Translation Technology Questionnaire

Tick any item/s about your personal profile:

Age: 18-24, 25-34, 35+

Occupation (Student, Instructor, Translator)

Gender Male Female

		Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
1	Translation tools and applications are useful.					
	Translators should have an access to various types of technology.					
	Using translation software must be a requirement in translation careers.					
	Translation tools are easy to use.					
	Using content resources improves translation products.					
	Research in translation is far					

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	better with technology.				
	Using technology in translation research ensures accuracy and precision.				
	I am interested in learning new tools in translation.				
	Using online resources for translation practice is very effective.				
	Using tools and resources for translation research is effective.				

		Extremely useful	very useful	useful	*Not useful*	Never used it
11	What do you think of the following tools and resources:					
	MS Word Google Translation Reverso.net Wordrefrence.com Word wide web Proz.com Concordancers Translation memory databases: TAUS almaany.com webCorp Mymemory Cross-language information retrieval tool: 2lingual BabelNet Phraseup					

12	What translation tools or resources do you use the most?	

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