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i d'Estudis de l'Àsia Oriental**
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Mapping the area of subtitling technology from a sociological standpoint:

an investigation of the complex relationship between technology,

the subtitling practice and subtitlers

PhD thesis presented by:

Rafaella Athanasiadi

Supervised by:

Dr. Carme Mangiron Hevia

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INTRODUCTION

INTRODUCTION

During the late 20th century, subtitling started to be considered a valuable subject worth of academic study. Nevertheless, the linguistically and socioculturally driven approaches that were employed to investigate it bypassed one of the major factors that affect both its process and outcome, that is, technology. Subtitling, in contrast with translation, cannot be realised outside technology. However, the close-knit relationship that has always existed between technology, subtitlers and subtitling has not been researched in detail or in a systematic way. Even if there is research on the current technologies, in what we can refer to as the subtitling and translation technology field, there has been very little interest in the way technology intertwines with subtitling and affects all the involved stakeholders from a sociological point of view. Hence, our understanding of the subtitling process remains partial, as well as outdated, as technologies keep advancing dramatically.

Therefore, in response to this gap in academic research, this doctoral dissertation aims to characterise the relationship that exists between technology, subtitling (as a practice) and subtitlers and provide a descriptive sociological analysis of this relationship.

The mixed-approach methodology (descriptive analysis of various audiovisual mediums, questionnaire and interviews) that was followed throughout the thesis revealed that the relationship between technology, the subtitling practice and subtitlers can be characterised as dynamic, as it cannot be confined to a strict sociological theory. In addition, regarding the relationship of technology with subtitlers, it influences subtitlers in terms of skills, as they feel they need to upskill their technical knowledge; in terms of training, as they need to re-train or train for the first time, and in terms of work prospects, as the subtitlers may not be able to obtain certain jobs due to the lack of technical training, as it is shown in the quantitative data of the dissertation. Lastly, this doctoral dissertation suggests the implementation of a 'sociology of translation and subtitling technology' if we wish to truly understand the underlying forces that inform the subtitling practice.

a) Motivation and academic justification

The motivations behind conducting this doctoral dissertation are both personal and academic. Regarding the personal motivations, these are three-fold. First of all, the researcher was always interested in translation and subtitling technologies. After the completion of her BA in English language and literature, she pursued a postgraduate degree which was focused on translation technologies (MSc in Medical, Technical and scientific translation with Translation technology) at University College of London. In fact, her MSc dissertation revolved around Machine translation (MT) and Translation Memories (TM) tools in Audiovisual Translation (*The applications of machine translation and translation memory tools in audiovisual translation: a new era?*). Thus, this doctoral dissertation is an extension of her previous studies.

Secondly, the researcher was also interested in sociological approaches. This spark of interest was due to her BA degree in which she attended a course on translation sociology which captivated her attention. She did not have any other opportunity to study translation sociology, thus, the sociological approach to her PhD dissertation is because of the aforementioned.

Lastly, the researcher comes from a context (Greek-speaking context) in which audiovisual translation (AVT) in general, and subtitling, specifically, are still developing and she wanted to study it in depth. In addition, the researcher wanted to compare this developing context with a developed context to highlight the differences between them. She chose Spain as she was studying and living there. Also, the university she was attending, Universitat Autònoma de Barcelona (UAB), has a longstanding tradition of AVT training. In addition, due to the connection of the researcher to UAB, she made a number of contacts which helped her disseminate her questionnaire. Moreover, the supervisor of this dissertation had a number of contacts in Spain, not only regarding the participants of

the questionnaire, but also regarding subtitling companies and academics which helped the author of the dissertation to complete her research.

Regarding the academic reasons, these are two-fold. Firstly, technology is a driving force in professional and social realms. In the case of subtitling, technology has a vital role. Over the years, various linguistic, socio-cultural and cognitive approaches have been employed to explore the uncharted area of subtitling. However, technology has featured very little in the centre of these studies. Most of the studies that deal with subtitling dedicate a small portion to technology or a specific technology, which is quite surprising if we consider that subtitling, in contrast with other modes of AVT, cannot be realised outside of technology. A few examples of studies that deal with technology and subtitling are the following: Díaz-Cintas' (2005) work regarding the historical development of technology; Díaz-Cintas & Anderman's (2009) portrayal of the benefits and limitations of technology; Volk et al. (2010), who stress the advantages of automated subtitling in the Scandinavian context; the work by Díaz-Cintas (2014), who talks about the technological turn in subtitling, and Rojas' (2014) research, in which he analyses a methodology on how to 'automatically create translation memories for subtitling' (Rojas, 2014, p. 1). Pérez-González (2014) highlights certain cases for which the optimisation of subtitling is crucial; for example the small audiovisual markets or highly repetitive and small 'screen-based texts' (Pérez González, 2014, p. 18).

In addition, there is the ground-breaking work of Hanoulle, Remael and Hoste (2015), who study the efficacy of terminology-extraction systems in subtitled documentaries; Matamala (2017), who deals with the way different technological tools can aid audiovisual translation professionals, users and researchers, and Chaume (2018), who discusses the importance of digital technology in subtitling. In addition, Díaz-Cintas (2018), deals with the new subtitling practices that have been adopted due to the cyberspace; Tardel *et al*. (2019), deal with the automation of the subprocesses in subtitling, and Díaz-Cintas & Massidda (2019), study the latest technological advances in

audiovisual translation. Moreover, Fernández Moriano (2019) offers a glimpse on the state of subtitling technology and free subtitling editor features from a professional point of view. Arrés López (2019) deals with the viability of subtitling on new hardware, such as VR goggles and smartwatches. However, little attention has been given to the relationship of technology and subtitling and subtitlers from a sociological point of view.

Secondly, the contexts that the researcher chose to study, especially the Greek-speaking context (i.e., Greece and Cyprus), has received very little attention in academic research when it comes to AVT practices, technology and sociology. Also, as it has been mentioned, this context is part of a developing AVT industry, and the researcher wanted to study it in-depth. In addition, little attention has been given to a comparison between a developed AVT industry and a developing AVT industry in terms of sociological approaches.

b) Main objective and research questions

The primary and secondary objectives of this thesis are stated and explained in this section. In addition, the research questions that guide this study are presented.

I.   Main objective

This doctoral dissertation has a main objective, which is based on two research questions, as stated below:

Main objective 1:
To describe and characterise the relationship between technology, the subtitling process and subtitlers.

Research question 1:
Considering that technology is inseparable from the subtitling process and the professional lives of subtitlers, how can we unveil and characterise the relationship that exists between technology, subtitling and subtitlers in the subtitling technologies spectrum?

II.   Secondary objectives

This study has two secondary objectives, which can be formulated in the following two research questions:

Secondary objective 1:
To describe and analyse the skills and training of subtitlers with regards to the way they received these skills and how they developed them.

Secondary research question 1:
a. How do subtitlers acquire the necessary skills to perform adequately in their profession?   b. Has the development of technology in subtitling created a need for the subtitlers to be re-trained or can they cope with their existing skills and/or the initial training they once received?

Secondary objective 2:
To observe whether there are significant differences in the way technology influences the involved stakeholders in distinct contexts; especially when there is a developing AVT industry (e.g., the Greek-speaking context) and a developed AVT indusrty (e.g. Spanish context).

Secondary research question 2:
Does the role that technology play in the subtitling practice shift when the context changes?

c) Methodology

In order to map the relationship between technology, subtitling and subtitlers and fulfil the primary and secondary objectives of the doctoral dissertation, a combination of approaches was employed.

In relation to the primary objective, mapping the relationship between technology, subtitling and subtitlers requires a mixed-method methodology which follows a participant-oriented approach, as the participants' training, skills and work opportunities are at the centre of this research. Regarding the quantitative data, these come from an online questionnaire that targeted professional subtitlers whose native language was either Spanish (Castilian) or Greek. These data were analysed manually in Microsoft Excel and are presented in the form of pie charts in Chapter 3.

With regards to the qualitative data, these originated from two different interview groups; interview group A and interview group B. Interview group A was comprised by subtitling companies in Greece and Spain. The data from interview group A provide an insight on the way subtitling companies deal with technology internally, but also on the way they deal with subtitlers who are (or are not) technologically competent. The data from interview group B present the academic training and the skills that the universities provide to subtitlers in terms of technology. All the data are analysed manually in Microsoft Excel and are presented in the form of tables or descriptions in Chapter 3.

It should also be noted that in each data analysis presentation, the two contexts (Greek-speaking and Spanish context) are compared in terms of similarities and differences. More information on the methodology applied is provided in chapter 2.

d) Structure of the dissertation

This dissertation consists of an introduction, four chapters, the conclusion, the bibliography and several appendixes.

In the **Introduction** section, the main focus of the dissertation is presented. In addition, the objectives and the research questions of the dissertation are illustrated. The motivation for pursing the doctoral dissertation is also presented. Furthermore, the methodology of the dissertation is briefly explained. The last part of the introduction is the structure of the dissertation.

Chapter 1. Literature review: it includes the theoretical backbone of the dissertation, which is comprised by the definition of key concepts, such as, technology (in general), translation technology, AVT practice, subtitling, various mediums of audiovisual distribution, post-editing machine translation and translation memory tools. In addition, chapter 1 includes the area of sociology and more specifically, translation sociology and sociology of technology.

Chapter 2. Methodology: it includes the methodology that was followed throughout the dissertation in order to answer the main and secondary research questions.

Chapter 3. Data analysis: it introduces and presents visually all the data that were collected with the questionnaire and the interviews.

Chapter 4. Sociological analysis: it presents the sociological study of the dissertation, which is based on the data that have been collected and presented in chapter 3.

The **Conclusions** summarise the main conclusions and contributions of the study and the ways in which the primary and secondary research questions were answered. In addition, the limitations of the study are introduced and analysed.

In addition, this doctoral dissertation includes a list of annexes with the following titles:

Annex A: Optical film subtitles for television by Ivarsson (2004)

Annex B: Information and consent form for questionnaire

Annex C: Information and consent form for interviews

Annex D: Permission form by the Ethical Committee of Universitat Autònoma de Barcelona

Annex E: Questionnaire questions

Annex F: Interview questions regarding interview group A: Subtitling companies

Annex G: Interview questions regarding interview group B: Academics

It should also be noted that the reference system that is used throughout the thesis is Harvard Reference style. Harvard reference style is used mainly in United Kingdom and Australia. Since the researcher has always followed the British way of writing and referencing, this style was chosen. Furthermore, it should also pointed out that the spelling and any other orthographic conventions follow the British system.

CHAPTER 1: LITERATURE REVIEW

CHAPTER 1: LITERATURE REVIEW

The goal of this dissertation is to study the complex relationship between subtitlers, technology and subtitling (as a process) in order to gain a new perspective on the mechanics that underlie the profession of subtitling. Therefore, in order to build a solid theoretical framework, which can provide a fertile ground for discussion and analysis of the above complex relationship, various sources from different disciplines were consulted. This chapter brings together studies from three distinct disciplines, that is, information technology, translation studies and sociology, that make up the backbone of this research.

Section 1.1. defines the concept of technology and section 1.2. defines and presents the research field of Audiovisual translation and Subtitling. The research areas of Translation technology and Subtitling technology are defined in sections 1.2.1 and 1.2.2, respectively. Section 1.3. presents the subtitling evolution from a technological point of view. Section 1.4. provides an overview of how technology has been a driving force in general. Section 1.4.1. presents technology as a driving force in society and 1.4.2. presents the way technology has been a driving force in the academic world. In addition, section 1.5. illustrates the relationship of subtitling with various tools like translation memory (TM) software, machine translation (MT) software, localisation platforms and cloud-based subtitling software.

1.1.   Defining *Technology*

'Definitions have interested philosophers since ancient times' (Stanford Encyclopaedia of Philosophy, 2015, online). In fact, the majority of the definitions that are currently in use in our language have been debated for centuries. The rationale behind these debates is rather simple. 'Definitions serve a variety of functions, and their general character varies with the function' (ibid., online). In other words, the formulation of a

definition depends on the function that it is called to fulfil; if that function changes then the definition should, theoretically, be revised.

As the Stanford Encyclopaedia of Philosophy (2015) argues, accurate and well-formulated definitions rely on two criteria: *conservativeness* and *use*. The former criterion refers to the fact that no new assumptions should be made regarding the definition, whereas in the case of the latter criterion it should establish firmly the accepted use/application of the term (ibid., online). As it can be inferred, formulating definitions is rather complicated, especially in the case of abstract concepts. Such an abstract concept is the word *technology,* which this thesis deals with from a subtitling standpoint.

As it was mentioned, definitions target specific addressees. Based on the addressee and the function, definitions can be divided into various types. In addition, according to the scope that is adopted on a matter, there is a finite amount of information that accompanies it. In other words, by choosing a particular type of definition that attends to a specific function, the information that is available within that scope is going to range from point A to point B.

Taking the above discussion regarding the addressees and the function into account, since technology constitutes such an important component of this research, we ought to approach it critically by using different kinds of resources. Therefore, the examination will be three-fold: etymological analysis, dictionary definition and academic definition.

I.   Etymology of *Technology*

Why would an etymological analysis of the word *technology* be of any interest? 'Etymology is the investigation of word histories' (Durkin, 2009, p. 1) and it is a well-known fact that language and society are closely linked. In fact, many linguistic theories discuss

the level of influence between language and society (with the Sapir-Whorf[1] hypothesis being the most extreme). In general, however, the recurring conclusion that keeps being drawn is that language and society do not function independently. By studying the history of a word, the keen observer can understand not only how a language has developed over the years (Historical Linguistics), but also how society has changed (Sociolinguistics). For instance, if the meaning of a word has changed over the years, then it could be argued that the need of the society in question to use that particular word has also changed. Also, a change in meaning may be forced sometimes due to globalisation, especially in major languages like English. One example is the word technology, which originally signified the art of discourse, but nowadays its meaning shifted towards materialistic connotations (equipment, tools), as the industry has dictated it.

From an etymological perspective, the word *technology* is relatively rich. *Technology* comes from Ancient Greek. According to the Online Etymology Dictionary (online), *technology* first appeared in 1610. Initially, technology meant 'a discourse or treatise on an art or the arts' and it comes from the Greek *τεχνολογία* (tekhnologia).

In Greek, *τεχνολογία* (tekhnologia) means a 'systematic treatment of an art, craft, or technique'. *Τεχνολογία* is a coined term that comes from the Greek *techno-*, a combining form of tekhne (*τέχνη*) that means 'art, skill, craft in work; method, system, an art, a system or method of making or doing' and the Greek suffix *-logia*, which signifies 'a discourse, doctrine, science, or theory' (ibid., online).

Furthermore, according to the Online Etymology Dictionary (online), *techno-* can be traced back to the PIE[2] *teks-; which means 'craft' (of weaving or fabricating). The Greek

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[1] The Sapir-Whorf Hypothesis (1929) argues that language 'is not merely a reproducing instrument for voicing ideas, but is itself a shaper of ideas, the programme and guide for the individual's meaningful activity' (cited in Marshall, 1998, online)

[2] PIE: Proto-Indo-European language spoken by a people who lived from roughly 4500 to 2500 B.C., and left no written texts (Powell, n.d., online).

suffix -*logia* descends also from the PIE *leg- which meant 'collecting, gathering, or speaking'.

As it was expected, the meaning of the word technology changed over time. In 1895, the Century Dictionary described technology as the 'study of mechanical and industrial arts'. The term *High technology* attested from 1964 and its short form, high-tech, appeared in 1972 (ibid., online). A visual representation of the etymology of the word technology can be seen below.
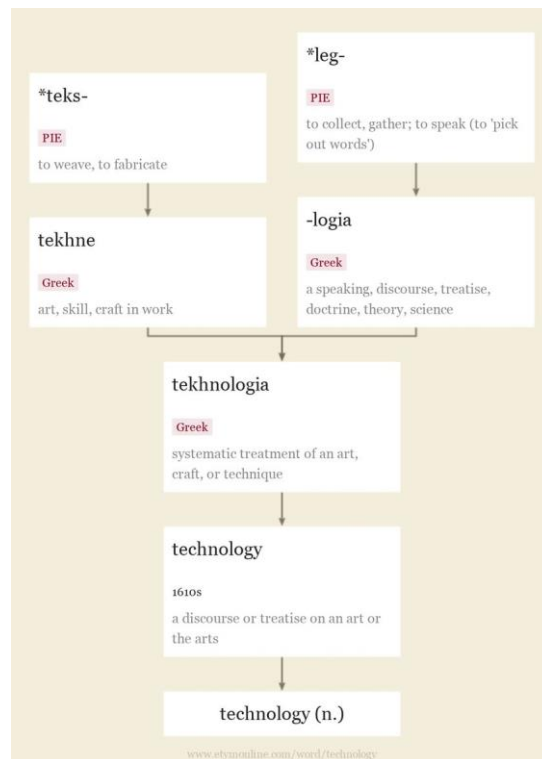
Figure 1. Etymology of technology (Source: Online Etymology Dictionary)

Having mentioned the above, two points arise. First of all, the word *technology* existed since the Ancient Greece, which evidently indicates that *technology* has always walked alongside with societies, as it was never abandoned, but rather altered according to the socio-political context. Secondly, the word itself has changed in terms of meaning, as it started as a nuance with an artistic reference and it became a synonym to the process

and the knowledge required to operate various tools. The following dictionary entries illustrate the latter, and most current, use of the word *technology*.

II.   *Technology* and Dictionaries

As it was aforementioned, definitions can serve various functions and addressees. For the purposes of examining how *technology* is currently being used, four general-descriptive dictionaries will be studied below: Merriam-Webster, Oxford, Collins and Cambridge (2) dictionary.

According to the Merriam-Webster Dictionary (online), technology is defined as:

1) (a): the practical application of knowledge especially in a particular area; (b): a capability given by the practical application of knowledge.
2) a manner of accomplishing a task especially using technical processes, methods, or knowledge.
3) the specialised aspects of a particular field of endeavour.

Similarly, Oxford Dictionary (online) defines technology in the following ways:

1) the application of scientific knowledge for practical purposes, especially in industry.

2) machinery and devices developed from scientific knowledge.

3) the branch of knowledge dealing with engineering or applied sciences.

In addition, in the Cambridge dictionary (online) *technology* is described as 'the study and knowledge of the practical, especially industrial, use of scientific discoveries'. CambridgeAcademic Content Dictionary (online), however, phrases the above definition slightly different, as the definition is focused on the methods:

a.   The methods for using scientific discoveries for practical purposes, esp. in industry.

b. Technology is also a particular method by which science is used for practical purposes.

Lastly, Collins Dictionary (online) mentions that technology 'refers to methods, systems, and devices which are the result of scientific knowledge being used for practical purposes'.

Based on the above, it is clear that there are similarities and differences between the different definitions in each dictionary. The main similarity that is presented in all definitions is the emphasis on the accumulation of knowledge, and more specifically the scientific knowledge, that is required in this area. Another similarity is the application of knowledge that is fundamental for defining *technology* (e.g., the word application is found in all definitions). However, when it comes to methods and devices (machinery), there seems to be a discrepancy on whether these two are essential for defining technology. For instance, Oxford dictionary considers devices that have been developed from scientific knowledge as part of the definition, whereas all the other dictionaries do not share this idea. On the other hand, Merriam-Webster, Cambridge Academic Content dictionary and Collins dictionary place importance on the technical methods as part of the definition.

It is important to remember, however, that these definitions, although slightly different, are very broad; which is to be expected due to the type of the dictionaries. Therefore, next *technology* will be viewed in the light of three specific academic disciplines, information technology, sociology and philosophy, in order to observe how the definitions shift when the context is narrowed down.

III.   *Technology* and Academia

Technology poses a challenge to define it academically due to the unique attributes of the available contexts to study it. As evidenced by the number of articles and studies that

attempt to define it, different academic fields view technology in specific ways because they position it in miscellaneous contexts. Some examples from the fields of sociology, philosophy and information technology will be provided below.

From a sociological perspective (Scott, 2014, p. 665), *technology* is:

> a term used rather loosely in sociology, to mean either machines, equipment, and possibly the productive technique associated with them; or a type of social relationship dictated by the technical organization and mechanisation of work.

The emphasis here is on the productive side of technology (especially regarding the means of production) and how this productive side influences society.

On the other hand, from a philosophical perspective, Hughes (2004, pp. 1-2) reflects on the difficulty of describing technology:

> technology is messy and complex. It is difficult to define and to understand. In its variety, it is full of contradictions, laden with human folly, saved by occasional benign deeds, and rich with unintended consequences. Defining technology in its complexity is as difficult as grasping the essence of politics.

Hughes focuses on the abstractness of the word *technology* and the complexity that this word can hide. He connects technology with another complex concept, that of politics, which indicates the close connection between technology and society.

In addition, Feenberg (1991, p. 14), the writer of *The Critical Theory of Technology,* argues that:

> technology is not a thing in the ordinary sense of the term, but an 'ambivalent' process of development suspended between different possibilities. This 'ambivalence' of technology

is distinguished from neutrality by the role it attributes to social values in the design, and not merely the use, of technical systems. On this view, technology is not a destiny but a scene of the struggle. It is a social battlefield, or perhaps a better metaphor would be a parliament of things on which civilizational alternatives are debated and decided.

Here, Feenberg views technology slightly differently from the above definitions, since he is describing it as a constantly changing process that involves the social factor as well.

Summing up, the dictionary entries of the word *technology* revolve around scientific knowledge and its application, whereas the academic sources for defining *technology* acknowledge that there is a close connection between technology and society.

Taking the above into account, for the purposes of this doctoral research, that falls under the broader Subtitling Technology research area, *technology* is defined from here and onwards as any mean (physical or otherwise) of accomplishing a specific task that requires a technical method, technical knowledge or a device developed from scientific knowledge in constantly developing social contexts.

It should also be noted that this PhD dissertation will study technology in the light of the translation spectrum only; and to be precise, subtitling technology. This is illustrated in the below figure which follows a top to bottom (from general to specific) structure. The figure starts from the general area of technology (orange), that can include anything technological, for example, computers. Then, it narrows down to the translation technology circle (grey) that encompasses any type of technology including interpreting technology. It keeps narrowing down to the area of Audiovisual translation technology (yellow), which includes subtitling and dubbing technologies, and it reaches the area that this thesis is focusing on, that is, subtitling technologies, which deal exclusively with different environments that use subtitles. It is important to note that all these areas interact with each other as they are within each other and cannot function separately
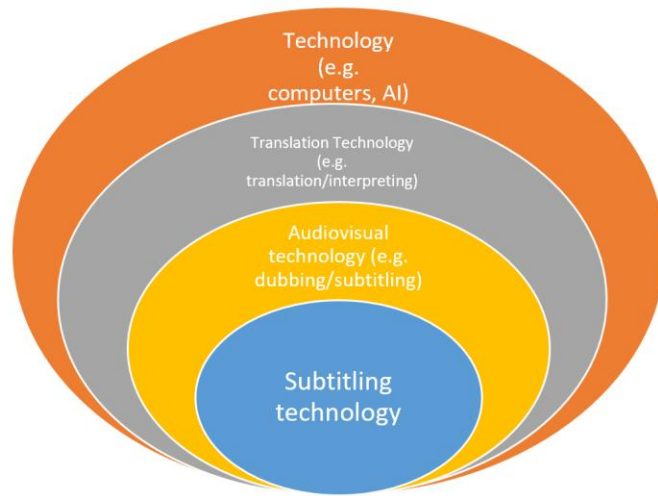
Figure 2. Different types of technologies

1.2.   Defining Key Concepts: AVT and Subtitling

AVT has been defined and re-defined numerous times, which means that AVT research has been flourishing and expanding over the years. However, it seems that it took academia quite a while to recognise AVT as an acceptable academic research area. Twelve years ago, Díaz-Cintas *et al.* wrote (2010: 12) the following:

> [I]t may be too soon to speak of AVT as a discipline in its own right when Translation Studies (TS) itself is still not accepted as such within the broader scholarly community. While TS is still addressed by some as a subsidiary of linguistics and comparative literature, Audiovisual Translation Studies will have to work towards making TS worthy of an independent existence.

As the above extract demonstrates, it was not only AVT that was struggling to gain recognition, but also TS in general. Nevertheless, AVT was challenged as translation proper due to the idiosyncratic features it incorporates; one being the resistance it projects to the outdated prevailing theories of language transfer of formal equivalence and dynamic equivalence (Nida 1964). As Chaume (2018, p. 86) argues:

Audiovisual translation has strongly contributed to the creation of a new scenario where equivalence can take on a new third meaning, i.e. the creation of a new target product that is in some way related to the original but not necessarily in terms of formal equivalence or dynamic equivalence.

Chaume (2018) highlights several other aspects of AVT that expand the notion of *translation*. For instance, there are cases in which two intralingual versions of audiovisual content (e.g., Brazilian Portuguese and European Portuguese) are equally accepted as two different *texts*. In Chaume's (2018: 89) words: «Two translations into two varieties of the same language are not the same text. So the term 'translation' does not imply the transfer of a text into just one language variety».

Chaume (2018) points to some other types of AVT like intersemiotic translation (e.g, audio description), localisation (e.g., video game localisation) and transcreation (e.g., localisation of commercials for TV and internet), which expand the concept of *translation* and sets it apart from the traditional dichotomies of Newmark's terms of *faithful* and *unfaithful* translations.

In addition, Díaz-Cintas *et al.* (2010: 13) call attention to the fact that the vital component of AVT extends a long way from the linguistic and cultural transfer.

The close connection that AVT presently has with technology, with global economy and with industry at large makes it a field with endless applications and approaches and a strong candidate for testing continual change and development. […] In principle, audiovisual translation is innate to humankind; people have been translating the audio/visual world which they live in from time immemorial. Every expression in art is, in its own way, a form of AVT. However, AVT can be connected to the advent of the moving image and of the talkie in particular.

In 2012, however, Remael, Orero and Carroll (2012, p. 13) offer a different look at the state of AVT as a discipline, claiming that it had indeed matured and had become, in fact, an independent academic discipline:

Far from being an ugly duckling at the periphery of TS, AVTS [Audiovisual Translation Studies] has evolved into a discipline. Its fledgling concerns with a focus on the specificity of AVT and its constraints first led to much fragmentary research conducted by practitioners. Now, a decade into the 21st century, AVTS is a mature field of studies in its own right, with AVT researchers adopting detached, comprehensive, descriptive and scientific approaches.

What is more exciting, however, is the fact that new research avenues have been carved in AVT research, one example being video game localisation. As Jankowska *et al.* (2018, p. 4) mention:

> But AVT is not only about film and television. Carme Mangiron shows how localisation in the game industry – which is much bigger than the film industry in terms of revenues – is in dire need of further academic investigation, as well as more attention from the industry.

Nowadays, AVT research has come to include much more than subtitling and dubbing for specific mediums of distribution. However, in the past AVT focused on subtitling or dubbing (depending on the country) and dealt with the available mediums of audiovisual distribution, such as cinema, television and VHS (precursor of DVD). In the words of Díaz-Cintas and Remael (2007: 12):

> In its inception, AVT was used to encapsulate different translation practices used in the audiovisual media – cinema, television, VHS – in which there is a transfer from a source to a target language, which involves some form of interaction with sound and images. Dubbing and subtitling are the most popular in the profession and the best known by audiences, but there are others such as voice-over, partial-dubbing, narration and interpreting. The translation of live performance was added to this taxonomy at a later stage and that is how surtitling for the opera and the theatre has also come to be included.

However, 13 years after the above quote, Díaz-Cintas and Remael (2020, p.6) argue that:

> Nowadays, audiovisual translation, abbreviated to AVT, has made it as the standard referent widely used across languages to refer to the field. This coinage has the advantage

of including the semiotic dimension (audio and visual) of the product to be translated and is employed to denote the various translation practices implemented in the audiovisual industry.

Moreover, as Jankowska *et al.* (2018) highlight, Media Accessibility (MA) research – that is, audio description (AD) and subtitling for the d/Deaf and hard of hearing (SDH) – has already bloomed under AVT. According to Fryer (2016: 1):

AD (also known as video description in the USA) is a verbal commentary providing visual information for those unable to perceive it themselves. AD helps blind and partially sighted people access audiovisual medial and is also used in live settings such as theatres, galleries and museums (e.g. Díaz-Cintas *et al.*, 2007; Vocaleyes.com) as well as in the architectural tours, football and cricket matches (RNIB.org.uk) and to help blind people enjoy holidays (TravelEyes-International.com).

In addition, SDH's mission is identical to AD's, since SDH also tries to give access to audiovisual (AV) material, although evidently it addresses deaf and/or hard of hearing (HOH) audiences. According to Remael (2007: 21):

Subtitling for the deaf and hard-of-hearing (SDH) has been around for quite some time and the practice is relatively widespread worldwide. In Europe, the first experiments with SDH on television largely coincided with the introduction of teletext. As new media gain popularity, new technologies are introduced and awareness of the need to provide information and entertainment that is accessible to all grows, the amount of subtitling also increases.

MA keeps growing as a research area and this is evident by the many European projects that deal with it; one of the most recent being ImAc, 'a European project funded by the European Commission that aims to research how access services (subtitling, AD, audio subtitles, SL) can be integrated with immersive media' (Agulló and Matamala 2019: 218).

Taking the above into consideration, AVT research is a multidisciplinary and vibrant research area with many research avenues. The scope of this dissertation is limited to the

area of interlingual subtitling only; however, it is not restricted to film and television only. In fact, academic research in the area of interlingual subtitling consumes a big part of AVT research. As Chaume (2013, p. 112) suggests:

> more has been written about subtitling than dubbing, because, generally, greater attention has been paid to the phenomenon of subtitling in countries where it is common practice. In countries where dubbing is preferred, there has been less academic interest in the mode.

It is important to note that subtitling, as an academic research area, has become quite diverse since live subtitling (respeaking), video game localisation, surtitling and SDH have joined it. Although traditionally the above areas have not been part of subtitling, they all produce subtitles as an end-product. Thus, it is obvious that subtitling is becoming an interdisciplinary and fluid area. If we wish to refer to the term *subtitling* strictly however, Díaz Cintas and Remael (2007, p. 8) define it as:

> [...] a translation practice that consists of presenting a written text, generally on the lower part of the screen, that endeavours to recount the original dialogue of the speakers, as well as the discursive elements that appear in the image (letters, inserts, graffiti, inscriptions, placards, and the like), and the information that is contained on the soundtrack (songs, voices off).

This dissertation uses the term *subtitling* to include all contexts which produce subtitles as an end-product but will focus only in the AV mediums of cinema, television, DVD and VOD. Only a brief analysis will be carried out regarding respeaking (live subtitles) and video game localisation.

1.2.1. Translation Technology

Having in mind that this research is positioned under the umbrella of translation technology, a brief historical analysis of this academic area is deemed necessary.

The unimaginable growth of technology could not leave translation unaffected. As the technological advances progress rapidly, the urge to use computer-assisted software, in

order to maximise the efficiency of the translators, as well as minimise their cost, increased exponentially. As a result of this rapid technological development, a new research area was born in academia under the name of *Translation Technology*.

According to Chan (2004, p.258), *Translation Technology* is considered 'a branch of translation studies that specializes in the issues and skills related to the computerization of translation'. Furthermore, according to Bowker (2002, pp. 5-9), *Translation Technology* 'refers to different types of technology used in human translation, machine translation [MT], and computer-aided translation, covering the general tools used in computing, such as word processors and electronic resources, and the specific tools used in translating, such as corpus-analysis tools and terminology management systems. According to O'Hagan (2020, p. 26), the influence of technology begins from 'translation-specific technologies as MT to more general-purpose speech technologies and cloud computing' which is quite 'far-reaching'.

Agulló (2020) presents a few journals that were either created because of this new research area or that specialised in translation technology afterwards. As she mentions, in 2001, the academic e-journal *Revista Tradumàtica* was created. *Revista Tradumàtica* specialised in translation technology from the start. In addition, Agulló (2020) argues that the translation journal *Perspectives: Studies in Translation Theory and Practice* and the *Journal of Specialised Translation* publish papers that deal with translation technology. Furthermore, Agulló (2020, p. 189) highlights the fact that 'a monographic that is exclusively dedicated to translation and technologies has been published' by O'Hagan in 2020, which, as she notes, is extremely important, as it is testament of the importance of technology in the translation field.

Regarding the offset of *Translation Technologies*, Chan (2017, p. 3) mentions that in 1978:

Alan Melby of the Translation Research Group of Brigham Young University conducted research on machine translation [MT] and developed an interactive translation system ALPS (Automated Language Processing Systems), he incorporated the idea of translation memory into a tool known as 'Repetitions Processing', which aimed at finding matched strings (Kingscott 1984: 27–29; Melby 1978; Melby and Warner 1995: 187).

However, it was Arthern (1979, p. 93), a translator at the European Commission, who suggested the method of 'translation by text-retrieval'; what is now known as *translation Memory (TM) software*. Basically, Arthern (ibid., p. 95) had proposed that:

this information would have to be stored in such a way that any given portion of text in any of the languages involved can be located immediately [...] together with its translation into any or all of the other languages which the organization employs.

Since then, TM software has become an inseparable piece of the translator toolkit for both the in-house as well as the freelance translators.

The new translation technologies wave set in motion a debate between the academic world and the industry. On the one hand, the industry dictated the use of this new surge of translation technology tools in order to maximize its profits. On the other hand, translators had to incorporate these technologies in their work (knowledge that had to be acquired fast and efficiently), even though there was little academic reference/guidance on compensation rates, benefits and disadvantages of these tools, positive and negatives of belonging to translation agencies and so on.

As a result of the gap between industry and research, a number of scholars dealt, and still do, with the aforementioned issues. Some examples of these studies are provided below

in chronological order from older to most recent. Bowker[3] (2002), Quah[4] (2006) and focused on the tools available at their respective time and the influence this technology had on the translation practice. Also, Absolon (2008) and Daelemans and Hoste (2010) studied the effectiveness of different translation tools in the translation workflow. Moreover, Olohan (2011) researched the influence of translation technologies on the translation process and the research problems that this relationship brings about for academic study. O'Hagan (2012; 2013) also studied the available tools at her time and the influence these tools had on the translation practice. The recent academic studies in translation technologies focus on post-editing and other translation technology tools. A few examples regarding post-editing, include Federico *et al.* (2012), who studied the efficiency of 12 translators during post-editing; Witczak & Jaworski (2018), who dealt with usability and computer-human interaction in relation to translation technology and Läubli *et al.* (2019) who tested through empirical methods the way Neural Machine Translation (NMT) influences the translators' speed and quality in the financial sector. In addition, Munkova *et al.* (2021) studied the influence of the quality of Machine Translation (MT) output on a translator's performance. Thus, as it can be seen, post-editing has featured in a number of studies the last 10 years. This doctoral dissertation allows dedicates a portion on post-editing. Furthermore, Olohan (2020) focused on translation technology from a sociological perspective.

In addition, Costa, Pastor and Muñoz (2014) discussed the potentials of technology-assisted interpreting. Interpreting technologies is an emerging research area, as scholars are now shifting their attention towards the new technologies that can be incorporated in interpreting; especially since there are new products being utilised for interpreting like the Ili translator, a smart wearable translator that interprets instantly. Ili is an instant, one-way interpreter which interprets from English into three possible languages: Spanish, Japanese and Mandarin (figure 3).

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[3] Bowker's (2002) work was very influential since she introduced various kinds of assistive tools and examined their potentials.
[4] The pioneer work of Chiew Kin Quah (2006) played a key role in the field, as she linked the field of technology and translation theory. She critically explored the reasons why these two fields are considered as distinct areas of research despite the fact that they both essentially deal with the translation act.

Figure 3: Ili translator (Source: https://iamili.com/us/)

In the area of Machine Translation (MT), which also falls under translation technology, not only a variety of research exists, but also there is a number of EU projects that are funding doctoral and post-doctoral research positions in this area; like the Marie Curie fellowships. Research in MT technology ranges from applied (Conforti, Huck and Fraser, 2018) to theoretical (Hutchins, 2005; 2007, Johnson *et al.*, 2017) and even sociological (Alessandro, 2014) research. Further information regarding MT is given in section 1.3.6.

Considering the above, an undeniable conclusion that can be drawn is that translation technology research will keep expanding alongside the developments of technology.

1.2.2. Subtitling Technology

As mentioned above, this doctoral dissertation examines technology from a subtitling angle. Technology has played, and still plays, a significant role in the development of subtitling. Most of the studies that deal with subtitling dedicate a small portion to technology; which is quite surprising if we consider that subtitling, in contrast with other modes of AVT, cannot be realised outside of technology.

As Agulló (2020, p. 189) mentions, the 'studies focused on translation technology for AVT and subtitling technology are scarce'. A few examples of studies that deal with technology and subtitling are the following, which are given in a chronological order from older to most recent. In 2005, Díaz-Cintas focused on the historical development of technology in subtitling. In addition, Díaz-Cintas & Anderman (2009) portrayed the benefits and limitations of technology in subtitling.

Moreover, Volk *et al.* (2010), stressed the advantages of the automated subtitling in the Scandinavian context. Georgakopoulou (2012) dealt with subtitling technology from a descriptive level. In addition, Bywood et al. (2013, 2017) studied the implementation of machine translation in subtitling practice. The work by Díaz-Cintas (2014), who talks about the technological turn in subtitling was also critical at the time. Moreover, Rojas' (2014) research, in which he analyses a methodology on how to 'automatically create translation memories for subtitling' (Rojas, 2014, p. 1) was very important.

Pérez-González (2014) highlights certain cases for which the optimisation of subtitling is crucial; for example, the small audiovisual markets or highly repetitive and small 'screen-based texts' (Pérez González 2014: 18) and Hanoulle, Remael and Hoste (2015) dealt with the efficacy of terminology-extraction systems in subtitled documentaries. Moreover, Matamala (2017), deals with the way different technological tools can aid audiovisual translation professionals, users and researchers, whereas Chaume (2018) discusses the importance of digital technology in subtitling. Díaz-Cintas (2018) deals with the new subtitling practices that have been adopted due to the cyberspace and Tardel *et al*. (2019) focused on the automation of the subprocesses in subtitling. Díaz-Cintas & Massidda (2019) studied the latest technological advances in audiovisual translation. Moreover, Fernández Moriano (2019) offered a glimpse on the state of subtitling technology and free subtitling editor features from a professional point of view. Arrés López (2019) dealt with the viability of subtitling on new hardware, such as VR goggles and smartwatches.

Moreover, Díaz-Cintas and Remael (2020) studied the cloud-based subtitling software. In addition, Agulló (2020) studied the creation 360° subtitles for media accessibility reasons. Moreover, Díaz-Cintas and Remael (2020) studied the upcoming cloud-based subtitling software. Furthermore, García-Escribano et *al.* (2022) researched the use of professional web-based systems in subtitling practice and training. In addition, Artegiani (2022) dealt with the communication and the interactions in cloud platform subtitling.

However, it should be noted that even if the above studies have revolved around technology and subtitling, the term *Subtitling Technology* as a research area rarely seems to be defined in the same way translation technology is defined in published works, even if:

a) not only it has been acknowledged that subtitling is dependent on technology;
b) there is specialised technology for subtitling and a body of research that deals with subtitling and technology (as shown above).

As Agulló (2020, p. 199) concluded in her PhD dissertation:

> the importance of carrying out studies in relation to subtitling technology has been made clear. It is crucial to understand how subtitling technologies impact the work of professional subtitlers, the cognitive process behind their interaction with the software or the process of subtitling with a specific tool.

It should also be noted that definitions, like naming, carry important social value. As Bourdieu (1982, p. 21) mentions:

> I have shown elsewhere (Bourdieu, 1980, 1986b), in the case of Kabylia, that groups – households, clans or tribes – and the names that designate them are the instruments and stakes of innumerable strategies and that agents are endlessly occupied in the negotiation of their own identity.

What Bourdieu ultimately means here is that by naming a group that is active in an area, entails social recognition and acceptance by acknowledging its existence. Put simply, naming has power. Following the same logic, *Subtitling Technology*, should be defined. This research defines *Subtitling Technology* as an area where different subtitling environments come into dialogue with each other to investigate the degree of influence that technology has in the subtitling realm in terms of process and involved stakeholders. This area falls under the *Translation Technology* umbrella since the majority of tools and technological approaches of *Subtitling Technology* were adopted from *Translation Technology*, for example, the use of Translation Memories (TMs), Terminology Bases (TBs) and Machine Translation (MT).

Nonetheless, research in *Subtitling Technology* can extend far beyond the implementation of tools in subtitling as it opens new pathways for academic enquiries, for instance, 3D subtitling, implementation of virtual reality subtitles and cloud-based technologies.

Even though technology has started to gain more attention in subtitling in the last six years, its strong influence was recognized by some scholars quite early. As Díaz-Cintas (2007: 26) argued:

> The extensive technological developments that have taken place in recent decades have had highly significant consequences for the world of AVT, media accessibility in general and subtitling in particular. The internet has fully come of age. Computer subtitling programs have become much more affordable and accessible, with many of them available free on the net [...].

Eight years later, Díaz-Cintas (2015, p. 633) elaborated more on the importance of technological advances and its relationship with subtitling: 'It could be argued that developments in subtitling are taking place at a faster pace than in any other areas of

translation because of, among other reasons, the ubiquitous presence of subtitles in the cyberspace and the magnetism they seem to exert on netizens'.

The subsections of section 1.3. provide examples of how technology has driven the subtitling practice throughout history. Technological developments determine subtitling in two ways: through the mediums of audiovisual distribution (e.g., TV, DVD, VOD) and through the *ad hoc* subtitling process (e.g., subtitling software). One way to determine the influence of technology in subtitling is by looking at how it restricts it. Mediums of audiovisual distribution (e.g., cinema) depend on technological developments. In other words, all the mediums of audiovisual distribution (cinema, television, VCR, DVD, internet) are the result of years of technical research and development and hence parallel progress. By conducting a historical analysis of the development of subtitling, we are basically creating a historical analysis of multimedia technology.

The mediums that will be studied are the following:

a. Cinema
b. Television
c. DVD
d. Internet (VOD platforms)

It should be noted that video games and opera and theatre subtitling (surtitling) are also considered mediums of audiovisual distribution since they project subtitles. However, since these areas are idiosyncratic in terms of subtitling process, product and purpose, they fall outside the scope of this research. This research focuses on the influence of technology in the aforementioned four mediums of audiovisual distribution as these mediums have been longer in the AVT industry. Further research will need to be carried out separately in video game localisation and surtitling for the theatre/opera.

Each of the above AV distribution mediums will be described under section 1.3. with regards to the historical overview of each medium and the technological progress that occurred in terms of subtitling. The historical development analysis of each medium is required in order to gain a firm grasp of the evolution that occurred inside the particular medium which, without any doubt, influences the subtitling process as well. In addition, a historical account of the technology being employed in each AV distribution medium in terms of subtitling will be provided in order to pinpoint the evolution of the subtitling techniques and tools that existed and have developed. It should be mentioned that the analysis of different technologies will remain to the descriptive level as the focus of the study is the degree of influence of various technologies in subtitling and not the technical characteristics of the technologies *per se*.

1.3.   Audiovisual Mediums and the historical evolution of the subtitling process

One way to determine the influence of technology in subtitling is by looking how it restricts it. Mediums of audiovisual distribution depend on technological developments. In other words, all the mediums of audiovisual distribution (cinema, television, VCR, DVD, internet and so on) are the result of years of technical research and development and hence progress in parallel. By conducting a historical analysis of the development of subtitling, we are basically creating a historical analysis of multimedia technology.

1.3.1. Inception and evolution of subtitling on cinema and TV: from the 1930s to the 1990s

The first AV medium was cinema. From 1878[5] to 2020, the cinema has undergone a growth in all aspects. Since the silent era with the intertitles to awe-inspiring sound

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[5] One of the first *movies* was produced in 1878 when 'Muybridge used his trip-wire technique to produce a series of images of a galloping horse at a Palo Alto racetrack, decisively demonstrating that a horse did indeed have all four legs off the ground when running at a fast clip' (Dixon and Foster, 2008, p.6)

effects with subtitles in immersive contexts, there has been a big leap in terms of process and production; especially if we consider that cinema started as a quick interchange of a series of still pictures and it progressed to a point of stunning motion graphics that everyone enjoys in luxurious cinema theatres.

The technological wonder of the cinema would seem impossible without the Lumière brothers, as 125 years ago they made the 'first commercial breakthrough in combining the photographic and projection device into one machine in early 1895' (Dixon and Foster, 2008, p. 6). The Lumières made literally hundreds of one-shot, one-scene films, and for a number of years they showed them to an eager public captivated by the simple reality that the images moved. It was the first successful commercial exploitation of the medium (ibid, p.6). Ironically though, 'Louis Lumiere had famously declared that the cinematographe was an invention without a future' (ibid, p.7).

When recording the history of cinema, one cannot ignore the great minds that were involved in this long process. According to Dixon and Foster (2008, p. 7):

> Of all the early film pioneers, it was T. Edison and his associates who most clearly saw the profit potential of the new medium. For the Lumière brothers, the cinema was but a curiosity […]. Edison, however, saw the chance to make real money.

Edison had envisioned his films to be 'peep-show entertainments', but later changed his mind as he saw the commercial possibility of projected motion pictures (ibid, p.8). Cinema was an upcoming gold mine for Edison, and he would not let it stay unexploited (ibid.). He continued producing several films, but he was always inclined towards the preferences of the audiences in order to stay commercial throughout his career. Based on Dixon and Foster (2008, p. 10):

> Edison set down the basic precepts upon which commercial Hollywood movie production, distribution, and exhibition are still based: give the audience spectacle, sex, and violence, yet simultaneously pay lip service to the dominant social order. [...]
>
> Edison's ultra-commercial films fit right in, presenting a world of idealized romantic couples, racist stereotypes, and relentless exoticism, leavened with a healthy dose of sadism and voyeurism to titillate the public. In short, Edison knew what the public wanted [p. 11].

While Edison, along with Étienne-Jules Marey, Louis Aimé Augustin Le Prince, and the Lumière brothers, was 'inventing the foundation of the modern motion picture in the American context, other early practitioners of the cinematic art were creating worlds of their own' (Dixon and Foster, 2008, p.11). For instance, Georges Méliès can be credited with being the founding father of special effects in cinema (ibid, p.11). He also produced 'one of the cinema's first (if not the first) science fiction films' (ibid, p.12). In addition, Alice Guy is said to be one of the originators of the narrative film (ibid, p.13). In 1911, the newspaper cartoonist Winsor McCay, who came up with the famous *Little Nemo in Slumberland* comic strip in the early 1900s, entered the world of animated films (ibid, p. 19). After a few years however, he went back to his comic strip and left the territory of animated films to be explored by the world-known Walt Disney and Ub Iwerks (ibid, p. 19).

At that point, the European context had also started to experiment with films. Oskar Messter is considered the creator of the German film industry since he made more than three hundred films from 1896 through 1924 (ibid, p. 20). In France, Max Linder started starring in comedy films (much like Charles Chaplin) and in Italy Arturo Ambrosio and Luigi Maggi produced a variety of *sword and sandal*[6] films (ibid, p. 20).

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[6] In Italy, *sword and sandal* films are also called peplum, 'a name first coined by French critics in the early 1960s that refers to the short 'skirt' or 'kilt' worn by the hero protagonists and other male characters in these films (after the Greek peplos, which began as a floor-length gown worn by Greek women and was eventually adapted by men into a garment that was shorter [...]' (Cornelius, 2011, p.4).

At the same time, 'the first legal battles for utilising the cinematographic apparatus were being fought, as Thomas Edison hunted his competitors with a number of lawsuits' (ibid, p.20). These battles became increasingly fierce, especially when Edison established the Motion Picture Patents Company[7] in 1908 and endeavoured to dominate the cinema trade (ibid, p.21). Nevertheless, by 1912, the achievements of European and independent producers and the violent opposition of filmmakers outside the company weakened the Movie Trust, which, in 1917, was dissolved by court order (Britannica, 2016, online). A big hit that is worth mentioning, which affected the Company's future prospects, was the establishment of Universal Pictures in 1912 by Carl Laemmle (Dixon and Foster, 2008). In addition, the contemporary studios that we all admire today started forming at that period. Thus, a number of studio companies started to appear by eager entrepreneurs that were desiring to conquer this fertile market.

In addition, 'William Fox, Laemmle's ally in the war against the Edison Trust, created the Fox Film Corporation in 1915' (which would later merge with Twentieth Century Pictures in 1935, under impresario Darryl F. Zanuck (Dixon and Foster, 2008, p. 33). Furthermore, Metro Goldwyn Mayer (MGM), with its eminent lion logo at the beginning of each film and 'the motto *Ars Gratia Artis* (Art for Art's Sake) boldly emblazoned across the screen, followed in 1924, rising out the combined talents of Samuel Goldwyn, Marcus Loew, Louis B. Mayer, and financial wizard Nicholas Schenck' (ibid, p.33). Furthermore, by mid-1930s, Paramount Pictures[8] had dominated the film production as its creators would force their 'studio-owned theatres' to reproduce only Paramount products (ibid, p.34). Of the most recognisable names in the film world, Warner Bros, was established in 1923 by Jack, Sam, Albert, and Harry Warner (ibid, p.34) and continued to produce a massive amount of films and TV series until today; although it merged in 1990 with Time Inc. to form Time Warner Inc., 'the largest media and entertainment corporation in the world' (Britannica, 2016).

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[7] Also called Movie Trust, Edison Trust, or The Trust, trust of 10 film producers and distributors who attempted to gain complete control of the motion-picture industry in the United States from 1908 to 1912 (Britannica, 2016, online)

[8] Paramount Pictures was formed by 'Adolph Zukor's Famous Players when they merged with Jesse Lasky's Feature Play Company' (Dixon and Foster, 2008, p.34)

Last but not least, is Columbia Pictures, another big name in the cinematic world, which was created by Jack and Harry Cohn in 1924 (Dixon and Foster, 2008, p. 34).

The above pioneers were a few of the most prominent figures in the film industry who laid the foundations for the emerging medium to evolve. Adopting a technical perspective towards the fruition of the cinematic product, it is important to note that the first *films* did not allow for any sound effects. As it was aforementioned, those *films* could only offer an illusion of movement. However, according to Dixon and Foster (2008, p. 21):

> even in the late 1890s and early 1900s, the cinema had already begun to experiment with synchronized sound (in the films of Alice Guy for Gaumont's Chronophone, as well as other related processes, which date from the late 1890s) and the use of hand-tinted, or machine-applied, colour.

During the silent film era, directors had to communicate dialogues through written text. This is when the predecessors of subtitles were created: intertitles. When it comes to the inventors of intertitles or their origin, researchers find themselves in a grey area. This territory remains relatively uncharted since there is not sufficient hard evidence that can lead us to a conclusive hypothesis of who invented the intertitles.

Gaudreault (2013) claims that the reason that there seems to be a confusion with the origin of this word is because it has been used to signify different things in the past. In the 1910s, the term intertitles was used as a synonym of the title cards that were shown in the films; what we nowadays recognise as simple titles. To be precise, according to Gaudreault (2013: 83):

> the title cards of early kinematography served two successive roles before earning their stripes as *intertitles*. Until around 1900, they served primarily as titles, before fulfilling the function of subtitles until around 1912. Thus, the very first written texts to be projected onto the screen, just before the turn of the twentieth century, were titles in the true sense of the word—not *subtitles* or *intertitles*.

The meaning of the word intertitles slowly started shifting to suggest the captions that were placed in between shots within scenes (Gaudreault 2013, p. 81), which is the same as today, but there is little evidence of when it exactly happened. According to Díaz Cintas (2007, p. 26), intertitles are defined 'as a piece of filmed, printed text that appears between scenes'. Furthermore, to complicate the situation even more, intertitles were sometimes called *sub-titles* in the sense of 'subtitles in, for instance, a newspaper' (Ivarsson 2004, online).

In the era of *intertitles*, the film export to foreign markets was much easier than today. The basic ingredient that was required 'was a new set of intertitles' (Dixon and Foster 2008, p. 32). However, once sound film was invented, the scenery changed radically. The first sound film with subtitles was shown in 1929As Gottlieb (2002, p. 216) states:

> the first attested showing of a sound film with subtitles was when *The Jazz Singer* (originally released in the US in October 1927) opened in Paris, on January 26, 1929, with subtitles in French. Later that year, Italy followed suit, and on August 17, 1929, another Al Jolson film, *The Singing Fool*, opened in Copenhagen, fitted with Danish subtitles.

It should be mentioned that the task of adding subtitles on the negative was a big endeavour. First of all, as Ivarsson (2004) argues, the negatives of the films were safeguarded in the country that produced them, which basically hindered the pace of distribution. Additionally, the quality was also affected since the original negative was not available. Thus, the corresponding authority had to re-copy the negative, which caused severe quality issues on the final product (Ivarsson, 2004). According to Díaz-Cintas and Remael (2007, p. 23) subtitling for the cinema has experienced five phases until reaching its current state. These phases include optical subtitling, mechanical and thermal subtitling, chemical subtitling, laser subtitling, and electronic/digital subtitling

In 2009 subtitling for cinema received its first shock since the first movie with 3D interlingual subtitles came out; that is J. Cameron's *Avatar*. As Díaz-Cintas (2013) mentions, this event marked the onset of a series of new workflows that had to be able to correspond to the new challenge. In addition, Díaz-Cintas (2013, p. 127) advocates that, 'the British company Screen Subtitling have been pioneers in the development of Poliscript 3DITOR, a subtitle preparation software that helps design, display and deliver 3D subtitles'.

The second AV medium which played an important role in subtitling during the first decades of audiovisual content was TV. As Díaz-Cintas (2013, p. 119) argues: 'the trigger for [the] moulding of our habits towards the audiovisual dimension can be traced back to the cinema in the first instance and the television some decades later'. Television played a significant role in the distribution of audiovisual material as it used to be the sole medium of audiovisual distribution that was available any time of the day; being part of the household itself. The development of subtitling for television followed the footsteps of cinema, especially in terms of technology.

In the UK context, the first public demonstration of television took place in 1926 by John Logie Baird (National Science and Media Museum, 20112011). Twelve years after that, in 1938, BBC broadcasted *Der Student von Prag* (Arthur Robison, 1935) with subtitles. Not only was this the first arguably the first use of subtitling on TV, but probably also 'first scheduled showing of a film in the history of television' (Ivarsson 2004: online). According to Pedersten (2018: 83):

the choice of AVT became more entrenched when television became a serious reality in the early 1950s. After initial experimenting (e.g., with voice-over on Danish television; Gottlieb & Grigaravičiūtė, 1999), many countries made the same choice for the small screen as they had for the big screen.

Technically speaking, the tools and techniques for adding subtitles were already invented for cinema. However, there was a lot of adjustment that needed to be done due to practical reasons; one of which was the slower speed at which the audience could follow the subtitles on television in contrast with the cinematic screen (Ivarsson 2004). Moreover, 'the picture on a TV set has a narrower contrast range than on a cinema screen' (Ivarsson 2004: online). According to Díaz-Cintas and Remael (2007: 25):

> To adjust the film print from cinema to television, the pace of the movie must be slightly sped up, reducing the length of the movie and the time available for subtitles by 4%. Generally speaking, a movie lasting approximately 90 minutes contains some 900 subtitles in the cinema, 750 on video or DVD, and 650 in the television version. However, to reduce costs the same subtitles are sometimes used regardless of the broadcast medium, which can force a higher reading speed, cause loss of definition, and make subtitles more difficult to read.

During this time, optical subtitling was the only method available, as it was already being used for films (Ivarsson, 2004). However, this method posed a series of problems, mainly in terms of time as subtitles had to be done independently from the film strip then they had to be added back (a detailed explanation of the optical method for subtitling for the Television is provided in Annex A). When the caption generators (Ivarsson, 2004) started to be used for adding subtitles on the television image, the process became much faster, since the subtitles were added directly on the image itself, but they came with a higher price (ibid.).

At a later stage, two new subtitling methods became available for subtitling on TV: one was the 'teletex option' (Ivarsson, 2004, online), while the other was the rather cheaper computer-controlled character generator in the transmitter[9] (Ivarsson, 2004, online). Fortunately, the manual workload was semi-automated thanks to time codes. Thus, it became possible to install software in the subtitlers's personal computers (Ivarsson 2004:

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[9] 'When the subtitler cues in a new subtitle, the characters are generated by electronic means and mixed into the transmitted image' (Ivarsson 2004: online).

online). It should be noted that although nowadays using subtitling software to work from the comfort of a chosen space is considered mundane, this did not used to be the case almost two decades ago.

1.3.2.   Subtitling at the turn of the 20th century: DVD and DTTV

Towards the end of the 20th century, a new distribution medium of audiovisual material was born. As it has been argued so far by the academic community, Georgakopoulou (2003), Díaz-Cintas (2004), Díaz-Cintas (2005), Kayahara (2005), and so on, the introduction of the DVD (Digital Versatile Disc or Digital Video Disk) brought an unexpected wave of changes both in terms AV consumption habits and industry standards.

The creation of the DVD came as a response of the computer revolution that was happening around the 1990s. As Georgakopoulou (2003, p. 203) mentions, 'it was clear that the industry needed a new type of storage medium that could handle these new types of digital data'. Díaz-Cintas (2005, p. 3) also adds that:

> It [DVD] is a new generation of optical disc that, although very similar to the CD, is essentially faster and has a greater memory capacity, a potential recognized by the audiovisual industry. Perhaps its most significant advantage is the possibility of incorporating up to 8 versions of the same program dubbed into different languages, and up to 32 subtitle tracks in several other languages.

The release of the DVD in 1996 trembled the practices that had been established by audiovisual professionals at the time. The technology that has been used so far in DVD production, and by extension in subtitling for DVD, was revolutionary. The process of DVD production was never brief and without an effort. As Georgakopoulou (2003) mentions there were six steps that had to be followed. This process is presented below visually (figure 4).
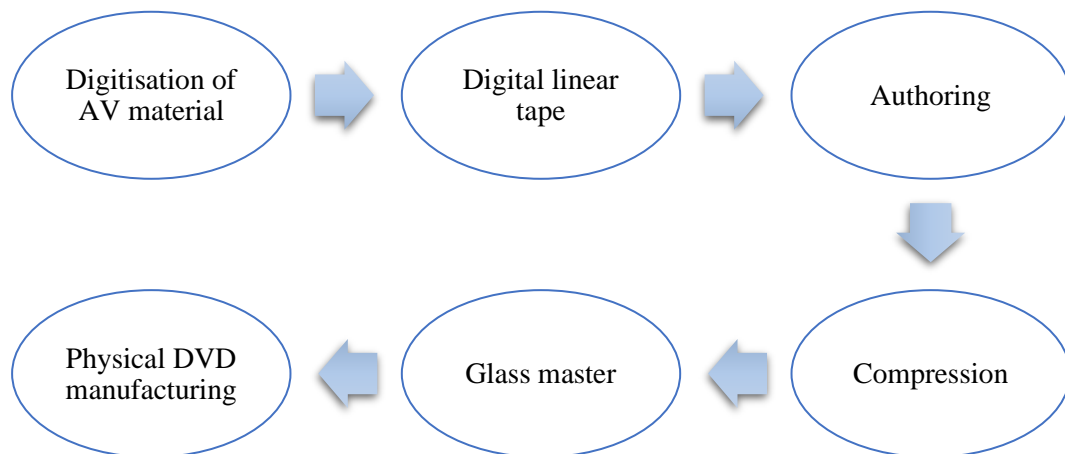
Figure 4. DVD manufacturing process (Georgakopoulou, 2003)

This process was later improved, however, with the use of templates which were needed due to the large amount of multilingual work that had to be completed simultaneously. As Georgakopoulou (2019, p. 139) highlights: 'The template methodology served all these purposes, as it helped achieve shorter project turnaround times through the reuse of subtitle timing information from source template files and also reduced the creation cost for the language versions required per project'.

As expected, the consumers replaced videotapes with DVDs as the latter offered them several subtitled or dubbed versions of the movies/series in one device, high quality of the video images, 'interactivity of the digital controls, and the presence of numerous extra features packed into the discs' capacious storage' (Hosch, 2009, online). Hosch (2009, online) argues that 'the next generation beyond DVD technology is high-definition, or HD, technology. As television systems switched over to digital signalling, high-definition television (HDTV) became available, featuring much greater picture resolution than traditional television'. At that point, two competing (and incompatible) technologies were introduced for storing video in high-definition on a CD-ROM-sized disc: HD DVD, proposed by Toshiba and the NEC Corporation, and Blu-ray, suggested by a group led by Sony (Hosch, 2009, online). In 2008, Blu-ray was established as the standard format and the

production of HD DVD players, although much cheaper, was put to an end (ibid). Nonetheless, during this time, the viability of the Blue-Ray discs was questionable due to the high numbers of movies in high-definition (ibid, online) that were available online as 'cloud computing services', which are operated, until today, as 'huge data banks' (ibid, online).

In 2020, the use of the DVDs has dropped drastically as other AV distribution mediums rose to its place such as the VoD (further analysis regarding this medium will be given below. It is no accident that, the companies have reduced the production of new DVD player models to minimum. According to the International Video Federation (IVF, 2012), European spending on DVD and Blu-ray dropped for the seventh consecutive year although it still stands at 8.3 billion. In addition, based on the latest ERA[10] reports (2018, online):

> Downloads from Amazon, Apple and Sky Store and streaming services such as Netflix, Amazon Prime and Sky's Now TV again proved the biggest news in video, driving digital revenues up 26% to £1.689bn. This was in sharp contrast to the performance of DVD, down 23.5% in volume, and Blu-ray, down 11.9%. In value terms, with revenues of £2.338bn in 2018, the video business is now 7.4% above its 2012 low-point, but still well below its historic 2004 high of £2.953bn.

The closest medium of audiovisual distribution that has the same structure (that is, multilingual subtitles, dubbed versions, and additional footage) is the video-on-demand platforms like Netflix, HBO Max or Hulu (discussed further in section 1.3.4.).

Although the rise of DVD at the end of the 20th century may had changed the former AVT landscape at that time, there was another technological revolution that took place at the start of the 21st century in an older medium (that is, TV) that also reshaped the AVT landscape, bringing it closer to what it is today. Digital terrestrial television (DTTV) was

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[10] ERA is the trade association representing the vast majority of retailers and digital services offering music, video and games. Its members range from independent record shops (Reflex, Sister Ray) to digital services (Spotify, Google, Sky, Deezer, 7digital) to internet retailers (Amazon) to specialist High Street operators (HMV, Game) and supermarkets (Tesco, Sainsburys, Asda, Morrisons).

the successor of the analog television that reigned during the mid-20th century. DTTV replaced the analog television worldwide at different rates. According to Lefort *et al.* (2002, p. 5), at the end of 2001, 27 million households had access to digital television (18% of European television households). Regarding the European Union (EU) countries, Lefort *et al.* (2002, p. 6) state, 'digitisation has started to be implemented commercially in four Member States (Spain, Sweden, Finland and the United Kingdom) and there are plans to launch in nearly all other Member States'.

These technological advances in the medium of TV brought basically a two-fold change in subtitling. According to the ITU handbook (2016, 10), the advantages that DTTV had over analogue TV included the addition of two and more languages soundtracks, the improvement and introduction of multiple languages in subtitling, and easier access to MA options such as audio description and sign language interpreting.

At a much later stage, the button *subtitles* was added on some TV remote controls. Furthermore, the format of the subtitles changed in order to accommodate the new technological changes. For example, 'EBU developed a TTML-based format: EBU Timed Text (EBU-TT) for broadcasting and EBU-TT-D for online delivery, which make use of XML to render subtitles in line with the user preferences' (ITU, 2016, p. 265). This change entailed that subtitlers had to use specific digital subtitling software in order to be able to export the subtitles in the requested formats.

1.3.3. Current practices: video-on-demand and the internet

The invention of the World Wide Web brought an inconceivable wave of changes in human communication, exchange of ideas and working conditions. Hilbert and López (2011) mention that in 2007 more than 97% of all telecommunicated information was channelled through the internet (let us only imagine that this survey took place in the first decade of the current century). Furthermore, as Díaz-Cintas (2013, p. 121) argues: 'given the importance of the internet in our daily lives, and its prominence in entertainment and

commerce spheres, it is not surprising that companies, institutions and individuals want to have an (audiovisual) presence on it'.

In terms of AV content distribution, the internet is a maze since it has not only enabled AV distribution via links to video-sharing platforms (like Youtube) and uploaded material to various websites (e.g., Vlogs) and social media platforms (e.g., Facebook), but has also made live AV distribution possible; shuttering the monopoly of the television regime. In fact, live AV content diffusion has been incorporated in social media platforms in the form of short video clips (video length varies according to the platform). In contrast with the fixed streamlined AV content routine that cinema and television had established, the internet brought the option to filter, reject and select both the type and length of AV material. That being said, it could be argued that the possibility of AV selection was already a reality with the emergence of DVD by buying the selected films, although it was certainly amplified with the use of the internet.

Thus, as it can be inferred, this new medium of distribution not only opened the path for expansion for the companies to produce more audiovisual material and hence strengthen their presence online, but also increased the work of subtitlers.

Regarding distribution platforms, the expansion of the internet and digital technology shifted direction towards video-on-demand platforms (VOD), which have replaced DVD almost completely. VOD platforms have provided the digital space for subtitling to flourish, as they include an unpreceded number of films, documentaries and series needing of translation in many countries. Some VOD providers, like HBO and Netflix, have also become producers of AV material, offering several novel AV contents that also need translation. The current COVID-19 crisis has also contributed to the expansion of VOD content, as studios such as Warner Brothers have opted for premiering their productions on VOD platforms like HBO Max.

By the time that VOD flourished, however, electronic subtitling had already been invented, hence, subtitling was carried out in user-friendly interfaces. Nowadays, the use of new assistive tools such as Translation Memory (TM) software and Machine Translation (MT) tools and the uprising Cloud-based subtitling technology (see section 1.3.6.) are common in subtitling, which allows for more precision in terminology and strict delivery times.

As Hilderbrand (2010, p. 26) highlights, 'Video on Demand appeared in trade and news reports in 2000 as a prototype ancillary market and a new term, a rebranding of pay-per-view by analogy with renting movies from a video store'. Hilderbrand (2010, p. 26) also informs us that 'as a platform and revenue stream, VOD emerged as a millennial strategy to navigate the convergence of film, cable, and the Internet'.

When VOD services were presented to the world, DVD was still at the top in terms of popularity and revenues (Hilderbrand, 2010). In fact, 'VOD was understood as a new model for home video as much as a new feature for cable subscribers' (Hilderbrand 2010: 26). As the years passed, VOD platforms received exponential attention by academia as they expanded in various mediums; i.e. TV and internet. A very keen observation regarding the usage of the term is the fact that it is non-specific (Hilderbrand 2010: 26). Hilderbrand (2010: 26) adds that the 'the term has regularly been used to identify two different kinds of emerging video services: downloadable web-based video and cable television content'. Figure 5 shows all the types of VOD services and the mediums in which these can be implemented (last row of the figure).
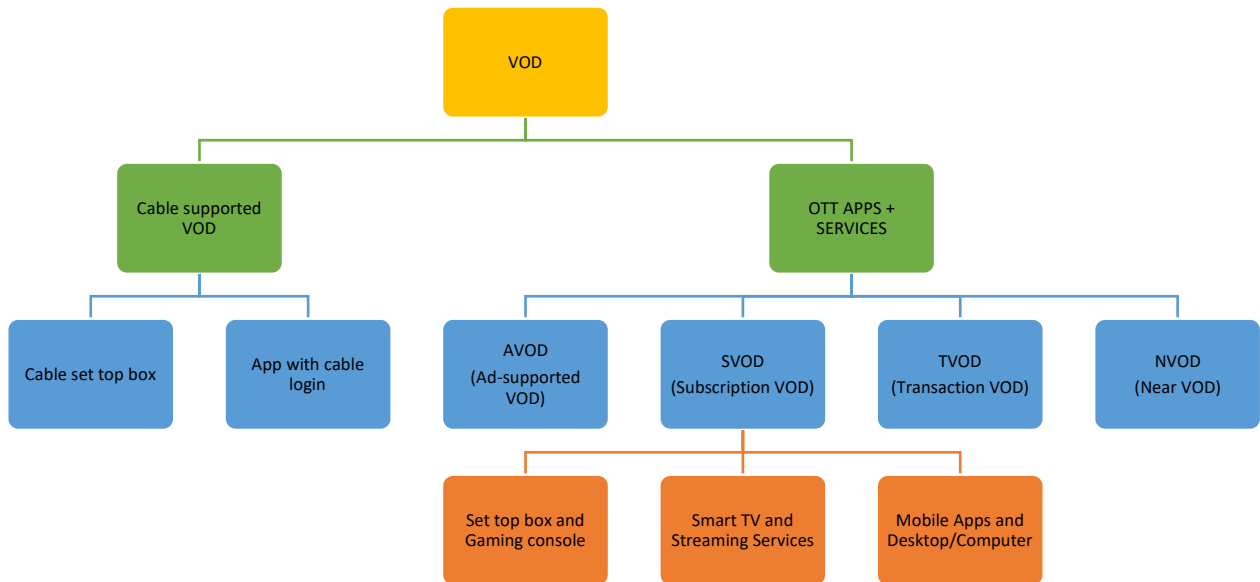
Figure 5. Types of VOD (adapted from Awan, 2019: online)

The technical term for Internet VoD is OTT (over-the-top) applications and services. OTT is a 'term used for the delivery of film and TV content via the internet, without requiring users to subscribe to a traditional cable or satellite pay TV service' (Awan, 2019, online).

OTT is divided into subcategories according to financial model of the provided service. According to Awan (2019, online) the main subcategories are: AVOD, SVOD and TVOD.

SVOD (Subscription-based video on demand)

Subscription VOD is a type of service, where you enter into a subscription agreement, which will then grant you access to the service typically to watch until you unsubscribe, that means to watch with no limits. The best example of an SVOD service is **Netflix**.

TVOD (Transactional-based video on demand)

Transactional (or Transaction) VOD is opposite of SVOD. TVOD will normally not charge you anything to sign up for the service/create a user profile. Instead, you will pay an amount based on

the content you watch. Most often this relates to movies but is also used for series and in particular for sports and events. **iTunes** is an example of TVOD.

AVOD (Advertisement-based video on demand)

Ad-based VOD is a model that is free for users. Users are free to log in and stream videos, in return for spending time watching ads. **YouTube** is the best example of AVOD.

It should also be noted that there are services that can use features of all of the above models like Youtube (Awan, online). More examples of the aforementioned OTT services are illustrated below (figure 6).
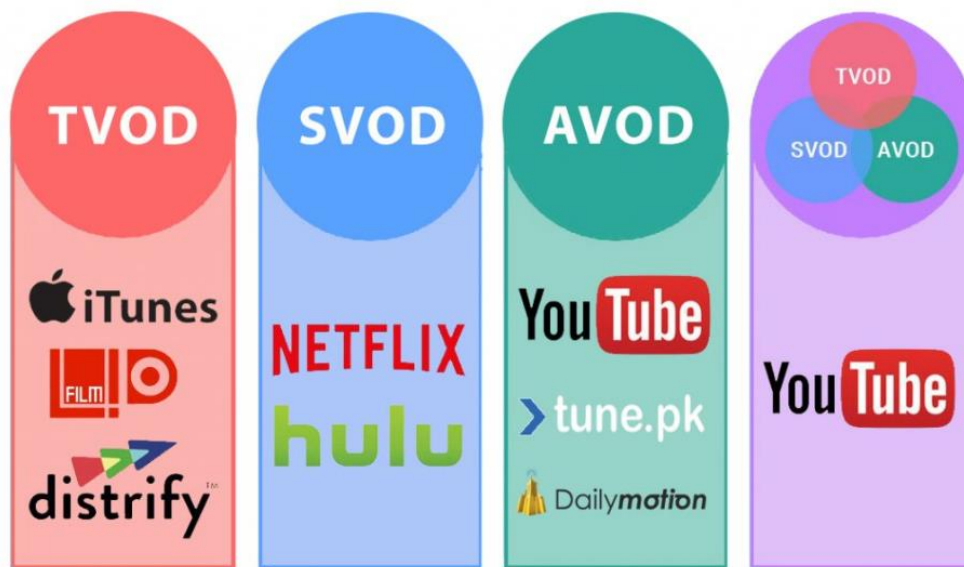
Figure 6. OTT services (Awan, 2019, online)

VoD services have been in the development for a number of years mainly due to the heavy dependence on technology. Japan had made clear since 1986 that it aimed to develop an Integrated Network System (Lea, 1994), an archaic model of the modern VoD services that exist at the moment. According to Mackintosh (1986, p.57):

once this network is in place in most of the country, communications will become radically cheaper... and a large range of new services (many of them two-way, or interactive) will

become available and affordable. In this way, the videophone will at last become a commercial reality; shopping-from-home and banking-from-home (tele-shopping and tele-banking), based on expanded use of television 'terminals', will become commonplace; working-at-home, using personal, intelligent work stations (i.e. computers with data, graphics and text- processing capabilities) will begin to become significant enough to presage a reduction in business travel (by road, rail and air); and the local fibre-optic cables, still with multiple megahertz of spare capacity, will probably also deliver a full range of entertainment services, including public-service television, pay TV to cater for a wide variety of entertainment, sporting and educational needs, and high-fidelity audio programmes.

However, the required technology (DCT [11]and ADSL[12] technologies) was still in its infancy and could not cater for the needs of the countries that desired to offer such services. Various countries (US, UK, Japan) experimented with VoD throughout the years. VoD was initially cable supported until the invention and stabilisation of the modern Internet.

As early as 1994, BT Plc (British Telecommunications) expressed its intention to begin consumer VoD trials (Lea, 1994). In fact, BT aimed to offer this trial to 2 500 households. The ancestor of the modern VoD was to 'allow viewers to select a video they want to see from a menu displayed on their television and have it sent to them over their telephone line. They would still be able to receive or make telephone calls at the same time as watching the video' (Lea, 1994, p. 1). However, BT was not allowed to offer such services and compete with cable TV companies since according to the Government policy, 'BT [was] barred from carrying 'entertainment services' over its network to people's homes until 1998 at the earliest' (ibid, p.1). In 1994, VOD became a reality through the Cambridge Interactive Television Trial (iTV Trial) via set-top boxes which were distributed to homes and schools (University of Cambridge, 1994). Nonetheless, this project was terminated in 1996 since the production of content and the technology used was not sustainable for

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[11] DCT (Discrete Cosine Transform) video compression (Lea, 1994)

[12] ADSL (Asymmetric Digital Subscriber Line) (Lea, 1994)

the Cambridge Cable Network (modern Virgin Media).More attempts were made throughout the years until *Digital Television* was made a possibility. In 2008, a BBC-led project, *Kangaroo*, built the technology and the assets for offering VOD services but the project was shut down in 2009 by the Competition Commission (BBC, 2010). In 2010 however, a new VOD service, SeeSaw was brought to light. SeeSaw utilised the technology from project *Kangaroo* as this technology was bought by the broadcast technology company Arqiva (ibid). SeeSaw was to offer 'on-demand access to classic Doctor Who episodes' (BBC, 2010, online) and was also in negotiations with Channel 4 and Five and American broadcasters for other shows (ibid). In addition, SeeSaw was to offer free (AVoD) and pay-per-views (NVoD) options). After that, a number of telecommunication or private companies attempted to create their own VOD platforms. VOD in Europe struggled to find a viable financial plan to sustain itself, but it slowly caught the pace of the US.

The registered European VOD services can be found on the website of the European Audiovisual Observatory[13] (MAVISE database) which offers a list of 205 licenced VOD services in Europe and provides information regarding their type (e.g. SVOD), country of origin, service provider, targeted country, genre, statue and final owner. A screenshot of the MAVISE database is provided below in figure 7.

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[13] http://mavise.obs.coe.int/q/ondemand/vod

Figure 7. MAVISE database (source: European Audiovisual Observatory)

1.3.3.1.   Non-professional subtitling

Although non-professional subtitling is out of the scope of this research, it should be noted that it is because of the technological advancement that non-professional subtitling was born. As Díaz-Cintas (2014, p. 636) argues:

When it comes to the production of subtitles, the traditional model of a translation company that commissions a project from professional subtitlers and pays them for their work has ceased to be the only one in existence. In today's global world, viewers are also bound to come across subtitles that nobody has commissioned or paid for (fansubs) as well as subtitles

that organizations have requested from volunteers but not reimbursed (crowdsourced subtitling or crowd subtitling).

The phenomena that Díaz-Cintas describes above would not be possible without the help of technology. Digital technology has given the capability to everyone with a computer and an internet connection to produce subtitles or even dubbed versions of any audiovisual material (fandubbing) (Chaume, 2013). Fansubbing, romhacking and crowdsourced subtitling basically prove that audiovisual translation (and by extension, subtitling) and technology are undeniably connected and that technology acts as a driving force of change, since these phenomena would not exist if technology did not move forward the way it did.

Pérez-González (2006) was one of the first researchers who identified the phenomenon of fansubbing. According to him (2006: 68):

Fansubbing is a relatively new subtitling-based mediation phenomenon articulated by fans of Japanese animated films or anime worldwide. Born as a children-geared filmic manifestation in the late 1970s, anime has grown and taken over 'live action' films as the dominant form of cinematic entertainment in contemporary Japan.

Regarding the specific characteristics of fansubbing, Chaume (2013: 114) points out that:

One of the most popular programs for making fansubs is Subtitle Workshop, although Aegisub, Pinnacle, and BsPlayer are also used. The fan uploads the subtitled text to the Internet; there are different legal consequences they may incur by doing this, dependent on country. Fansubbing is usually less orthodox than conventional subtitling. Colors can be used; subtitles may appear anywhere on the screen (above or below the speaker, or sideways); they use more characters than conventional subtitles; fonts may vary throughout the film; translations are frequently highly foreignizing; higher reading speeds are demanded than for conventional subtitles.

Romhacking is similar to the above phenomenon but in the area of video game localisation. It shares some characteristics with fansubbing since amateurs choose to localise, mainly, classic video games, on their own terms. According to Muñoz Sánchez (2009: 170):

> Generally speaking, the term – romhacking refers to the process of modifying the ROM data of a video game to alter the game's graphics, dialogues, levels, gameplay or other gameplay elements. A romhacker may have two kinds of projects: editing a game to create new levels and to change characters' attributes; or translating it from one language to another.

Finally, we have crowdsourcing subtitling, which is not done by amateurs like the above mentioned cases, but is usually carried out by professional subtitlers as a form of activism. According to Díaz-Cintas (2014, p. 637):

> [crowdsourcing subtitling] refers to collaborative, nonprofit subtitles powered by specific organizations or teams of volunteers. From a technical perspective, they often use applications or platforms built for the specific purpose of this task and which are very easy to learn and use, as is the case of dotSub (dotsub.com) or Amara (www.amara.org), since they usually do not allow the participants to decide the timing of the subtitles and ask them to concentrate on the linguistic transfer. The process of adding subtitles is fast and easy and no software needs to be downloaded or installed. The final output, clips and subtitles, is shared on open websites like TED (www.ted.com), Khan Academy (www.khanacademy.org) or Viki (www.viki.com).

1.3.4. Current working processes and software

Digital technology has made the subtitling process move far away from previous, tedious subtitling practices and provided professionals with a much more flexible, user-friendly working environment. As Díaz-Cintas (2013: 124) points out 'the most crucial milestone has been the advent of digital technology, opening unforeseen potential for the development of specific subtitling software with new functionality'. The invention of

digital technology had a direct impact on the way subtitling was carried out, since it shifted subtitling from a time-consuming, dull, and rigid procedure to a much more practical and flexible task.

The first software programmes that accommodated professional subtitling needs for the industry were built around the mid-1970s (Díaz-Cintas 2013). The subtitling process used to last exceedingly long and involved a number of devices for a single task. It used to require a computer, an external video player for the VHS tapes with the content for translation and a television monitor to watch the programme. In fact, as Díaz-Cintas (2013, p. 124) states:

> The computer would have a word processor with a special subtitling programme which made it possible to write the subtitles in a form identical to that shown on the television screen, and some subtitlers would also need a stopwatch to perform a more or less accurate spotting of the dialogue.

Nowadays, the above model is considered archaic and outdated, especially since the field of subtitling has moved to cutting-edge software with features such as advanced automatic speech recognition (ASR) systems for online and offline transcription as well as for live subtitling (respeaking), timecode creation, automated detection of shot and scene changes, option to choose between speed, colour and font of subtitles, linguistic checks, and so on. All this compressed in one screen (Díaz-Cintas 2013). One example of such software is WinCaps, developed by Screen Systems. This company has been working on the automation of the time-consuming processes in subtitling. One of their latest advances is automatic transcription to timecode a script, a game-changing functionality which by using automatic speech recognition will produce 'well-timed subtitles from an untimed script' (Screen Systems: online).

According to Diaz-Cintas and Massidda (2020, p. 520):

The capability and functionality of most professional subtitling programs have been improved at an incredibly fast pace in recent decades, with some of the leading manufacturers being EZTitles (www.eztitles.com), FAB (www.fab-online.com), Screen Systems (www.screensystems.tv), Spot (www.spotsoftware.nl) and TitleVision (http://titlevision.dk). Alternatively, some subtitling vendors have developed their own proprietary software programs like Deluxe's EddiePlus (http://bydeluxemedia.com) and SDI Media's Global Titling System (www.sdimedia.com).

Moreover, there are also free subtitling software available online which allow the production of subtitles in many formats like .SRT. Some of these include Subtitling Workshop, DivXL and Media Subtitler, Aegisub, or Subtitle Edit (Díaz-Cintas and Massidda, 2020).

Despite the difference in functionalities within the various subtitling platforms, digital subtitling essentially follows four basic steps: import of the audiovisual content, translation of linguistic elements, synchronisation of the subtitles with the audio and export of the subtitles in the requested format.

Furthermore, it is worth noting that additional translation assistive tools are currently being used during the subtitling process by both freelance subtitlers and language service providers (LSP) in order to increase productivity, quality and consistency (see section 1.3.6.).

1.3.5. Looking towards the future: TM, MT, Cloud and Virtual Reality

TM tools have been in the industry since the 1990. According to Macklovitch (2000, p. 1), a translation memory is considered 'a particular type of translation support tool that maintains a database of source and target language sentence pairs, and automatically retrieves the translation of those sentences in a new text which occurs in the database'. As Smith (2013, p. 1) argues 'traditionally subtitling has fallen outside the scope of

translation memory packages, perhaps as it was thought to be too creative a process to benefit from the features such software offers'. However, this situation has improved significantly since 2013 as there have been a number of changes in translation memory software in order to accommodate subtitling requirements, such as video import and synchronisation while translating (some examples are Transifex, XTM and Transit NXT). Nevertheless, it should be highlighted that, in order to be able to use the functionalities of such software, it is mandatory to obtain a source language file (timecoded script) beforehand in a format that can be imported and parsed by the chosen software; (e.g., .SRT).

Regarding machine translation (MT) tools, as Hutchins & Somers (1992, p. 1) argue, 'the mechanisation of translation has been one of humanity's oldest dreams'. In fact, former machine translation projects received enormous amounts of funding for creating a fully automated machine that could translate from one language to another (for example, the Caterpillar project of 1991 at CMU).

Machine translation is a multidisciplinary field, since it combines knowledge from distinct areas: from artificial intelligence to computational linguistics. According to the European Association for Machine Translation (EAMT) (n.d., online), 'machine translation (MT) is the application of computers to the task of translating texts from one natural language to another'.

Nowadays, there are MT systems that can be standalone downloadable applications, like PROMT; cloud-based platforms that allow the building of MT engines, such as KantanMT; or even MT components integrated in translation software like Wordfast Anywhere or SDL Trados Studio in the form of API (Application Programming Interface) connections. In fact, the integration of MT in translation software has been increasing. Thirteen years ago, Lagoudaki (2008, p. 263) noted that: 'More and more Translation Memory (TM) systems […] are fortified with machine translation (MT) techniques to enable them to

propose a translation to the translator when no match is found in his TM resources'. Although nowadays the aforementioned systems have not changed radically in terms of functionalities, there are a lot more options when it comes to the connection of the TM software with MT tools. Nevertheless, if we focus solely on the subtitling practice, as Bywood, Georgakopoulou and Etchegoyhen (2017, p. 494) mention, there is an 'apparent lack of interest from the subtitling industry in embracing MT technology, compared with the traditional text localisation industry'.

MT engines are usually developed for translation purposes and not for subtitling purposes. However, even for repetitive texts that need translation, MT engines require a rather long period of time in order to produce good results because of the need of constant maintenance. In addition, they need a big amount of aligned data (monolingual and bilingual) in order to establish a good baseline of the context of the material to be translated. In addition, the source text needs to be properly segmented in order to avoid ambiguity and cause confusion to the engine. Also, acronyms cause confusion within MT engines; something that requires manual or semi-manual effort by linguists in order to limit this issue by building acronym glossaries.

Machine translation has created the need for new tasks for linguists that is, post-editing. Moreover, according to the commercial MT engines that exist at the moment, it is true that they hardly can account for the number of characters that is allowed in a subtitle (according to the industry reading speeds), which basically makes the job of the post-editor even more time-consuming as the entire translation may need to be re-adjusted. As Bywood, Georgakopoulou and Etchegoyhen (2017 p. 496) advocate: 'Various factors have been shown to influence productivity gain/loss when MT is used in the translation workflow, including type of ST input, language pair, MT quality, and translator proficiency in post-editing'.

It should be noted that as it is shown at the moment by the industry, only LSPs tend to buy MT engines in order to maximise their delivery rates and profit for clients with repetitive texts (usually medical and technical documents). Freelance translators or subtitlers do not seem to invest in buying and training MT tools yet, although some work as post-editors. It should also be highlighted here that the practice of post-editing subtitles can arise various debates. In fact, a glaring example is the subtitling of the Netflix series "Squid game" into European Spanish. According to Subtle (Subtitlers association, 2020), as translated by the International Association of Professional Translators and Interpreters (IAPTI):

> ATRAE[14] has released a statement against the use of post-editing for subtitling after learning that the record-breaking series "Squid Game" was subtitled in Spanish using post-edited machine translation. They urge the major audiovisual platforms to eliminate such practices and thereby stop damaging a sector that is already vulnerable.

In regard to the usage of MT in subtitling, a few European projects that dealt with the optimisation of subtitling through MT solutions have existed in the past: MUSA, eTITLE and SUMAT (see analysis in section 1.3.6.3.). Generally speaking, MUSA was a very complex system with an integrated MT engine, translation memories, term substitution components (MUSA: online) and a high-quality speech recognition system (Institute for Language and Speech processing: online). This project carved the path for future research since it showed that 'an architecture for a multilingual subtitling system is implementable' (Piperidis *et al.* 2004: 17).

Then, there was the eTITLE project. Bywood, Georgakopoulou and Etchegoyhen (2017: 495) offer the following explanation for it:

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[14] Asociación de Traducción y Adaptación Audiovisual de España

Another two-year European project, eTITLE (2003–2004), also attempted to build a system that would integrate tools such as speech recognition for text to audio alignment purposes, text condensation, TMs, and MT in order to aid subtitlers in their work. Melero, Oliver, and Badia (2006) worked in Catalan, Spanish, English, and Czech. They did not train their own MT system with relevant data but simply resorted to freely available systems. A small productivity gain evaluation in the most difficult language of the project, Czech, demonstrated a 17% time benefit from using MT versus human translation, despite the poor performance of the MT with regard to Czech morphology (Melero, Oliver, and Badia, 2006, p. 17).

Regarding the SUMAT project, according to Petukhova *et al.* (2012: 21), it aimed at building an online translation service that would be bidirectional 'for nine European languages combined into 14 different language pairs'. The main goal of this project was to speed up the translation processes of subtitling companies on a large scale by semi-automating subtitling through a statistical MT engine (Petukhova *et al.*: 21). The SUMAT project focused on the need of the industry to accelerate the subtitling process as much as possible. A very important conclusion that was drawn from the results of this project was the fact that even after so many years of research in the field of MT, MT still has not gained its place in the subtitling process in the industry yet. In fact, not even other automated tools like translation memories are part of the subtitling process (Del Pozo 2014).

As for other future technological trends affecting subtitling, by the 21st century the world has already incorporated the use of the Cloud in their workflow (personal or professional, one example being Google Drive). Cloud subtitling is also a reality through professional cloud-based subtitling toolkits such as OOONA. OOONA was founded in 2012 (OOONA: online) and currently it is the only cloud-based subtitling software on the market, making it compatible with any operating system. It offers all the functionalities of a desktop-based subtitling software, including video import, subtitle synchronisation, transcription,

conversion of any subtitling file, burning and encoding of subtitles on videos, and so on. In addition, the Translation option allows for the creation of automated timed templates where the subtitler can focus on the translation task and import or export the second language subtitles in any format. Also, the subtitler can perform automated quality assurance checks with minimum human effort. Generally speaking, cloud-based subtitling has a lot of potential as it can transform the subtitling process into a more collaborative process with better quality control and faster performance.

Another trait of the 21st century is the use of virtual reality (VR). Subtitling has already been used in virtual environments as a way to enhance accessibility in immersive environments, such as VR. Such project is the European ImAc project (mentioned above) which, according to Hughes, Climent and Pesch (2019: 216) deals with 'how accessibility services can be integrated with 360° video as well as new methods for enabling universal access to immersive content'. In addition, based on Hughes, Climent and Pesch (2019: 216) '[the] ImAc project proposes guiding methods for subtitling in immersive environments'. ImAc basically is the first project that uses subtitling in such a creative way, especially since it tried to encompass all audiences to offer equal access to AV material which is not always feasible. Other studies on this area include the aforementioned work of Arrés López (2019) as well as Rothe et al. (2018) who researched the ideal position of subtitles in the cinematic VR in order to reach optimal scores in terms of three parameters: presence, less sickness and lower workload.

1.3.6.   Specific functionalities in various TM and MT tools for subtitling

Section 1.3.6 presents an overview of some specific functionalities in various TM and MT tools which could be used for subtitling. It should be noted that all the screenshots that are used were taken by author of the dissertation, unless otherwise stated. Section 1.3.6.1 presents various translation memory software for subtitling and section 1.3.6.2. presents a few options regarding cloud-based localisation platforms for subtitling. Section

1.3.6.3 illustrates various MT tools that can be used for subtitling. Section 1.3.6.4. presents cloud-based tools for subtitling.

1.3.6.1.   Subtitling and Translation Memories

Garcia (2009, p.3) argues that 'the Information Revolution did not just generate more work for translators, but also new tools aimed at boosting their productivity'. One of these tools is translation memories (TM). According to Macklovitch (2000, p.1) a translation memory is considered 'a particular type of translation support tool that maintains a database of source and target language sentence pairs, and automatically retrieves the translation of those sentences in a new text which occur in the database'.

TM tools have been in the industry since 1990. As Hutchins (2003, p.14) argues, 'large-scale translation broadened with the appearance on the market of translation workstations (or translator workbenches)'. Translation memories have been successfully in the market for a number of years not only because they are user-friendly tools but also because they are efficient and effective in maintaining terminology and style. Also, they are easily incorporated with other tools like termbases (TB), MT engines, project management functionalities, localisation and concordance search tools.

As Smith (2013, p.1) argued 'traditionally subtitling has fallen outside the scope of translation memory packages, perhaps as it was thought to be too creative a process to benefit from the features such software offers'. However, this situation has improved positively since 2013 as there have been a number of changes in translation memory software in order to accommodate subtitling requirements, such as video import and synchronisation while translating. However, it should be highlighted that in order to be able to use the functionalities of such software, it is mandatory to obtain a source language file (timecoded script) beforehand in a format that can be imported and parsed

by the chosen software; e.g. .srt[15]. Four such software (Transit NXT, MemoQ, SDL Trados and Wordfast Pro) will be discussed below with regards to their functionalities as far as subtitling is concerned.

1.3.6.1.1 Desktop translation software & digital subtitling: Transit NXT

STAR UK is a translation service company which developed the software Transit NXT and equipped it with some functionalities that cater to the needs of a professional subtitler. Transit NXT offers the option of importing an audiovisual file while translating (figure 8) the target language script.
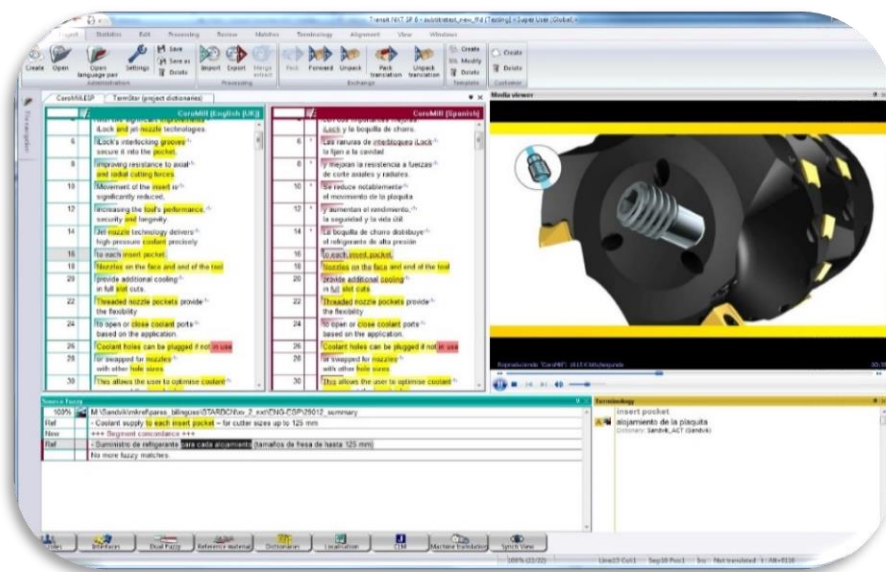
Figure 8. Translating .srt files in Transit NXT translation editor

'The subtitler of the source language will export the finished template to .srt format or .txt format which is then imported into Transit NXT' (Smith, 2013, p.1). Since a specialized filter for subtitling is added in order to protect the timecodes of the subtitles (Smith, 2013), subtitlers can store their work in a TM tool and use it accordingly for the needs of

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[15] .srt is the most common form for subtitles

each project. Also, Transit NXT's segmentation underlying system allows the subtitles to be treated as whole translation units (TU) with inline tags and thus does not split them inconsistently.

Moreover, not only a video can be added in Transit NXT but also its synchronization with the Transit translation editor is possible (Smith, 2013). When the cursor is placed on the segment for translation, the Media viewer 'automatically cues the video to play from the correct point, so you can hear the original speech in context. Alternatively, you can manually control the media player to play back sections of video as required.' (ibid, 1). Hence, these features make Transit NXT unique in a way since no other translation software allows the import of multimedia files and their synchronization with the translation editor.

On the other hand, although Transit NXT is a very powerful tool, the need to use subtitling software for timecoding the subtitles is still not covered. In the case of freelance subtitlers this is a great loss since the purchase of different software may not cover its initial costs.

1.3.6.1.2. Desktop translation software & subtitling: MemoQ, SDL Trados Studio and Wordfast Pro

MemoQ, SDL Trados Studio and Worfast Pro are a few other of the most well-known desktop translation software. They all function highly similar as all of them allow only the creation and use of TM while translating parsable subtitling files (e.g. .srt).
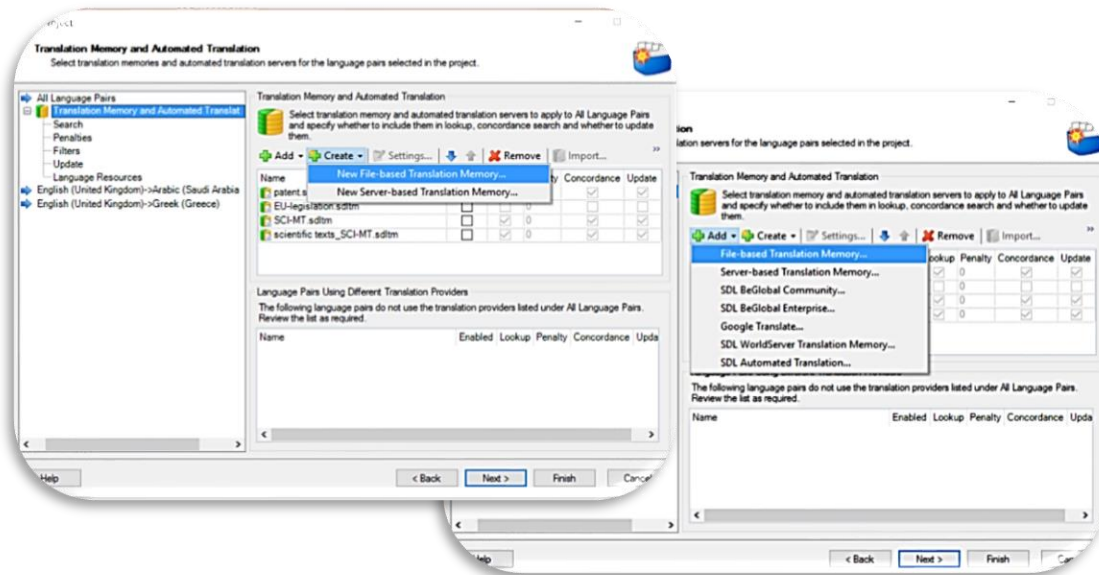
Figure 9. Creating or adding a TM in SDL Trados Studio
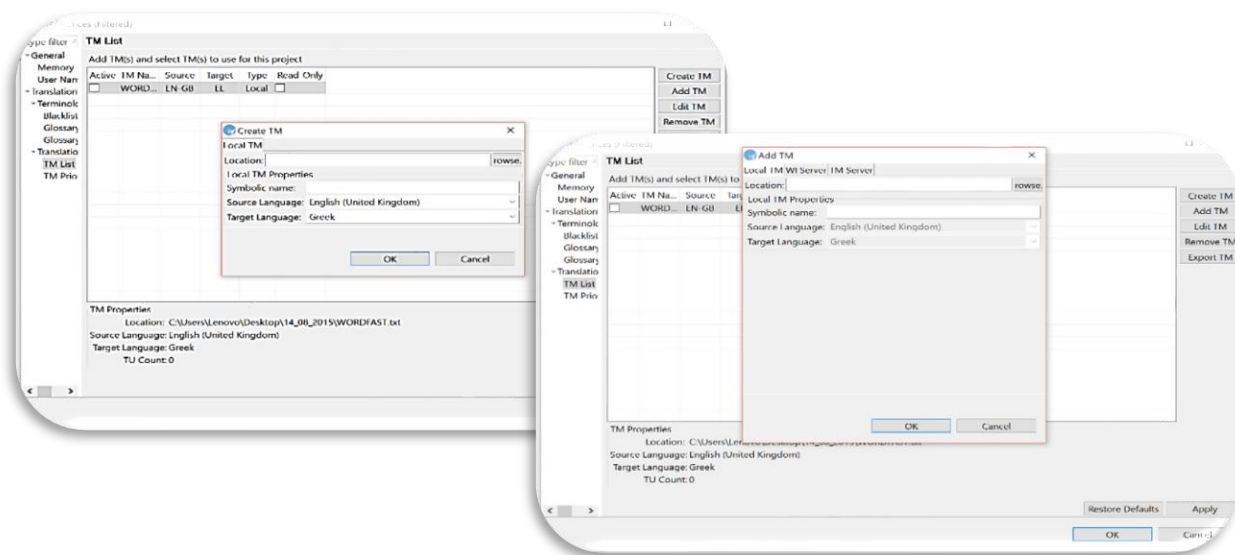
Figure 10. Creating or adding a TM in Wordfast Pro 3
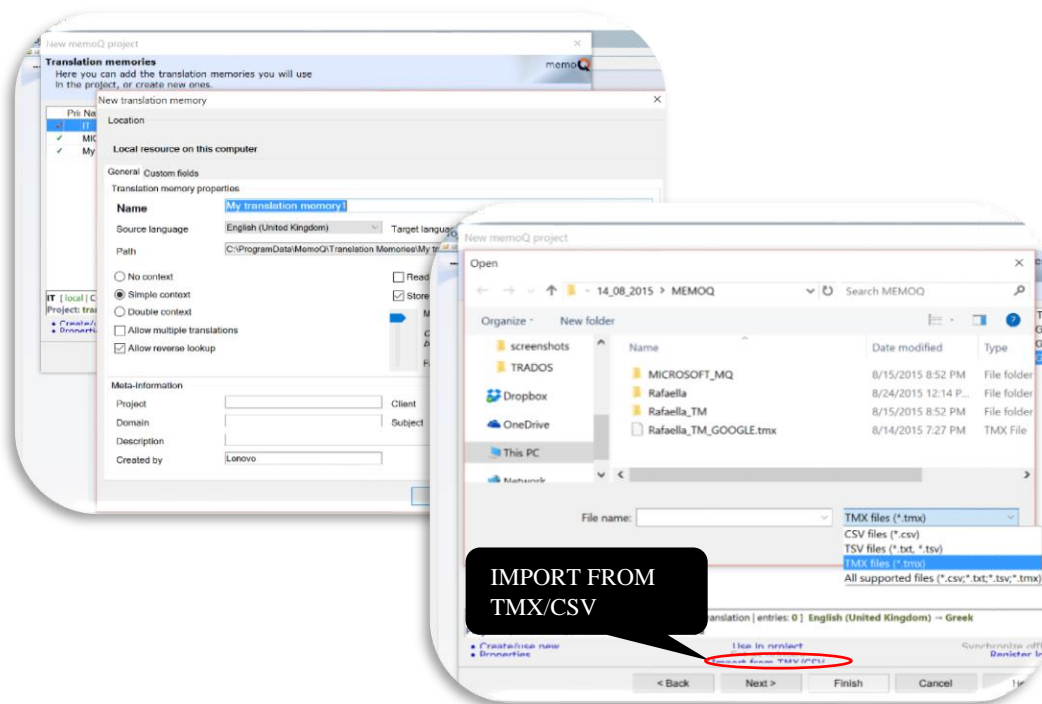
Figure 11. Creating or importing a TM in MemoQ

As it has been said, the above software does not offer the option of adding a video file while translating (unlike Transit NXT) nor any synchronization features for timecoding the subtitles. They are useful however in terms of storing translated content and building a good terminology database as long as there is a source file and there is no need to synchronise. However, the issue of financial viability remains.

1.3.6.2.   Cloud-based localisation platforms: Transifex and XTM

Translation memory software are not the only software where a TM can be added. Translation memories can also be created/imported in localisation platforms. Two of the most important localisation platforms, namely Transifex and XTM, will be analysed below in terms of their functionalities as far as the subtitling process is concerned.

Transifex is a professional cloud-based platform, which although it is mainly used for localisation, it also offers the option to add a TM and upload multimedia files; while translating subtitling files. In order to add a personal TM in the project for translation, the file must be in .tmx format (in order to export a TM in .tmx format, a TM software is required). An example of the import of multimedia files in Transifex is seen below.
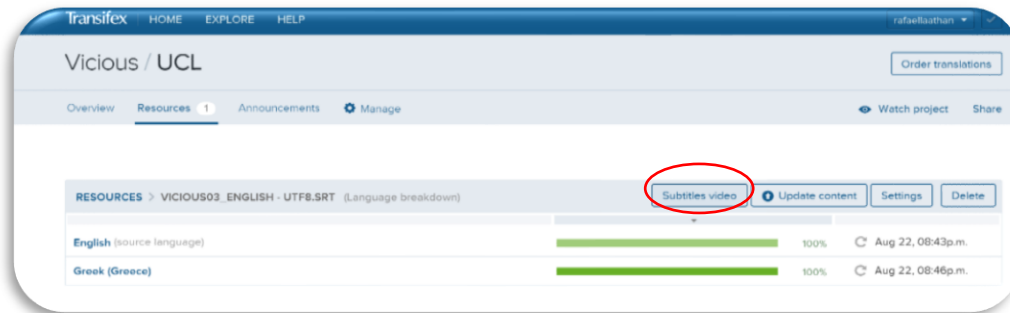
Figure 12. Uploading multimedia files in Transifex

In Transifex, the use can add a pre-existing TM. The suggestions from the TM are inserted in the Suggestions tab that is found in the right-hand side of the translation editor (figure below).
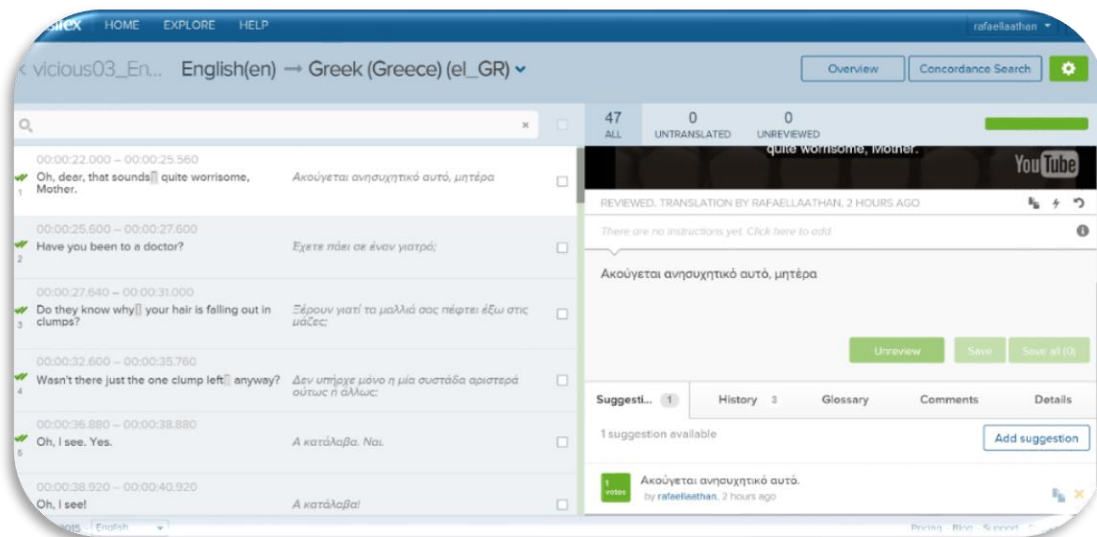
Figure 13. Suggestions from the TM in Transifex

Moreover, in Transifex, instead of creating a new TM each time, translation units are inserted automatically to an online TM while translating, which can be downloaded as a .tmx file (figure 14).
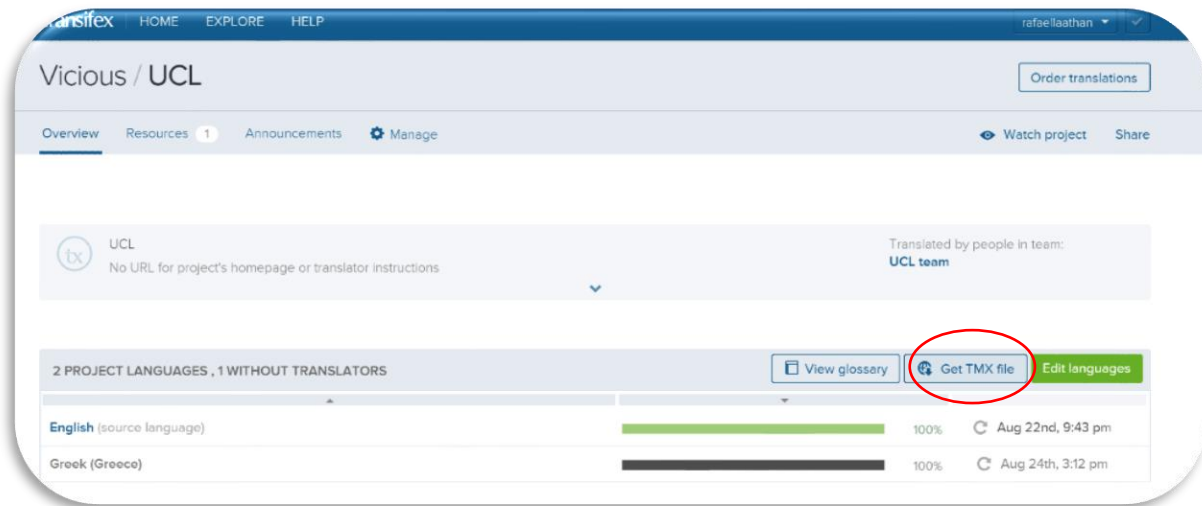
Figure 14. Acquiring TMX files in Transifex

Last but not least, Transifex offers a concordance search feature. Concordance search refers to the navigation inside the TM which is particularly useful if the user is looking for the translation of specific strings. The concordance search is a standardised feature of the translation software but not very common in cloud-based platforms.

Moving on to a different cloud-based localisation platform, XTM also provides very interesting features for subtitling purposes that include the option to import personal TMs. XTM has a very advanced TM component. Although not specifically designed for being used for .srt files (since the option to upload .srt files was only added in 2014) , the TM component in XTM includes not only concordance search inside the TM but also in the search engine *Google* and XTM terminology (figure below). The concordance search in Google and terminology is beneficial for subtitlers since it is a common practice to resort to the World Wide Web for clarification of cultural-specific item or a term.

Moreover, another useful feature for subtitling that XTM offers is the duplication of TM entries. According to XTM's manual (2015, p. 169), 'XTM will create a duplicate when:

a) the target text that is different from that in the TM;
b) the previous or next sentence checksums are different from that stored in the TM.

This feature is valuable for subtitlers since frequently the same sentence may be translated in a different way in a different project; hence usually one of the two translations is either overwritten or not imported in the TM. Of course, this feature can be disabled by the administrator of the project but, in my opinion, it can be proven very fruitful for subtitling.

Furthermore, in XTM, TMs are not created by the user but rather the confirmed translation units (TU) are imported into an online TM which is then exported as .tmx or .xls file (figure below).
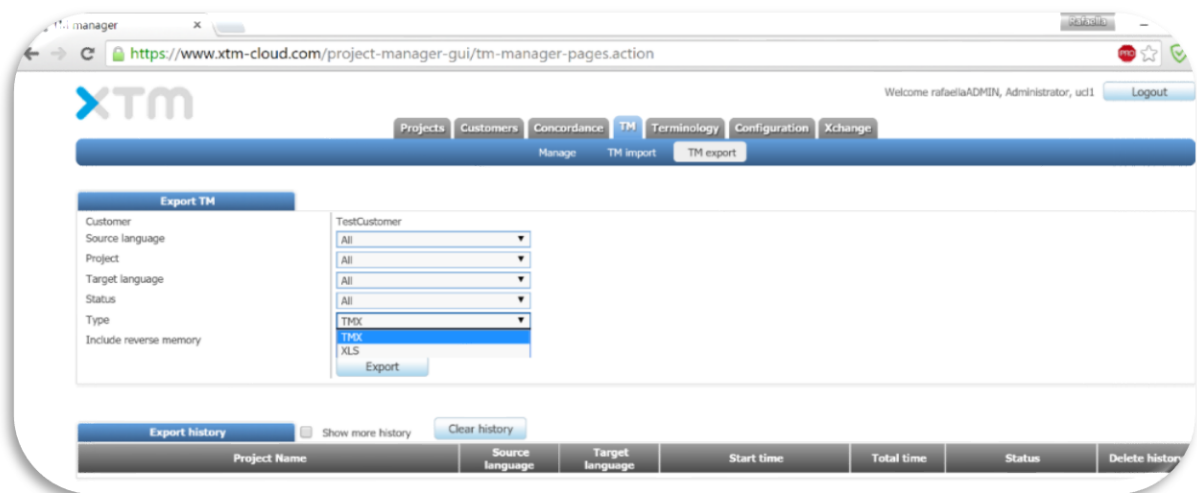
Figure 15. Exporting TMs in XTM

In order to add a personal TM in the platform, users have to select the TM tab and choose *TM import*. Following the same logic as Transifex, this platform accepts only .tmx files (figure below).
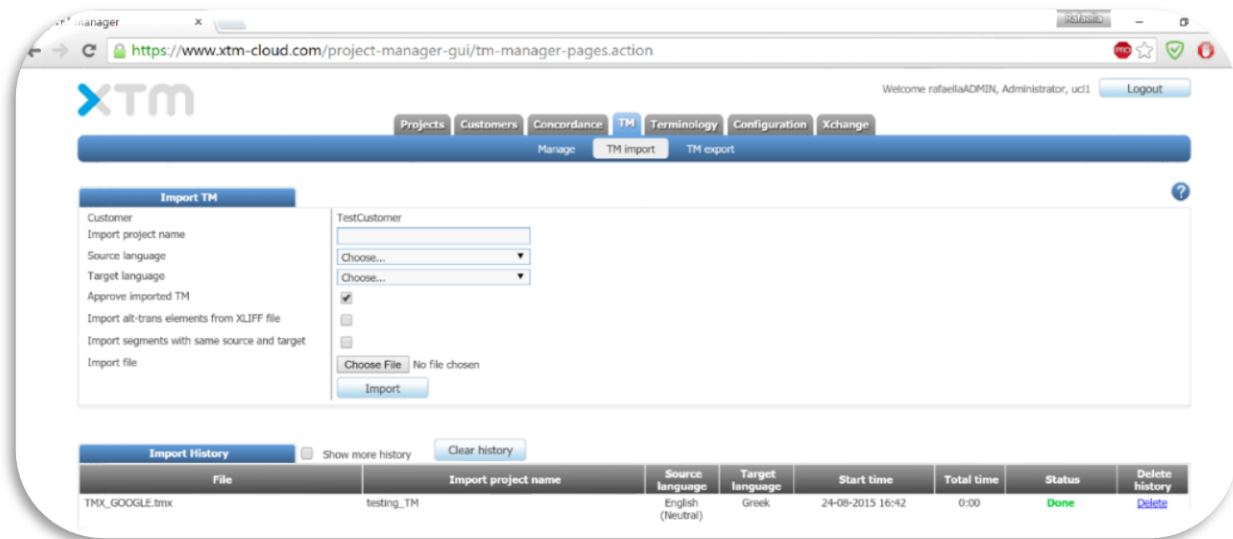
Figure 16. Importing TMs in XTM

Last but not least, although XTM does not offer the option to upload video files nor any synchronization feature that will allow the production of timecodes for the translated .srt file, it is still a good tool for maintaining a consistent database in the same way that MemoQ and SDL Trados is.

1.3.6.3. Digital Subtitling & Machine Translation

As Hutchins and Somers (1992:1) argue, 'the mechanisation of translation has been one of humanity's oldest dreams'. In fact, former machine translation projects received enormous amounts of funding for creating a fully automated machine that could translate from one language to another; for example, the Caterpillar project of 1991 at CMU.

According to Hutchins and Somers (1992:1):

> [..] during the TMI-92 conference in Montreal, Jaime Carbonell gave some details of the contract signed in May 1992 between Caterpillar, the world's largest manufacturer of earth-moving equipment, and the Centre for Machine Translation at Carnegie-Mellon University for the development of a fully automatic translation system. The five-year multimillion dollar contract had been concluded after an extensive evaluation by Caterpillar […].

Machine translation is a multidisciplinary field, since it combines knowledge from distinct areas; from artificial intelligence to linguistics. According to the European Association for Machine Translation (EAMT) (online), 'machine translation (MT) is the application of computers to the task of translating texts from one natural language to another'.

MT systems can be categorised according to their architecture. For example, there are Rule-based Machine Translation (RbMT) systems, which depend on the linguistic rules that a human creates and inserts inside the system. In RbMT systems, very large amounts of bilingual and monolingual lexicons have to be manually incorporated (Safaba: Translation innovation, online). Also, according to Safaba (online), there are Statistical Machine Translation systems (SMT) which:

> […] use computer algorithms that explore millions of possible ways of putting smaller pieces of text together, in an effort to produce a translation that looks best. Statistical translation 'models' consist of translations of words and phrases along with their statistical likelihood. These are learned automatically from previously translated text, creating a bilingual 'database' of translations. New sentences are translated by a program (the decoder), which matches the source words and phrases with the database of translations, and searches the 'space' of all possible translation combinations. A variety of fitness and preference scores are used to model a total score for each of the millions of possible translation candidates; an algorithm then selects and outputs the best scoring translation.

In addition, there are hybrid systems that combine two of the above infrastructures. 'Hybrid architectures intend to combine the advantages of the individual paradigms to achieve an overall better translation' (Hunsicker et al., 2012, p.312).

At the moment, there are MT systems that can be standalone downloadable applications, like PROMT, cloud-based platforms that allow the building of MT engines, such as KantanMT, or even MT components integrated in translation software, like Wordfast Anywhere or SDL Trados Studio in the form of API connections. In fact, the integration of MT in translation software seems to be increasing nowadays. According to Lagoudaki (2008, p. 263), 'more and more Translation Memory (TM) systems […] are fortified with machine translation (MT) techniques to enable them to propose a translation to the translator when no match is found in his TM resources.'

MT has been hardwired in the translation industry as it can be seen by the various companies that sell MT solutions and knowledge at high prices. The purpose is to optimise the translation process, both in terms of time and effort, as well as keep a high level of terminology consistency. In fact, a field that requires this kind of optimisation is audiovisual translation, and more specifically subtitling. Subtitling is a good candidate because it does not posit the challenges that dubbing does, as it is not based on the prosody and speed of the speech. Also, '[…] subtitling is considered to be one of the most expensive and time-consuming tasks an interested company needs to perform, since it is mainly carried out manually by experts. Typically, a 1-hour program requires around 7-15 hours of effort by humans' (MUSA, online). Therefore, as it can be inferred, subtitling is extremely demanding and time-consuming as a process, which could be benefited greatly by the aid of automated or semi-automated tools in order to increase its productivity. In fact, two projects (the MUSA and SUMAT project) that focused on the development of MT engines for subtitling will be briefly discussed below.

a. *EU-funded initiatives: The MUSA project*

The MUSA (MUltilingual Subtitling of multimediA content) project started in 2002 and lasted until 2005. It was a funded initiative of Information Society Technologies (IST) whose goal was 'the creation of a multimodal multilingual system that converts audio

streams into text transcriptions, generates subtitles from these transcriptions and then translates the subtitles in other languages' (MUSA, online:1). A screenshot of the platform of this project is provided below. In addition, English, French and Greek demos can be found on the official website[16] of the project.
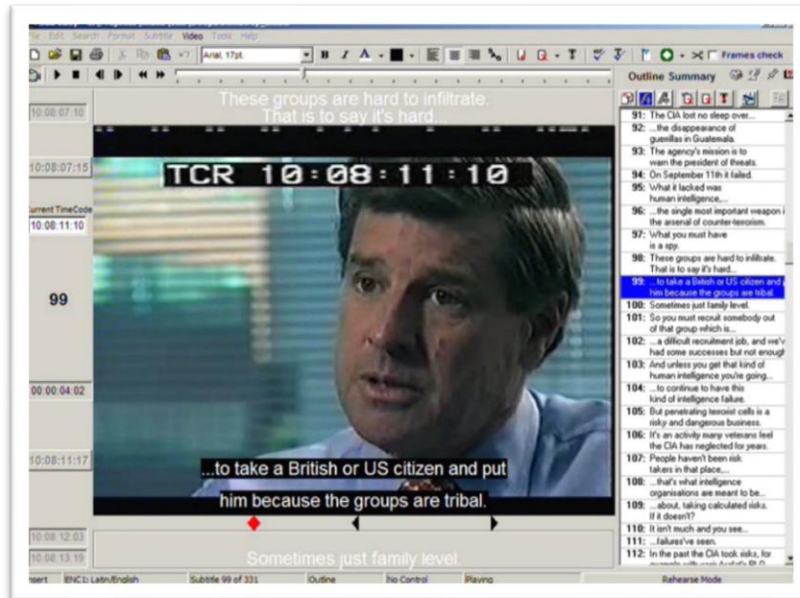
Figure 17. The platform of the project MUSA

Based on Piperidis, et al. (2004), the MUSA project supported three European languages: English (as both a source and a target language) French and Greek (as target languages), and the primary audiovisual data involved BBC TV documentaries and news-related television programmes (ibid.).

Generally speaking, MUSA was a very complex system with an integrated MT engine, translation memories, term substitution components (MUSA, online) and a high-quality speech recognition system (Institute for Language and Speech processing, online). However, Piperidis, Demiros and Prokopidis (2004) discussed the project's low-quality output since the acceptability of the subtitles struggled to reach the 50%. It should be

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[16] (http://sifnos.ilsp.gr/musa/demos.html)

mentioned, however, that the grammaticality and semantic acceptability of subtitles with targeted compression reached 70% (ibid.). As Piperidis et al. (2004, p.17) argued, 'a more simple computational model is feasible' and, in my opinion, perhaps more preferable. Taking everything into account, this project carved the path for future research since it basically showed that 'an architecture for a multilingual subtitling system is implementable' (Piperidis et al., 2004, p.17).

b. EU-funded initiatives: The SUMAT project

The EU-funded MT project for subtitles called SUMAT ran between 2011 and 2014. According to Petukhova et al. (2012, p. 21), the project aimed aybuilding an online translation service that would be bidirectional 'for nine European languages combined into 14[17] different language pairs'. The main goal of this project was to speed up the translation processes of subtitling companies on a large scale by semi-automating subtitling through a statistical MT engine (ibid,21). A figure showing the interface of this online translation system is provided below (Echezarreta, 2014).
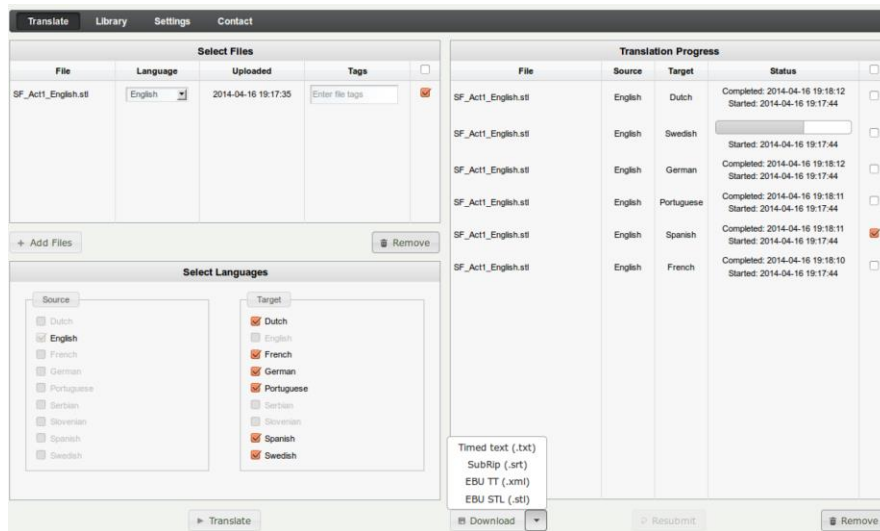
Figure 18. Online service: Translate Page (Echezarreta, 2014:30)

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[17] The targeted language pairs were: English-Dutch; English-French; English-German; English-Portuguese; English-Spanish; English-Swedish and Serbian-Slovenian" (Petukhova et al., 2012:21).

The results of this project were analysed according to five metrics (BLEU, METEROR, TER, EQUAL, Lev5). Hovy, King and Popescu-Belis (2003, p.4) argue that metrics are 'internal and/or external attributes' of the MT software quality characteristics. A screenshot of the results is provided below.
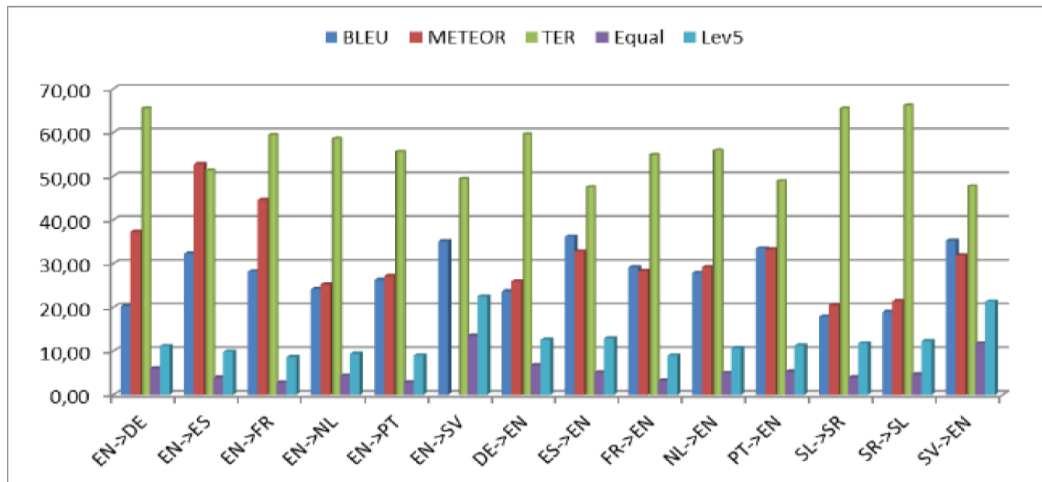
Figure 19. Final results of the project (Echezarreta, 2014, p.20)

Papineni et al. (2002, p.314) explain that IBM's BLUE score metric, stands for 'BiLingual Evaluation Understudy' and that it is basically 'a virtual apprentice or understudy to skilled human judges'. The higher the percentage the closer to human translation the output is. The above BLUE percentages are very low, and hence differ distinctly from what a subtitler would produce. For example, the Spanish into English language combination, that has the highest percentage, reaches only 36% whereas the second highest combination (English into Swedish) achieves around 34%.

In addition, a very useful measurement is the TER score which calibrates the quality of the MT engine. According to KantanMT (online), TER is an acronym for 'Translation Error Rate […] and it measures the amount of editing that a translator/subtitler would have to perform to change a translation so it exactly matches a reference translation'. The TER score is extremely useful because the translator/subtitler can have a realistic estimation

of the time that needs to be invested in the project. It should be noted that the TER scores should always be low, although in the above chart they are very high, they even reach up to 65-67% (English-German), which means that a lot of editing is required in order to obtain a translation that matches a human translation.

According to Agarwal and Lavie (2008:1), the METEOR metric made its appearance in 2004 and it was developed in order to ameliorate 'the correlation with human judgement of MT quality at the segment level'. Its basic function is the estimation of the translation 'by computing a score based on explicit word-to-word matches between the translation and a given reference translation' (ibid,1). Like in the case of the BLEU metric, the aim of the METEOR metric is to achieve high percentages. The percentages here are better than those of the BLEU metric since the English-Spanish combination reaches 51%.

Furthermore, based on Volk's (2009) definition, the Equal metric compares the percentage of MT output with a reference text. The above results are very poor with the highest percentage to reach 12% (English-Swedish). In addition, Lev5 signifies the Levenshtein distance metric which calculates 'the editing distance of at most 5 basic character operations' (deletions, insertions, substitutions) from the human translation (ibid,125). In this case, Lev5 scores are also poor since the highest percentage reaches 21% (English-Swedish).

The SUMAT project focused on the need of the industry to accelerate the subtitling process as much as possible. A very important conclusion that was drawn from the results of this project was the fact that even after so many years of research in the field of MT, MT still has not gained its place in the subtitling process in the industry yet, in fact, not even other automated tools like translation memories are part of the subtitling process (Arantza del Pozo, 2014). This was also confirmed by Lambourne[18] (2015), who argued from his experience, that in Denmark translators still feel threatened by CAT tools. This is

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[18] The former Screen Subtitling System's Business Development Director

quite surprising, especially if we take into consideration how time-consuming the subtitling process is.

The SUMAT project (which was completed in 2014) is an online system whereas the MUSA project (which is older since it finished in 2004) was designed as a PC-based software. This is an indication that subtitling starts to shift to online and cloud-based platforms. As a matter of fact, the integration of MT to online multilingual platforms is gradually becoming a standardised feature. In almost every cloud-based translation platform the option to use an MT engine provider is being offered.

No records of a professional commercial subtitling system that incorporates only automatic translation for translating subtitles could be found during this research. The development of such state-of-the-art language engines depends heavily on the demands of the market. According to Lambourne (2015), 'the cost and effort in [implementing such advanced systems] compared to the (tiny) amounts that subtitling companies these days can afford to pay for systems may rule it out however. Hard commercial facts of life unfortunately'.

However, the translation of subtitling files by a MT engine is possible nowadays since this option is offered not only in PC-based subtitling software like SRT translator but also in cloud-based localisation platforms like Transifex and XTM. In addition, translating subtitles with the use of MT has been a feature of traditional desktop-based translation software, like MemoQ, SDL Trados Studio and Wordfast Pro, for a number of years. An analysis of the features of each type of software is given below.

1.3.6.3.1.   Subtitling Software with MT integration: SRT Translator

The freeware PC-based SRT translator is the only desktop-based subtitling software that was found during this research that incorporates the option of using MT. To be precise, it uses the Google MT engine as well as Google Speech.

Despite the standardized features of every subtitling software, it also offers a few more options. Such examples are the SubSync tab, 'which synchronizes the audio with the subtitle by defining the start and end times' (Softpedia, 2015:1) and the Diff tool, which allows the comparison between two .srt files of the same TL (Softpedia, 2015); allowing subtitlers/companies to compare and contrast one translation to another. Also, a company can use it to compare subtitlers' work with the output of a MT engine and hence be aware whether their subtitlers use MT and to what extent (figure below).
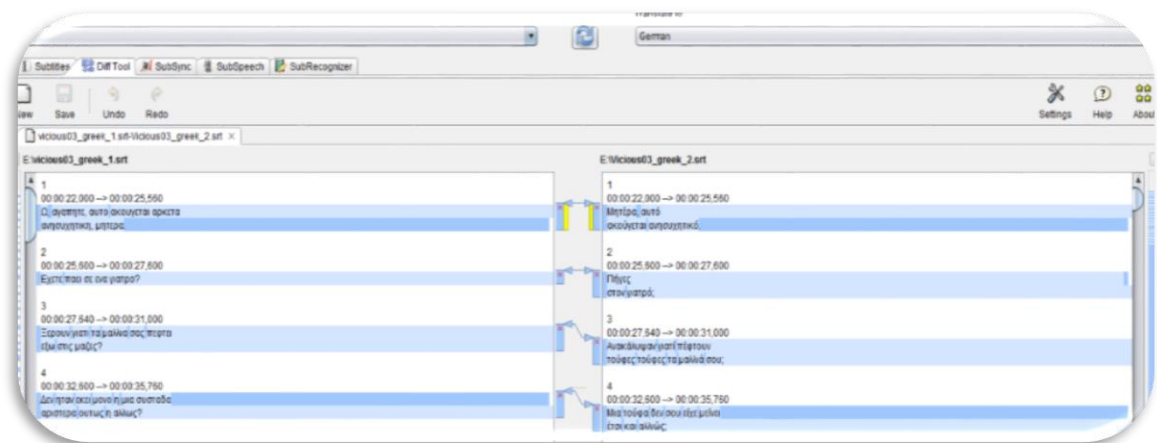
Figure 20. The Diff Tool in SRT Translator

Moreover, SRT translator offers the SubRecognizer feature which creates a timecoded source script (figure 22). This feature was tested by me by using an episode of the series *Vicious*. As it can be seen in figure 21, the subtitles are nonsensical and in many times they do not contain the appropriate amount of information.
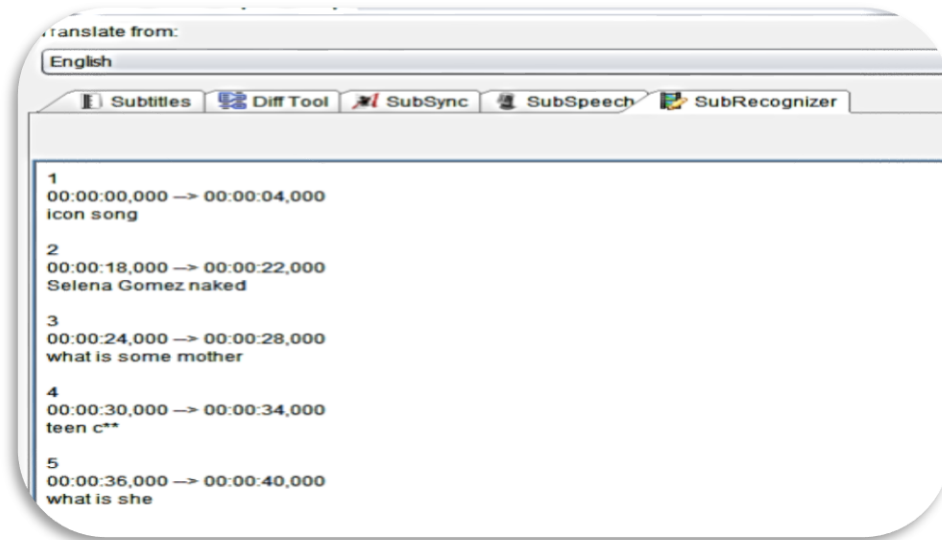
Figure 21. The SubRecongizer feature in SRT Translator
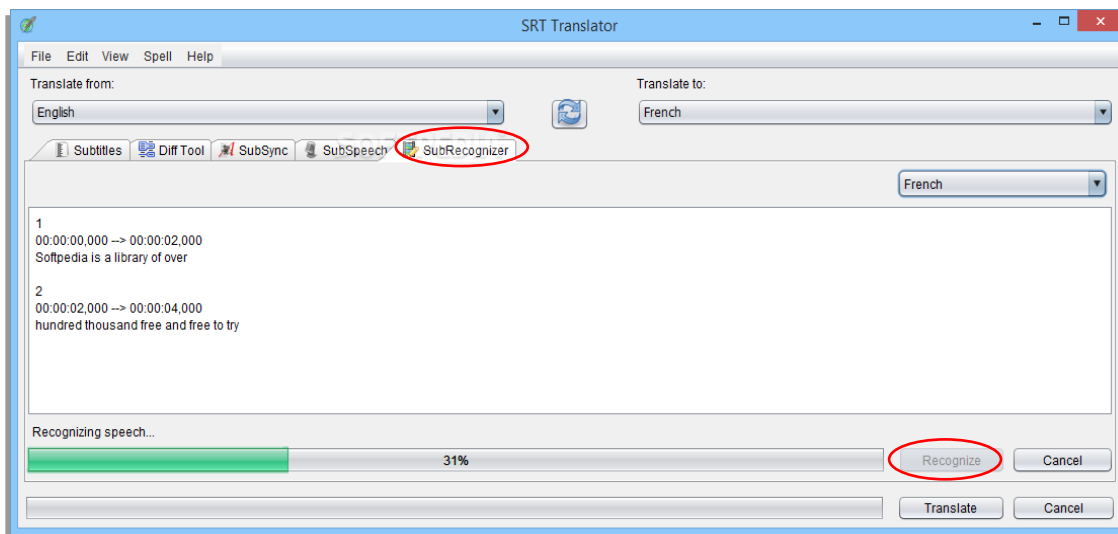
Figure 22. Using the SubRecogniser feature in SRT Translator

SRT translator is a tool that integrates quite advanced features considering that it is an open-source (GPLV3 licence[19]) subtitling tool. However, being freeware and builtonly by using the programming language Java, it has a lot of bugs that affect severely its

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[19] GPLV3 refers to the third version of the General Public licence which was published on the 29th of June 2007. According to this licence, free software can be used by anyone for any purposes as long as any changes are not made (Smith, 2007)

performance. For example, it may shut down unexpectedly or give meaningless output. In addition, the SubSpeech feature does not seem to work properly. Nevertheless, this tool remains very useful for creating a first subtitling draft since it does not have any legal restrictions, as far as the usage of the machine translated subtitles is concerned, it is free and user-friendly.

1.3.6.3.2. Translation memory software and MT integration: MemoQ, SDL Trados & Wordfast Pro

As mentioned, MemoQ, SDL Trados Studio and Wordfast Pro fall into the category of translation software, which basically signifies that they incorporate components like TMs, termbases (TB), MT providers, project management, terminology extraction and localisation tools. In relation to subtitling, translation software is useful because MT engine providers can be employed while translating subtitling files. The choice for machine translation in subtitling projects is up to the subtitler as sometimes it can help with regards to having a first draft (especially in the case of difficult terminology) and sometimes it can mislead and confuse the subtitler. Generally speaking, MT engines can be enabled easily in all the above software (as seen in the screenshot below) but not without a financial cost.
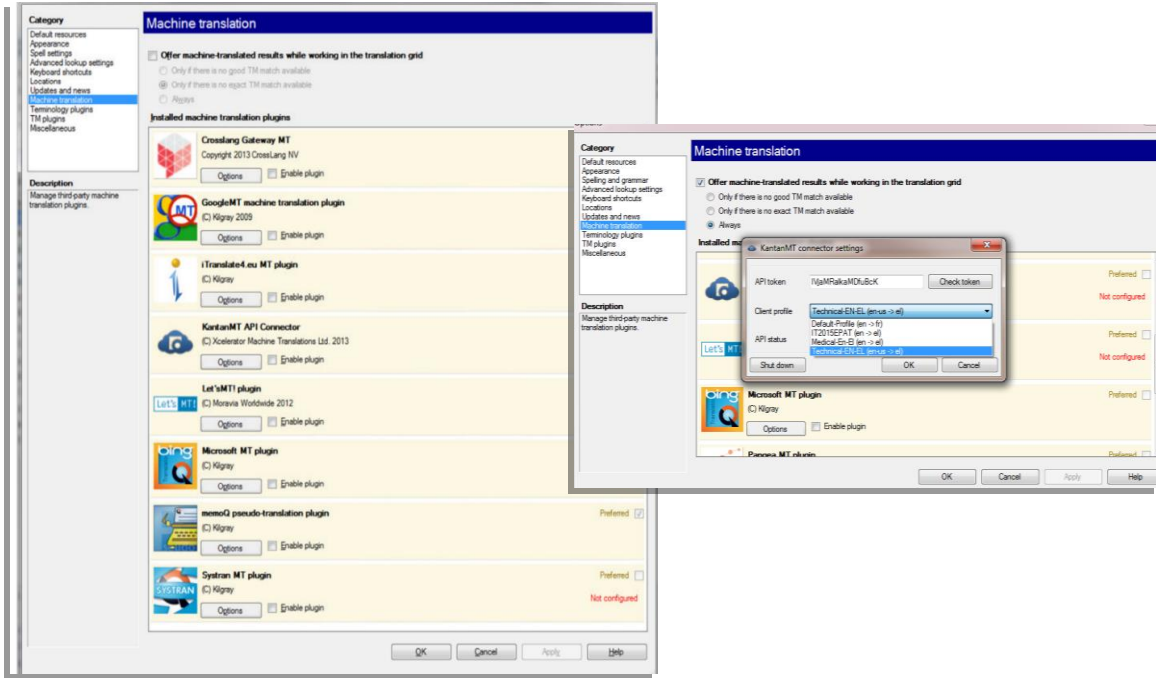
Figure 23. Using different MT engines for translating .srt files in MemoQ
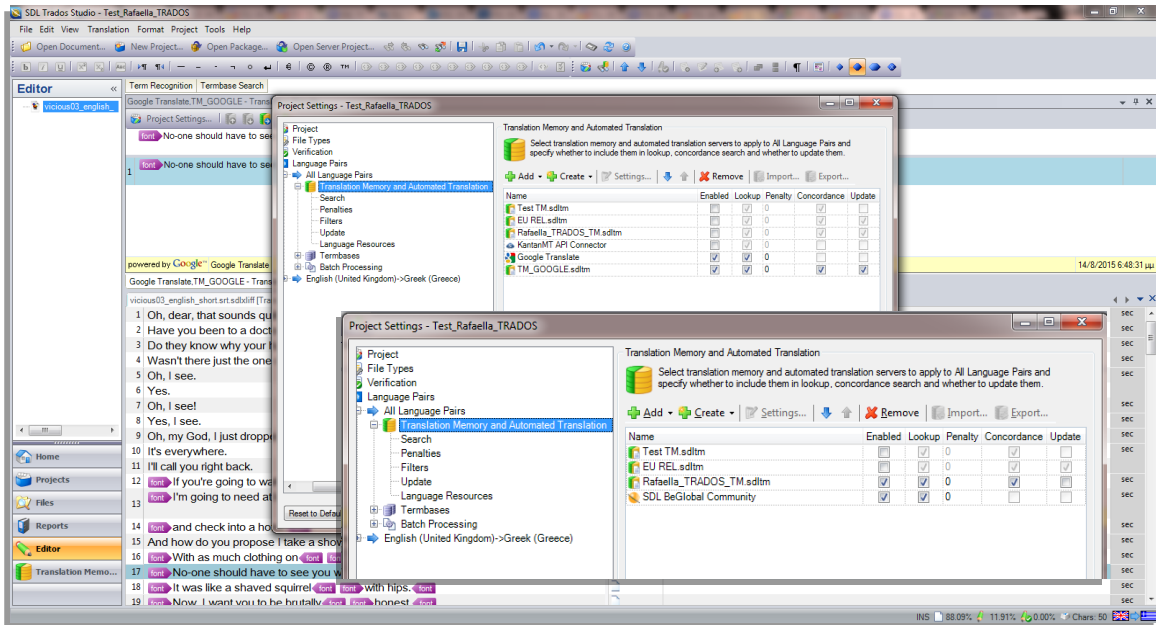
Figure 24. Enabling different MT engines for translating .srt files in SDL Trados Studio
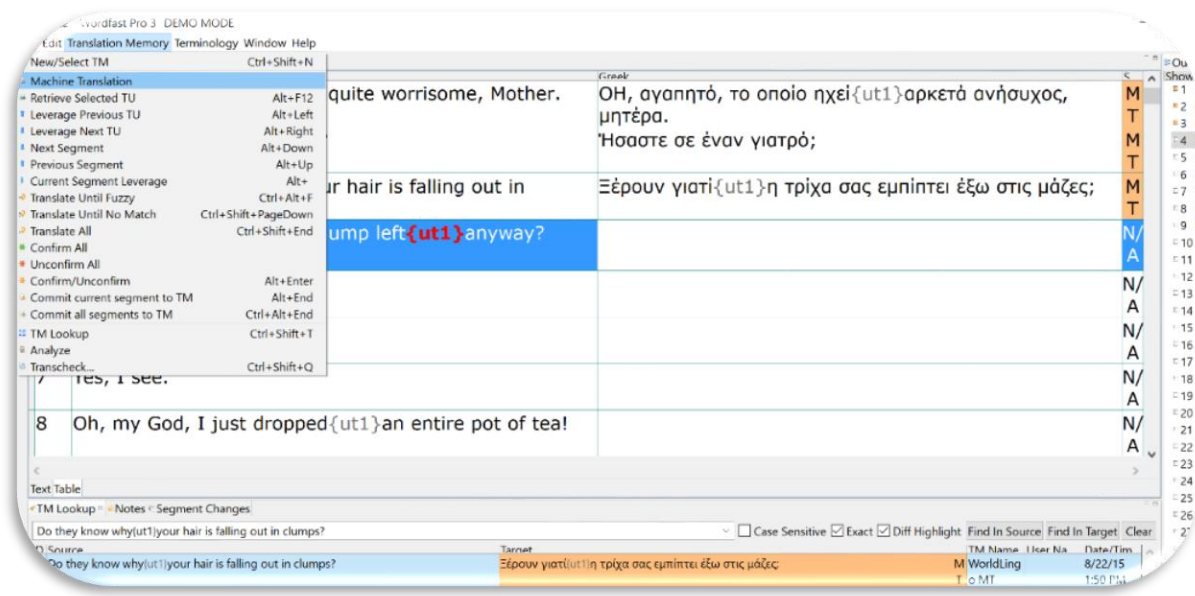
Figure 25. Using MT for translating .srt files in Wordfast Pro

1.3.6.3.3.   Localisation platforms with MT integration: Transifex and XTM

Lastly, machine translation can be found in localisation platforms; for instance, Transifex and XTM. Machine translation in localisation platforms works the same way as in translation software; it basically needs to be enabled beforehand and then click on the translation option. Transifex offers only two MT engine providers; Google Translate and Microsoft Translator.

MT in Transifex can be applied either by selecting specific source language (SL) segments or by selecting all the SL segments (as shown in the below screenshot) and then the subtitler can post-edit them accordingly.
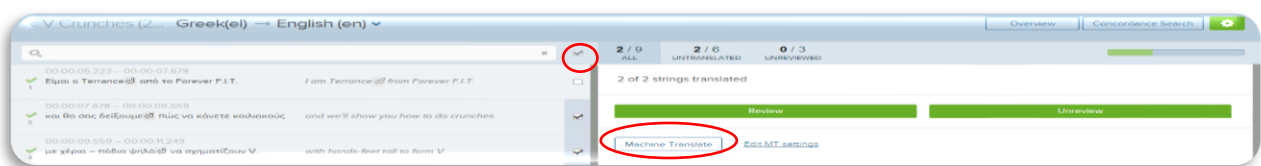
Figure 26. Using MT in Transifex

When it comes to the localisation platform XTM, although it works exactly as the translation memory software and Transifex, it offers a greater variety when it comes to MT engine providers; as it can be seen below.
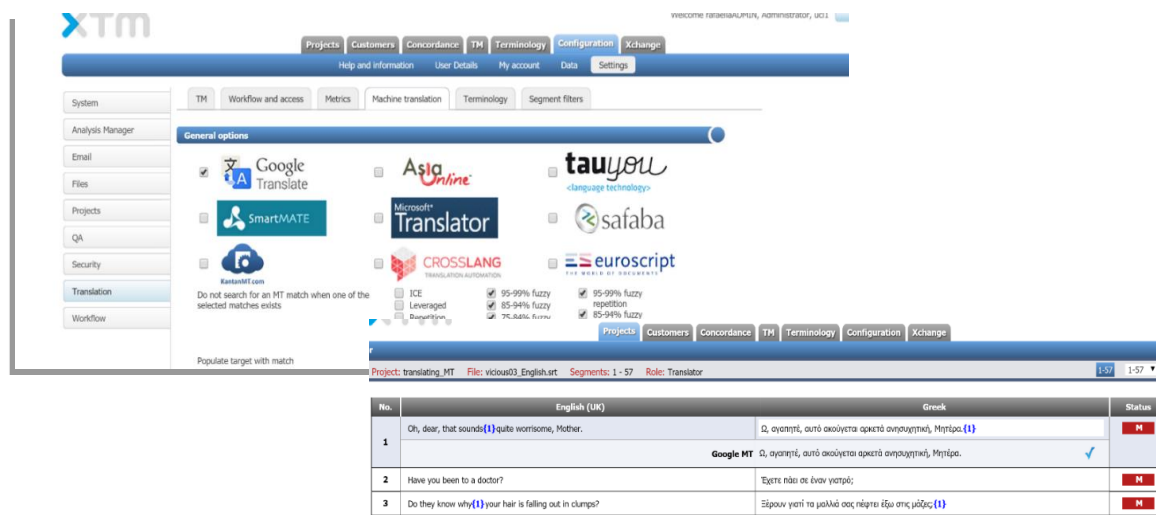
Figure 27. Enabling MT engines in XTM for translating subtitles

However, the cost of using such engines, except the free versions, along with the subscription licences may overweigh the revenues.

1.3.6.3.4.   Standalone MT customization platforms

In order to be able to access quality content-specific MT engines in the aforementioned translation software and localisation platforms, there is always a cost to be paid to the MT engine provider. Hence, even though a monthly fee is required, MT customisation provides cultural and content specific output. According to Vashee and Gibbs (2010, p.1) 'SMT engine customization is the process of training an engine with domain-specific terminology and data to narrow the range of possible candidate translations used during the translation process'. In other words, feeding the MT engine with domain-specific data

results to 'specific matching patterns' (Vashee and Gibbs, 2010, p.1) and hence the quality of the translation is raised to its maximum potential. Furthermore, customisable MT engines, like KantanMT, DeepL, Milengo or Let'sMT, offer more than just the option of building a MT engine that includes domain-specific terminology.

For example, KantanMT offers to the users not only the choice to build their NMT engine by training it with bilingual and monolingual data of their preference but also the option to include ready-made domain-specific stock engines with huge amounts of aligned bilingual data in selected fields like IT or law, adding an extra layer of quality data in users' MT engines. Furthermore, 'KantanMT Template engine technology allows multiple engines to share common training data, easing management of [personal] engines and reducing duplication of training data in user accounts' (KantanMT, 2015, p.1). This feature reduces the building time of the new MT engines to the minimum.

In addition, in KantanMT, users can retrain their MT engine using KantanISR4, an effective and efficient feature that helps users 'bypass the need to completely rebuild the engine' (KantanMT, 2015, p. 1) by simply adding source and target segments in a very user-friendly environment.

Taking into consideration the above, although MT engines can be build to offer a fast first draft of translated material and could help with idiosyncratic terminology, it is very expensive to hold such subscriptions, at least as a freelancer, and also it does not reduce the time that is needed to synchronise subtitles in any sort of way. However, it could be argued that in case of translation and subtitling agencies, MT could be proven useful as long as there is an appointed person who trains, with new data, and re-trains, from older data, the engine.

1.3.6.4. Cloud-based subtitling technology

OOONA was founded in 2012 (OOONA, online) and it is a professional cloud-based subtitling toolkit. At the moment, it is the only subtitling software that is cloud-based and offers all the functionalities of a desktop-based subtitling software.

As it can be seen below, it incorporates video import, subtitle synchronisation, transcription, conversion of any subtitling file, burning and encoding of subtitles on videos and so on. Furthermore, the timecodes of the source subtitles are separated from the subtitles on the left-hand side of the source text, not interfering in the translation process. All the necessary quality checks can be performed by simply selecting the appropriate settings on the homepage, which is similar to the quality assurance process in translation memory software. It is also crucial that you can burn and encode the subtitles in videos. A screenshot is provided below.
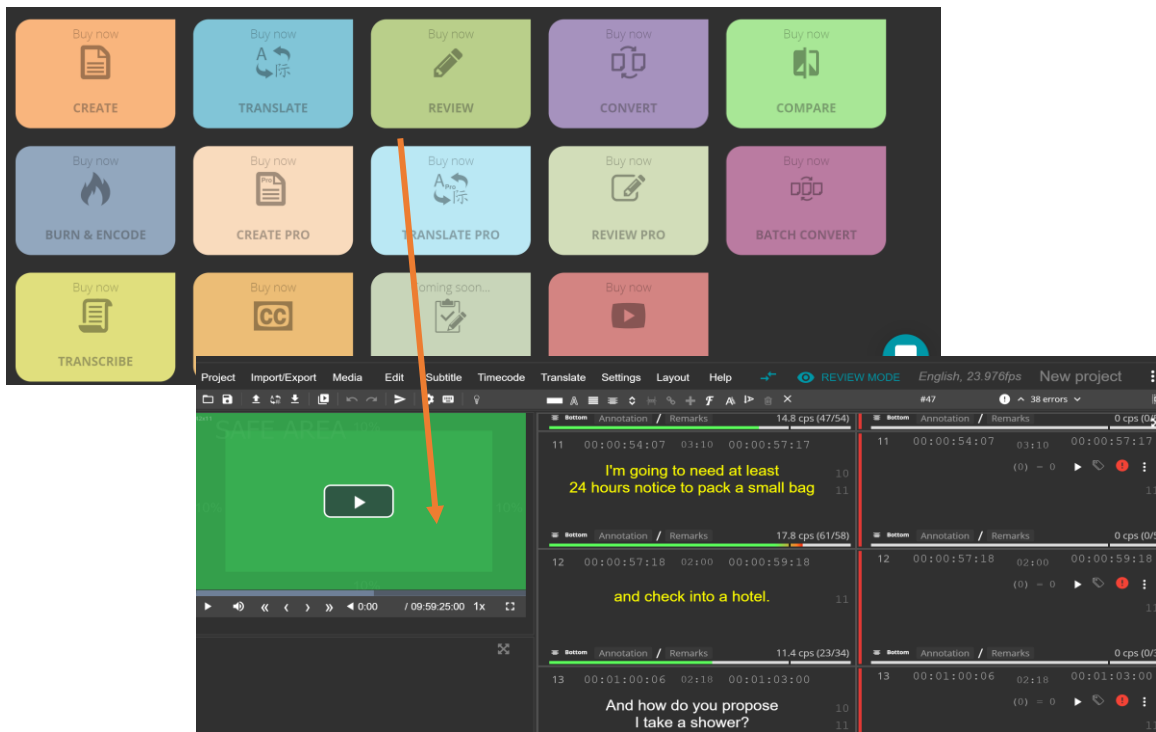
Figure 28. Translating in OOONA toolkit

According to OOONA (online), the toolkit allows for 'frame-accurate text timing with advanced timeline, video grid for precise caption positioning on the screen, audio waveform and scene-change detection for accurate subtitle spotting'.

In addition, the Translation option allows for the creation of automated timed templates where the subtitler can focus on the translation task and import or export the second language subtitles in any format. Also, the subtitler can perform automated quality assurance checks with minimum human effort.

Furthermore, OOONA offers the functionality *Compare* in which the subtitler can import two subtitling files and compare them in terms of semantic differences. It is not uncommon to have two or more different versions of a subtitled multimedia file, thus by using this functionality the user can export a file with their differences or have them side by side. This is useful for both educational purposes (students can compare and contrast various versions of subtitles with regards to semantic, cultural and social criteria) as well as industry-oriented reasons (for unifying for example the terminology/linguistic expression of the subtitled audiovisual material). In addition, OOONA partnered with Apptek, which is machine translation engine. Through this MT engine, subtitlers can benefit from MT tools.

Generally speaking, subtitling technology seems to be driven by cloud-based subtitling technology, as it can incorporate translation memories, MT engines and all the required subtitling components in one screen and most importantly in one software that can be accessed by any operating system and only requires internet.

1.4.   Technology as a driving force

Technology has always been in the centre of almost every academic discipline as it occupies a great proportion in the human everyday life, both professionally and personally. Technology, in its various forms and in different degrees, has been present in all the milestones in human history (wars, landing man to the moon, Nazi holocaust and so on). A few examples of how technology is acting as a driving force of change in different disciplines are given below.

1.4.1.   Technology and Society

As suggested, there is an undeniable relationship between technology and societies. In fact, the academic discipline that studies this relationship is Sociology, and more specifically Sociology of Technology and Science, which has a rich body of research. Technology can be examined differently according to the lens we choose to study it. For example, it can be seen as a social force that influences the society. The work by Latour (1992), Madeline (1992) and Woolgar (1991) was, and still is, ground-breaking in this area, as they shuttered the illusion that society controls technology.

Technology can also be considered an enforcer of existing social power systems through its 'devices', whether this refers to a laptop, the Internet or an online government system.

Let us consider this example. A freelance subtitler refuses to work with a laptop (which is the enforcer of the social power system in this case). Refusing to work with a laptop not only renders him/her unemployed, as he/she will hardly receive any job in the 21st century, but also if he/she was to tell someone that he/she refuses to work with a laptop, the situation would be considered odd; hence being marginalised not only on a professional level but also on a personal one. On the other hand, consider the case

where the subtitler is using a laptop. In this case, the subtitler works, hence earns money, socialises and is accepted by the society as he/she is abiding to one of the biggest norms in most societies, that is, working. The first case where the subtitler refuses to use the laptop is called *user resistance*. Wyatt (2003) provides an example of user resistance regarding the Internet and shows the result that this non-conformance to the expected reaction brings.

Sociology has always supported that social relations are difficult, especially if we consider social status, gender, and race. The main question here is whether technology has reproduced these distinctions or created a new regime. In other words, here, technology is considered as a driving force in social relations. A number of researchers have dealt with this topic since 1990s until today. Some examples are: Dilevko & Harris (1997), Van der Smagt & Gangopadhyay (1998), Turner (2005) and Kud (2020).

The above examples that present technology as a social force, as an enforcer of social power systems and as a driving power in social relations (including the respective body of research in these areas) are illustrations of the way technology influences the social realm. Whether positive or negative, it cannot be contested that technology is a driving force in the social realm.

1.4.2. Technology and Academia

Technology is also part of the professional world, irrespective of the type of profession. Let us take the case of the world of education, and more specifically, academia. There is a great amount of research dealing with the question of whether technology has changed the way the academic world works and whether this change is well-received.

According to Khalil (2013), academia has been resisting the implementation of education technologies, for instance, online teaching. Khalil (2013) provides a comprehensive

literature review[20] of different studies that deal with technology resistance. These studies revolve around the factors of resistance, especially regarding online education. Of course, these studies vary from each other, as they deal with different aspects of the issue. For instance, according to Berge and Muilenburg (2001), academia seems to reject technology for three reasons: the administrative structure, the organizational change and technical expertise. Also, feeling replaceable by technology ranks sixth. However, according to Harvey and Broyles (2010), the first three reasons that technology is rejected by the academic world are lack of ownership, lack of support and lack of perceived benefits. In addition, Harvey and Broyles (ibid.) list loneliness, boredom and fear of failure among these factors. Generally speaking, Harvey and Broyles (ibid.) deviated from listing administration problems, but rather they focused on the emotions this change causes to academics. Khalil (2013) concludes that the transition should be smooth, but also meaningful. In addition, the decision should be taken based on the current circumstances of each faculty instead of prescribing and implementing generic solutions.

2020 brings a change however in the academic world. Since the worldwide spread of the virus Covid-19, tertiary education (but also in some countries primary and secondary education) has moved almost completely to online environments. These online environments are not used only for teaching, but also for assessing students, to say the least. Little is known at this point whether this change is temporary or permanent and whether it will be well-received by the academic world. Future research will try to answer this question, but at this point it is not certain.

One thing is certain, however. Technology has supported the professional world and it was certainly the driving force of change since the outbreak of the virus. In fact, it was also the social glue that kept the world together during various forms of national lockdowns, thus, technology is much more than a simple tool.

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[20] Berge and Muilenburg (2001); Horn **Invalid source specified.**; Cameron and Green **Invalid source specified.**; Rodriguez **Invalid source specified.**, Bergmann and Brough (2007) cited in Moerschell **Invalid source specified.**; Harvey and Broyles (2010)

1.5. Sociology and Subtitling

According to the American Sociological Association (ASA) (online), 'sociology is the study of social life, social change, and the social causes and consequences of human behaviour'. Translation is a *par excellence* an example of social life, as well as an example of different societies interacting with each other, e.g., the source culture ('original' author) interacting with the target culture through a medium (translator). Translation can also cause social change, as it is through translation that people get acquainted with new ideas and expand their knowledge. However, the question of whether sociology is relevant to translation, and, more specifically, subtitling, remains unanswered. To be able to see the relevance of sociology to subtitling, and, to be precise, to subtitling technology, it is crucial to make a reference to the 'Sociological turn' in Translation Studies (TS), which will be analysed further in section 1.5.2.

Despite its young age, the academic area of TS has made several theoretical turns, as recorded by Snell-Hornby (2006). The field of TS was initially approached from a linguistic-focused perspective (e.g., Catford (1965), Nida (1964), Vinay and Darbelnet (1958), (1995)), which then shifted to literary studies theories (e.g., Holmes (1994)), and continued from a rather descriptive standpoint (e.g., Toury (1995)).

In addition, Skopos theory was also applied quite extensively in TS (e.g., Holz-Mänttäri 1984; Reiss and Vermeer 1984), which was followed by the cultural turn (Bassnett and Lefevere (1990), which was later influenced by the post-colonial translation theories (e.g., Ashcroft, Griffiths, and Tiffin (1989), Bhabha (1994), Gates (1989)), which were also followed by more general historical views of questions in translation studies (e.g. Pym (1998)). The year 1995 was the starting point of the sociological turn, which gave translation scholars a fertile ground to explore translation within a broader context. Thus, the sociological turn brought a wave of sociological terms in the study of translation as a process and/or product as well as the study of professional lives of the translators. In

addition, the sociological turn brought into attention the fact that translation is not happening outside society, but rather within a specific social context in which various parameters interact and shape each other.

Thus, as it can be assumed, sociological theoretical concepts were not applied only for the conceptualisation of theories regarding translation in its written form, but also for audiovisual (AV) translation. In this study we will be looking only into the area of subtitling, as dubbing falls out of the scope of this research. Although the body of research that combines subtitling and sociology is rather limited, there are a few examples that incorporated sociological analyses to their theories.

Some examples include the following works. The studies are presented in a chronological order starting from the most recent to the oldest as a way to highlight the recent studies which combine more than sociological concept and deal with more current topics.. Wongseree (2021, p.1), who analysed the 'ethnographic data based on a framework combining the Actor-Network Theory (ANT) as proposed by Latour in 1987 and 2005 with the concept of *habitus* proposed by Bourdieu in 1977 and 1990', Lu (2019), who used Bourdieu's sociological concepts in order to understand the underlying power relations that lie in amateur subtitling, Alsallum (2019), who presented a paper in the conference *Media for all 8* on news subtitling as a site of social practice by using Bourdieusian concepts such as *habitus* and *agency* and Wongseree et al. (2018), who focused on global media circulation based on fan translation from Latour's ANT theory.

In addition, Krasnopeyeva (2018) examined the user-generated translation (UGT) mediated by YouTube and 'used Pierre Bourdieu's concepts of *field*, *habitus* and *capital* reframed for digital-media research' (ibid, p.1). Zhang (2015), employed Latour's ANT theory to analyse the actors in video game localisation in the Chinese context and Orrego-Carmona (2011, p.1), used 'Bourdieu's sociological concept of *capital* (cultural capital, symbolic capital, economic capital and social capital)' in his study of non-professional

subtitling. Abdallah (2005, 2011), focused on the 'quality problems in the Finnish subtitling industry in the wake of economic globalisation using Latour's (1987, 2005) Actor-Network Theory' (cited in Williamson (2016)).

1.5.1. Basic concepts in sociology

This study utilises a number of sociological concepts which come from various philosophical positions. Thus, an analysis of these concepts is deemed necessary.

❖ **Field**: A theoretical construct by Pierre Bourdieu. It is the theoretical space in which all relations can be mapped. Fields can interact with other fields or be standalone. This study will be looking the subtitling technologies field.

❖ **Symbolic capital**: A concept by Pierre Bourdieu. Symbolic capital could be considered a synonym for prestige, recognition or an elevated status perceived by an external agent (Oreggo-Carmona, 2011). It can consist of the economic, cultural and social capital. Symbolic capital will be used here in terms of the way agents (subtitlers) accumulate the technical knowledge (subtitling technology knowledge) and how this capital helps them to accumulate other forms of capital (cultural/social/economic).

❖ **Agent**: A theoretical construct by Pierre Bourdieu. Agents is a term used for 'humans' that can act. Bourdieu's sociology does not include unanimated entities (e.g., technology). *Agents* are the ones who influence the field by accumulating capital, they struggle for power with other agents and the field, but most importantly they are influenced as well by the various struggles and the field. In other words, they affect and are affected by the field. In this research, there are two types of *agents:* subtitlers and subtitling companies.

❖ **Habitus**: A theoretical concept by Pierre Bourdieu. It includes a set of dispositions and internalised rules. In the context of this study, *habitus* is used in the sense that Simeoni (1998) uses the translator's *habitus*; that is, in order to shift the focus of study to the professional life of subtitlers.

❖ **ANT model:** A theoretical model by Bruno Latour. His Actor-Network Theory (ANT) is 'an interdisciplinary approach to the social sciences and technology studies' (Wolf and Fucari (2007, p. 23). In this study the ANT model will be employed to map various networks that are being formed in the area of subtitling technologies. The ANT model is highly relevant to this study since, according to the model, both human (e.g., subtitlers) and non-human (e.g. technology) 'actants' can play an equal role to the influence of a particular network. Using Latour's ANT model, however, allows a better discussion of the pivotal role of technology as part of a network rather than a deterministic factor.

1.5.2. Translation Sociology

The aforementioned 'sociological turn' in Translation Studies did not happen until the end of the 1990s (Orrego-Carmona, 2011). Despite the late onset of the translation sociology, being able to apply a sociological approach to the translation process and/or product liberated translation scholars from the strict linguistic and deterministic theories that they were adhering to and which were lacking contextualisation. According to Moe et al. (2019, p.20):

It is […] not surprising that many seminal contemporary works of translation studies have been strongly influenced by various theorists of culture and sociology, chief among them Itamar Even-Zohar (1990), Pierre Bourdieu (2008, [1986] 2011) and Abram de Swaan (2001), who approach languages and translation from somewhat different perspectives, but have offered translation studies new dimensions of research and capabilities for understanding the factors that shape translation.

Taking into consideration the research that has been produced up to now, in terms of the application of sociological theories in Translation Studies, it is important to note that most of the research includes Bourdieu's theoretical framework of society, with Latour's ANT model coming second and Luhmann's concepts coming third. According to Wolf and Fukari (2007, p.18):

> The sociologists whose work could form the basis of a theoretical framework for a sociology of translation are Pierre Bourdieu, Bernard Lahire, Bruno Latour and Niklas Luhmann.

In addition, Olohan (2020) also confirms that Bourdieu's sociology has been used more than Latour's theoretical models.

To examine the history of the sociology of translation one needs to go back to 1995 when Simeoni introduced Bourdieu's theoretical framework to TS. Based on Wolf and Fukari (2007), Orrego-Carmona (2011) and Olohan (2020) work on translation sociology, a table was created with the translation scholars who employed sociological approaches and concepts of the aforementioned sociologists (table 1).

Table 1. Translation scholars and sociology

Year	Translation scholar	Sociologist employed
1995	Simeoni	Bourdieu
1998	Simeoni	Bourdieu
1999	Gouanvic	Bourdieu
1999	Wolf	Bourdieu
1999	Hermans	Luhmann
2002	Heilbron and Sapiro	Bourdieu
2002(a)	Wolf	Bourdieu
2002(b)	Wolf	Bourdieu

2003	Inghilleri	Bourdieu
2005	Inghilleri	Bourdieu
2005	Buzelin	Latour
2006	Wolf	Bourdieu
2007	Hermans	Luhmann
2007	Chesterman	Bourdieu
2008	Hekkanen	Latour
2009	Jones	Latour
2010	Bogic	Latour
2011	Wolf	Bourdieu
2011	Abdallah	Latour
2013	Aaltonen	Latour
2013	Jansen and Wegener	Latour
2014	Buzelin	Latour
2014	Vorderobermeier	Bourdieu
2015	Eardley-Weaver	Latour
2016	Buzelin and Baraldi	Latour
2016	Hanna	Bourdieu
2017	Devaux	Latour
2017	O'Hagan	Latour

As it can be seen in table 1, the main sociologists who influenced TS are Bourdieu and Latour. It should be noted that after 2011, translation scholars seem to be inclined toward using the Latourian sociology. Thus, a more detailed description of the work and contribution of Pierre Bourdieu and Bruno Latour will be provided below. Luhmann's model is based on closed systems that do not interact with each other and hence his theoretical framework is not considered relevant to this study.

1.5.2.1.　　　Pierre Bourdieu

It cannot be denied that Bourdieu's view sociology has been applied extensively in TS. Although his theories are without a doubt complex, the concepts in which they rely on are relatively simple in their core and hence applicable in many cases. However, that is not to say that these concepts do not have limitations as theoretical constructs (for example, Buzelin (2005) suggests a complementation of Bourdieu's theory with Latour's ANT model).

According to Moe et al. (2019), the most important concepts of Bourdieu's theory are the following: *field*, *agent*, *capital* and *habitus*. It is suggested to adopt a top to down approach in the disambiguation of these concepts as they are all connected. To begin with, *field* defines the edges of the space in which all the rest constructs exist in. For example, in the quote that is given by Bourdieu (1990, p. 143) below, he defines *field* as the area of literary studies in order to create a confined virtual space that will help him to map the relations (*power struggle*) between various stakeholders (*agents*).

> […] the literary field is a force-field as well as a field of struggles which aim at transforming or maintaining the established relation of forces: each of the agents commits the force (the capital) that he has acquired through previous struggles to strategies that depend for their general direction on his position in the power struggle, that is, on his specific capital.

Having defined the *field*, it is important to note that those (humans) who interact inside this field are called *agents*. *Agents* can influence, but are also influenced, by the normative behaviour of the field. Also, *agents* attempt to accumulate as much *capital* as they can. Based on Bourdieusian sociology (2011, p.83), *capital* can be defined as the:

> accumulated labour (in its materialized form or its 'incorporated', embodied form) which, when appropriated on a private, i.e., exclusive basis by agents or groups of agents, enables them to appropriate social energy in the form of reified or living labour.

The Bourdieusian model allows *capital* to take four forms: *economical capital*, *cultural capital, social capital,* and *symbolic capital. Economic capital* refers simply to monetary resources that are available to an individual or a group (Orrego-Carmona, 2011). *Cultural capital* is multifaceted as it requires 'time and material means' and it can take three different states (ibid, p. 16). The three states in which we can find the cultural capital are: the embodied, the objectified and the institutionalised state. In the words of Bourdieu (1997, p. 47):

> the embodied state, i.e., in the form of long-lasting dispositions of the mind and body; in the objectified state, in the form of cultural goods (pictures, books, dictionaries, instruments, machines, etc.) which are the trace or realization of theories or critics of these theories, problematic, etc.; and in the institutionalized state, a form of objectification which must be set apart because […] it confers entirely original properties on the cultural capital, which it is presumed to guarantee.

Social capital is accumulated through social networks and connections of the agent, but always inside a specified field. *Social capital* was described by Bourdieu (1997, p. 51) as:

> [t]he aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition—or in other words, to membership in a group—which provides each of its members with the backing of the collectively owned capital.

Lastly, there is the *symbolic capital*, which as it can be seen below by Bourdieu's quote (1997, p. 56), can be in any form but must be acquired symbolically. *Symbolic capital* takes the concept of *prestige* and *elevated status* by a third party (Orrego-Carmona, 2011).

> capital—in whatever form—insofar as it is represented, i.e., apprehended symbolically, in a relationship of knowledge or, more precisely, of misrecognition and recognition, presupposes the intervention of the habitus, as a socially constituted cognitive capacity.

The last concept, and perhaps the most complex, is the construct of *habitus*. Starting from Bourdieu's (1990, p. 53) definition below, *habitus* is both structured (by the agent) and structuring (by other external forces for the agent). To be precise:

> The conditionings associated with a particular class of conditions of existence produce 'habitus', systems of durable, transposable dispositions, structured structures predisposed to function as structuring structures, that is, as principles which generate and organize practices and representations that can be objectively adapted to their outcomes without presupposing a conscious aiming at ends or an express mastery of the operations necessary in order to attain them. Objectively 'regulated' and 'regular' without being in any way the product of obedience to rules, they can be collectively orchestrated without being the product of the organizing action of a conductor.

One example that could help us disentangle the meaning of *habitus*, is Gouanvic's application of *habitus* in translation and, more specifically, the example of the translators' *habitus*. According to her (2010, p.125):

> The habitus is based on the technical acquisition of method and style proper to a specific literary field (or, according to circumstance, general literary field), but it is also based in a relational way on the social space of producers.

In other words, *habitus* is not a fixed situation, but rather an elusive concept that can be applied in various circumstances, as long as it includes an accumulation of what has been internalised, including the personal and professional experiences of the agent.

1.5.2.2.   Bruno Latour

Wolf and Fukari (2007, p. 23) argue that 'social studies as developed in France seem to be particularly pertinent when reflecting upon translation as a social practice'. Bruno Latour, a French sociologist, is the embodied version of this argument. Latour's Actor-Network Theory (ANT) has been used widely in the financial sector before being applied to Translation Studies due to its potential in capturing various types of interactions and

particularly due to the emphasis on the processes rather than the product (Buzelin, 2005). According to Buzelin (2005, p. 197), 'actor-networks encompass human and non-human actors, i.e., anything that can induce, whether intentionally or not, an action.' In the ANT model, there is no distinction between human and non-human actants (the term *actants* is the equivalent term for Bourdieu's *agents*). Both human and non-human can influence each other and they are both prescribed values in the particular *ad hoc* connection. As Callon (1997, p. 2) argued 'neither the actor's size nor its psychological make up nor the motivations behind its actions are predetermined' and as Wolf and Fukari (2007, p. 23) complement, 'identities and qualities are defined according to prevailing strategies of interaction'.

Latour's model is far from a simple network in which different nodes interact with each other. The ANT model allows for 'unpredictability and creativity' (Buzelin, 2005, p. 197). This is why the particular model has been used quite extensively on the topic of fansubbing or the process of crowdsourcing, as the former is unpredictable and the latter is creative in nature, and hence the ANT model could accommodate these particularities. In Buzelin's (2005, p. 197) words:

> By highlighting creativity and unpredictability, both concepts, that of actor-network and that of translation, point to the difficulty of reifying the process by which (scientific) facts and artefacts are produced, hence the need to analyze this process from the inside, to observe how actors make their decisions and interact while still unsure of the outcome, i.e., when the risks of failure are still present.

It should be noted that Latourian sociology is far more complex of what has been described above, but since this study will only focus on providing a theoretical network of actants it was deemed necessary to concentrate only on the aforementioned concepts of the ANT model.

1.5.3. Sociology of Technology

According to the American Sociological Association (online), 'sociology also measures the uneven use of technology among social groups'. A very big part of this study is focuses on technology and how it affects the involved parties, hence it is crucial to comprehend first the concept of *technology* in a larger scale, that is, how it influences social change, or stability, in a larger context. In order to do that, a brief account of the sociology of technology is obligatory.

Sociologists observed the effects of technology quite early – from Weber's (1922) action class theory that defined societies in terms of efficiency through the use of technology (in order to put aside any other moral or though-provoking question), to the contemporary sociologists like Di Maggio et al. (2001), who study the Internet as a site to test sociological theories, technology remained in the centre of social interaction. And how can it not? Technology was initially the embodiment of freedom in the agricultural era as it freed the hands of the farmers. Not many years later, however, it became the embodiment of 'oppression' in the form of production lines and machines (e.g., the Industrial revolution). An even worse image of technology is its employment in wars (e.g., post-colonial wars, World War I, World War II, Cold War and so on). In addition, technology was also used in the commercialisation and promotion of globalisation of capitalism, about which many sociologists wrote about. A recent book, *Capitalism, Technology, Labor: Socialist Register Reader*, that deals with these topics is by Albo et al. (2021), who portray the extent to which these concepts are relevant to each other and how much they have influenced modern society). Thus, all these abrupt and fast-paced changes in the way technology was, and is, used brought an inconceivable amount of shifts in the power relations between individuals and between societies as a whole.

Focusing on the current issues that sociology of technology deals with at the moment, and which falls under the scope of this research, one cannot deny the importance and role of the Internet. According to DiMaggio et al. (2001, p. 1):

> current research tends to focus on the Internet's implications in five domains: 1) inequality (the 'digital divide'); 2) community and social capital; 3) political participation; 4) organizations and other economic institutions; and 5) cultural participation and cultural diversity.

The above theoretical concepts will be used as the theoretical backbone for analysing the results of the study in Chapter 4 from a sociological approach.

CHAPTER 2: METHODOOGY

CHAPTER 2: METHODOLOGY

Chapter 2 presents the methodology that has been followed throughout the doctoral dissertation in order to fulfil the main and secondary objectives. The main objective deals the characterisation of the relationship between technology, subtitling and subtitlers. The first secondary objective revolves around the training of subtitlers and whether the development of technology has cause a need for retraining. The second secondary objective deals with a comparative analysis of the Greek-speaking (i.e. Greece and Cyprus) and Spanish context. As mentioned in the introduction, the scope of the research is limited to two contexts, the Greek-speaking context (i.e. Greece and Cyprus) and the Spanish context. These two contexts are taken as *par excellence* representatives of a developing AVT industry (Greek-speaking context) and a developed AVT industry (Spanish context).

The chapter begins with the overall methodology for the main objective (section 2.1.) and the research methods that were employed, in order to obtain the required data. Section 2.2. presents all the aspects for building the online questionnaire that addressed professional subtitlers. Section 2.3. involves the qualitative aspect of the methodology, and more specifically all the characteristics of the interview group A (interviews which addressed subtitling companies) and interview group B (interviews which addressed academics). Subsection 2.3.1. deals specifically with interview group A and section 2.3.2. revolves around interview group B.

2.1.   Methodology for studying the main objective

The primary objective of the thesis deals with the role of technology and its relationship with the subtitling profession and the subtitling process. Technology should not be seen as a mere tool but rather as a crucial component in both the professional lives of the subtitlers as well as in the actual task of subtitling. In other words, the goal of this objective is to understand, through the training, skills and work opportunities of the

subtitlers, the role that technology plays in the profession. Mapping the relationship between technology, subtitling and subtitlers requires a mixed-method methodology which follows a participant-oriented approach as the participants' training, skills and work opportunities are in the centre of this research.

According to Saldanha & O'Brien (2014, p. 23), a mixed-methods approach can be defined in the following way:

> A mixed-methods approach is the term used when several methods are used to collect or analyze data. This is often understood to mean using both qualitative and quantitative approaches. The two types of data can be collected simultaneously.

The scope of this research is limited to the Greek-speaking context (i.e. Greece and Cyprus) and the Spanish context (i.e. Spain). The same research instruments (questionnaire, interviews) were used in both contexts to ensure comparability.

2.2.   Quantitative research: Questionnaire

The quantitative data that were needed to answer the primary research question were collected with the use of an online questionnaire in Google Forms (see Annex D), which was created to obtain data regarding the training, skills and work opportunities of the subtitlers in relation to technology. The questionnaire had to be published online for two reasons:

a) COVID-19 restrictions that rendered any other option as not viable;
b) to reach a bigger sample.

The questionnaire was provided in English to the participants, as it targeted at the same time both Greek-speaking and European Spanish (Castilian) speakers. Participants had to be native speakers of either Greek or Spanish (Castilian), could reside anywhere in the

world and could be of any educational background, from ages between 18 – 50+. The reason behind the language condition was to ensure that the answers reflected the reality of the language-specific AV markets (in this case, Greece, Cyprus or Spain). In addition, the reason behind the age condition was to ensure that no primary or secondary education students could participate in this study, as this would have been out of the scope of the research, which targeted only subtitling professionals (no matter their educational background). The questionnaire was disseminated from 3rd of August to 15th of December 2021, giving the opportunity to the researcher to obtain as many replies as possible by re-posting and re-sharing the questionnaire.

2.2.1. Questionnaire: Pilot sessions

Before publishing the questionnaire, a pilot session was conducted with 2 participants from Spain and 2 participants from Greece (n=4) to determine the questionnaire's length and correct any unclear questions. Based on the respondents' feedback, the questionnaire was adjusted to cover more specific questions in relation to the type of technologies that are being used by the subtitlers and the process of post-editing. In addition, based on the time that the participants needed, the time length of the questionnaire was set to approximately 15 minutes. Table 2 summarises the feedback from the participants in the pilot session.

Table 2. Feedback from the questionnaire participants in pilot session A

Participant	Time recorded	Feedback
Participant 1	20 minutes	Lately I have been seeing a lot of 'subtitling opportunities' that are actually post edition opportunities. The moment you reach the company, they tell you that you will work editing subtitles created and translated automatically by AI and

		therefore the wage is lower because 'you can be more efficient'. There have been a few times I've seen an AI doing a good translation (with very literal translations and so on), but in general I think it is the opposite. Furthermore, I think it affects the quality of the translation, usually it is much lower than it would be if it would have been subtitled and translated from scratch.
Participant 2	10 minutes	The questionnaire is fine for me, but I would be a bit more specific about the type of technical training needed to work as a subtitler, as I think 'technology' or technical training is a very wide term and it might imply many things, from subtitling software, to CAT tools, online platforms, machine translation, post-edition and so on. Therefore, I might add a few questions regarding the specific type of technology.
Participant 3	10 minutes	I agree with most questions, but I would add a question of whether the technical training should be done by academic institutions or industry stakeholders who are already familiar with the post-editing processes for example.
Participant 4	10 minutes	It would be great if you could define the term technical training.

A follow-up pilot was conducted on the 3rd of August 2021 before the questionnaire was disseminated. The participants (n=2), one from Spain and one from Greece, recorded a time of 15 minutes with no particular comments. Thus, the questionnaire was disseminated on the 3rd of August 2021.

2.2.2. Questionnaire: Sampling

Regarding the type of sampling for the questionnaire, this was based on random sampling (or probability sampling). This type of sampling was chosen because as Saldanha & O'Brien (2014, p. 33) argue, this 'is considered the 'gold standard' of sampling and refers to the ideal scenario where every member of the population being studied has an equal chance of being selected as a participant in the research project'. This was done by sharing the questionnaire online through various universities and via professional websites (e.g., Proz.com), social media pages (e.g., Facebook groups such as the Greek Translation Professionals, TRAG, ESIST, JAT), and professional associations (e.g., Translators' translators' associations), so that everyone could have access to it. However, since the sample was quite low up until the middle of November 2021 (overall sample was n =90), snowball sampling had to be employed as well by using personal contacts and asking them to share the questionnaire.

According to Saldanha & O'Brien (2014, p.33), 'snowball sampling is also a convenience sampling method, but involves the recruitment of a group of participants who in turn recruit other participants'.

With regards to the representativeness of the sample, the questionnaire reached 138 responses, including both contexts. From the responses that were submitted, 80 out 138 originated from the Greek-speaking context (i.e. Greece and Cyprus) and 58 from the Spanish context. Although these numbers may seem low, it should be noted that it is not uncommon for participant-oriented research to display low participation. In fact, some recent PhD theses did not exceed 50 respondents. For instance, Mendoza's (2020) PhD thesis included a sample population of 27 Spanish participants. In addition, in Agullo's (2020) PhD thesis only 27 respondents participated in the questionnaire of her dissertation.

Also, the PhD dissertation of Asquerino (2021) included a small number of participants in her questionnaire, namely 25. A few other examples with low participation include publications by Rothe *et al.* (2018) with 34 participants and Brown *et al.* with 24 participants. Thus, even if the population size of the questionnaire of this doctoral dissertation is small, the detected tendencies can be cross-referenced with bigger samples in further studies.

2.2.3. Content and structure of the questionnaire

Before participants could access the questionnaire, they were asked to read and fill in a consent form that was signed online in order to ensure that all ethical and consent aspects were covered, which was based on the permission that was granted by the Ethical Committee of Universitat Autònoma de Barcelona (see Annex C). The consent form came before the questions and the participants could not reply to any of the questions unless they chose the option 'Agree'. The consent form was part of the questionnaire in Google Forms. When the respondents agree to the content of the consent form, they encounter the following five subsequent sections (see also Annex D):

Section A: Demographics

Section B: Subtitling, training and technology

Section C: Skills & Technology

Section D: Work opportunities & Technology

Section E: Subtitling technologies

The questions of the questionnaire were adapted from the *UK Translator Survey* (2017), which was one of 'the most recent large surveys for translators in the UK' (Olohan, 2020, p. 632). The survey dealt with the translation tools that translators employ in the workflows, the type of such tools, whether their technological knowledge helps them in their profession and the future role of translators in the translation industry.

The type of answers that the participants could choose from were divided into five categories. The type of answers that the participants could choose from were divided into five categories. It should be noted that the first four categories were inspired by the questionnaire used by the research group PACTE (Proceso de Adquisición de la Competencia Traductora y Evaluación) (PACTE, 2017a, pp. 349-351 and PACTE, 2015, pp. 473-474) of Universitat Autònoma de Barcelona which focuses on the translators' competencies (TC). The first four categories are also used in Asquerino's (2021, p. 481) PhD thesis, as follows:

1. dichotomous questions (e.g. yes/no);

2. single-answer questions, where an option had to be chosen out of many;

3. multiple-choice questions, where more than one option could be chosen out of many;

4. open-ended questions, where there was not a set of answers to choose from, so the participant could freely comment;

5. Likert scale, where the participants had to rank their answers from 1 to 5 (1 being the lowest and 5 being the highest).

The single-answer questions in section A (questions A1-A5) revolve around the demographic profile of the participants in order to be able to observe any correlations between the participants' age, educational background, gender, country of residence/native language and graduation year with technology. The single-answer question type was chosen for this section of the questionnaire as section A collects specific type of information in order to profile the participants.

Section B (questions B6-B12) deals with subtitlers' training and the role of technology in this training. This section includes a variety of question types such as, multiple-choice answers (B6), single-answers (B7, B8, B10) and dichotomous answers (B9, B11). This section includes a variety of question types such as, multiple-choice answers (B6), single-answers (B7, B8, B10) and dichotomous answers (B9, B11).

Section C (questions C13-C19) includes both close-ended and open-ended questions. Questions C13 and C14 use the user rating in a Likert scale (rating from 1 (lowest) to 5 (highest)) in order to understand how professional subtitlers perceive their skills and knowledge. Questions C15 and C16 concentrate also on the skills of the subtitlers but from the subtitlers' perspective (based on a specific set of options). C15 is a dichotomous question and C16 is a single-answer question. Questions C17 and C18 are both open-ended questions, allowing the participants to expand on their answers as much as they like. Question C19 is a rating question in the form of single-answer question, as the participants have to rate the most important skills for subtitlers, based on their opinion.

Section D (D20-D25) deals with the work opportunities of the subtitlers and the role the technology plays in this topic. This section contains an open-ended question (D22) and a number of single-answer questions (D20, D21, D23, D24), as well as one dichotomous question (D25).

Section E (questions E26-E30) revolves around the area of subtitling technologies and more specifically the use and quality of Computer-assisted translation (CAT) and machine translation (MT) tools. Section E includes four single-answer questions (E26-28, E30) and one open-ended question (E29). The rationale behind the structure of the questionnaire is to obtain both quantitative and qualitative data that would not be possible to acquire otherwise due to the difficulty to interview such a big sample.

The data from the questionnaire were analysed by manually extracting the number of participants for each question in Microsoft Excel and then using those data to present each question visually in the form of a pie or table. With regards to the comparison between the Greek-speaking context and the Spanish context, this was also done through the filtering options of Microsoft Excel. In addition, a number of correlations between the questions were carried out using Microsoft Excel's advanced filtering options. The data analysis of the questionnaire sample is presented in Chapter 3.

2.3.   Qualitative research: Interviews

In order to complement the quantitative data of questionnaire, two types of interviews were conducted:

a) interviews that were directed towards subtitling companies (interview group A);
b) interviews directed towards academics (interview group B) with the aim to collect qualitative data.

Section 2.3.1. presents the characteristics of interview group A as well as the interview type that was employed to study subtitling companies. The methodology, that deals with the interviews that were directed towards the academics, is presented in section 2.3.2 as these interviews are more relevant to the second main objective of the dissertation.

2.3.1.   Interview group A: Type of interviews

The interviews for interview group A were *structured interviews* since they were conducted to complement the data that have been obtained by the questionnaire. Thus, the questions were limited to the same topics and ideas that have been expressed in the questionnaire, but from a different angle. According to Saldanha & O'Brien (2014, p. 172):

> The advantage of this type of interview is that it ensures the same topics are
> covered in all cases and facilitates comparability across responses from different
> participants, as well as quantification.

The obvious limitation of using a structured interview is that no new ideas can be introduced, as the questions revolve around the same arguments. However, the

researcher did not consider this a limitation, as the purpose of the questionnaire was to enhance the already obtained data.

2.3.1.1.   Interview group A: Piloting

It is quite difficult to do a pilot session with interviewees as they usually have very limited time (Saldanha & O'Brien, 2014). However, the researcher was able to do one pilot session (n=1) with a Greek company, whose representative gave important insights on how to formulate some of the questions and the approximate time needed to answer the questions in a satisfactory way. Table 3 shows the feedback and the time the participant needed.

Table 3. Feedback from participant in the pilot interview for group A

Participant	Time recorded	Feedback
Participant 1	20 minutes	It would be good to divide the interview questions in the same way you divided the sections in the questionnaire so you can compare them. Also, I would like to see a question about industry certificates, what is expected/not expected from such certificate. Lastly, make sure that when you refer to the technology tools, it is clear what you mean.

Due to time restrictions, there was no other pilot session, but in order to ensure clarity in the interviews, the questions were explained in great detail so that there would not be any issues of misunderstanding.

2.3.1.2.   Interview group A: Sampling

The sampling method employed was purposive sampling 'where participants are selected on the basis of principled criteria so as to cover the key aspects of the research question' (Saldanha & O'Brien, 2014, p.180). Initially, the only criterion was that the subtitling companies should be located either in Spain or the Greek-speaking context because the researcher wanted to look in-depth the specific markets in their locales. Regarding the Greek sample, even though emails had been sent out to all the 17 Greek[21] subtitling companies that were registered in an online version of the Business Yellow pages[22], only 1 replied positively. Therefore, it was judged necessary to use snowball sampling, but it was not made possible to obtain another subtitling company for the Greek-speaking context. Regarding the Spanish context, although there were a number of options, the researcher purposefully chose only 3 companies that came from snowball sampling through personal contacts in order for the gap sample to not get any bigger, between the number of interviewees between Spain and Greece. The overall sample was n=4 (3 from Spain, 1 from Greece). Cyprus was not able to offer any options.

2.3.1.3.   Interview group A: Structure of interviews

The interviews were conducted either in an online environment (e.g., Zoom) or in a written form. In other words, the interviewees had the option to provide their responses in a written form due to the busy workloads that they had at the time. Since the questions were open-ended but structured, this condition did not affect the validity of their data.

All the interviewees (n=7) were given 14 open-ended questions and 1 close-ended question that concentrated on the training, skills and work opportunities of subtitlers as

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[21] There were no registered Cypriot subtitling companies.
[22] https://www.cytayellowpages.com.cy/search/translations

well as the role of technology in these areas. The interview questions can be divided in four subsections:

Section A: Profile
Section B: Technological Tools
Section C: Post-editing
Section D: Skills & Training

As already mentioned, all the participants were provided with a consent form prior to the interview that had to be signed in order to guarantee that all ethical and consent aspects were covered. The consent form was based on the permission that was granted by the Ethical Committee of Universitat Autònoma de Barcelona (see Annex D). In the consent form, participants had various options in terms of recording and anonymisation. Therefore, since some of the participants chose to be recorded and use their names in the quotes, and some others chose to not be recorded and not use their name, it was decided to anonymise all the interviews and take notes when the recording was not available. In addition, the quotes were sent to the participants in order to ensure their approval, where it was applicable.

Section A includes 2 questions for profile building. In fact, questions A1 and A2 of the interview focused on building a general profile of the participant, which is a standard practice in participant-oriented research. A2 is the only close-ended question which is a multiple choice between various audiovisual mediums.

Section B includes 3 questions regarding technology and tools. Questions B3-B5 focus on the types of tools that the companies use and B5 deals specifically with the companies' workflows and the role of technology in those.

The questions in section C (C6-C8) revolve around post-editing and not only if the company is using post-editing (C6), but also if the company has gone through any training regarding post-editing (C8), as well as the qualifications of the people who deal with post-editing (C7).

Section D is the biggest section of the interview and deals with the Skills & Training that the companies expect from the subtitlers (D9, D13, D14) but also the training the companies provide (D11, D15). In addition, in D10 the participants can express their opinion regarding the skills that are required for post-editing in comparison with the skills that are needed when subtitling from scratch. The reason for this question is that there is an identical question in the questionnaire and the researcher would like to see if the response changes according to the angle. The same question exists in the interview group B questions. Lastly, in D12, participants can provide their opinion regarding industry certificates and whether these are useful. The question can provide fruitful insights as to what is expected by the subtitlers to know and how such a certificate could help both the companies as well as the subtitlers by opening new avenues of work opportunities. It should be noted that the questions of the interview group A can be found in Annex E.

2.3.1.4.   Data Analysis tools

The analysis for the data originating from the interview group A had to be analysed manually in Microsoft Excel, as it was not possible to have a recorded transcript for all the interviews due to consent and confidentiality reasons. In other words, due to the mixed format of the data, the interview answers had to be manually added in Microsoft Excel in the form of a table and then analysed by using the percentage scale. Before the analysis started, the answers from the data were read and summarised with regards to their key points. All the answers were then anonymised and inserted in Microsoft Excel.

2.3.2.   Qualitative research: Interview group B

Section 2.3.2. deals with the interviews by academics (interview group B). The below subsections include information regarding the type of interview for group B, the piloting session and the structure and content of the interview questions.

2.3.2.1.   Interview group B: Type of the interviews

The interviews were in the form of *structured interviews*. This particular interview type was chosen because the interviews were conducted to complement the data that have been obtained by the subtitling curricula corpus but from a qualitative perspective. By being able to interview academics, the researcher gained a better understanding of skills and training of the subtitlers.

2.3.2.2.   Interview group B: Piloting

As it has been mentioned above, it is usually hard to do a pilot version with the interviewees, as they have very strict timetables (Saldanha & O'Brien, 2014). Therefore, since the questions followed the structure of the interview questions of group A, it was not deemed unnecessary to run another pilot on the questions, as the questions were only slightly changed to fit the academic context.

2.3.2.3.   Interview group B: Sampling

The sampling method employed in this interview group was purposive sampling. The main criterion for the participants who were recruited was that they had to teach subtitling in either Greek or Spanish in their respective universities (either as part or full time) at least for the last year. The participants could teach either undergraduate courses and/or

postgraduate courses. The overall sample was n=10 (5 from Spain, 4 from Greece, 1 from Cyprus), as a way to keep the numbers in an equilibrium.

2.3.2.4.   Interview group B: Structure of interviews

The interviews were conducted either in an online environment (e.g., Zoom) or in a written form. Thus, the participants were given the flexibility to provide their responses in a written form due to the busy workloads that they had at the time. Since the majority of questions was open-ended but structured, this condition did not affect the validity of their data.

All the interviewees (n=9) were given 16 open-ended questions and 2 close-ended questions that concentrated on the training, skills and work opportunities of the subtitlers, as well as the role of technology in these areas. The interview questions can be divided in four subsections:

Section A: Teacher Profile
Section B: General Profile
Section C: Post-editing
Section D: Skills & Training

All the participants were provided with a consent form prior to the interview that they had to sign in order to guarantee that all ethical and consent aspects were covered. The consent form was based on the permission that was granted by the Ethical Committee of Universitat Autònoma de Barcelona (Annex D). It should be noted that the consent form included a number of options regarding anonymisation, video recording and use of quotes (as seen in Annex C). As in the case of interview group A, some interviewees chose to be recorded, others to provide a written response, whereas others chose not to be recorded and not to use their name. Thus, it was judged necessary to anonymise all the

participants. In addition, respondents were given a copy of their quotes to approve, when it was necessary.

Questions A1-A4 are part of section A of the interview. This section focused on building the profile of the participant. Questions A1 and A2 are the only close-ended, single-answer questions in order to limit the answers of the participants and hence create a specific profile. This technique is also employed by Mendoza Domínguez (2020) in her PhD dissertation as a way to profile audiodescribers.

Section B has a similar structure with section A. Questions B5 – B9 focus on the general profile of the university and the degree in which the subtitling courses are positioned under as a way to build a more general profile. As it is shown in Chapter 3, there have been cases in which a lecturer may refer to more than one university. If this is the case, this is stated and the differences between universities are clarified.

Questions D10-D12 focus on the types of tools that the universities use during the subtitling courses. The questions in section D (D13-D18) revolve around post-editing and the skills & training that are being taught. For example, the questions do not deal only with whether the lecturer is teaching post-editing (D13) but also the qualifications of those who teach post-editing (D14). In addition, in question D15 the participants can express their opinion regarding the skills that are required for post-editing in comparison with the skills that are needed when subtitling from scratch. Lastly, in D16, participants can provide their opinion regarding industry certificates and whether these are useful. This question can provide fruitful insights as to what is expected by the subtitlers to know in an academic level and how such a certificate could help both the universities and the subtitlers by opening new avenues of work opportunities. It should be noted that the questions of the interview group B can be found in Annex G.

2.3.2.5.   Data analysis tools

The analysis of the interview group B data had to be done manually for the same reasons that were given in section 2.3.1.5, that is, due to the mixed format of data. The exact same methodology was used for analysing the data by interview group B (i.e. manual analysis in Microsoft Excel).

An overview of the main methodology that was employed for the main objective is given in table 4 below.

Table 4. Overview of methodology of the main objective regarding the relationship between technology, subtitlers and the subtitling practice

Type of research	Type of data	Research tools	Sample characteristic	No. of participants and Territories			Data analysis tool
Participant-oriented approach	Quantitative and qualitative	Questionnaire	Professional subtitlers	**Greek-speaking context**		**Spain context**	Manual analysis (Microsoft Excel)
				N=80		N=58	
Participant-oriented approach	Qualitative	Interview	Subtitling companies	**Greece**	**Cyprus**	**Spain**	Manual analysis (Microsoft Excel)
				1	0	4	
Participant-oriented approach	Qualitative	Interview	Academics	**Greece**	**Cyprus**	**Spain**	Manual analysis (Microsoft Excel)
				4	1	5	

CHAPTER 3: DATA ANALYSIS FOR MAIN OBJECTIVE REGARDING THE CHARACTERISATION OF THE RELATIONSHIP BETWEEN TECHNOLOGY, THE SUBTITLING PRACTICE AND SUBTITLERS

CHAPTER 3: DATA ANALYSIS FOR MAIN OBJECTIVE REGARDING THE CHARACTERISATION OF THE RELATIONSHIP BETWEEN TECHNOLOGY, THE SUBTITLING PRACTICE AND SUBTITLERS

This chapter presents the data that have been compiled in order to fulfil the main objective 1 (i.e. the characterisation of the relationship between technology, subtitling (as a practice) and subtitlers). Section 3.1. presents the quantitative data that were collected from the questionnaire in order to answer the research question of main objective 1 (i.e., How can we unveil and characterise the relationship that exists between technology, subtitling and subtitlers in the subtitling technologies spectrum?). Section 3.1.1. presents the data that were obtained after the completion of the questionnaire including both contexts (i.e., the Greek-speaking and the Spanish context). Section 3.1.2. displays a comparative analysis of the questionnaire data between the Greek-speaking context and the Spanish context in order to answer the second secondary research question (i.e., Does the role that technology play in the subtitling practice change when the context varies?). Section 3.1.3. presents the correlations between the questionnaire data for the Greek-speaking context and 3.1.4. illustrates the correlations between the questionnaire data for the Spanish context. Section 3.2. presents the qualitative data that were elicited from the interviews. Section 3.2.1. presents the interview with the subtitling companies (interview group A) and section 3.2.2. presents the interviews with the academics.

3.1.   Analysis of the questionnaire data for the Greek-speaking and Spanish context

According to Saldanha & O'Brien (2014, p.23) 'macro-level data are collected, for example, from organizations, countries, systems and social entities, while micro-level data are at the level of the individual, word, or text'. The data that come from the questionnaire and that will be presented in section 3.1.1. are considered micro-level data as they come from the level of the individual.

As it was mentioned in Chapter 2, the sample population of the questionnaire, including both the Greek-speaking context as well as the Spanish context, reached 138 respondents (n = 138), from which 80 participants come from the Greek-speaking context and 58 of the participants come from the Spanish context. It should be noted that the below result analysis, that is part of this section, presents the data for both contexts (n=138), in order to record the general tendencies that will be used for discussion in Chapter 4. Section 3.1.2. deals with the samples comparatively to highlight the differences between the Greek-speaking context and the Spanish context. The data analysis is divided into five subsections which follow the structure of the questionnaire, in an attempt to present the data in a clear, concise and organised manner.

3.1.1.1.   Data analysis of section A of the questionnaire: Demographics

After a preliminary analysis of the data of questionnaire, it becomes clear that the population is 75% female and that it mainly comes from the age group of 26 – 35, as shown in figures 29 and 30 below. Figure 29 corresponds to the questions A1 of the questionnaire and figure 30 corresponds to the question A2 of the questionnaire.
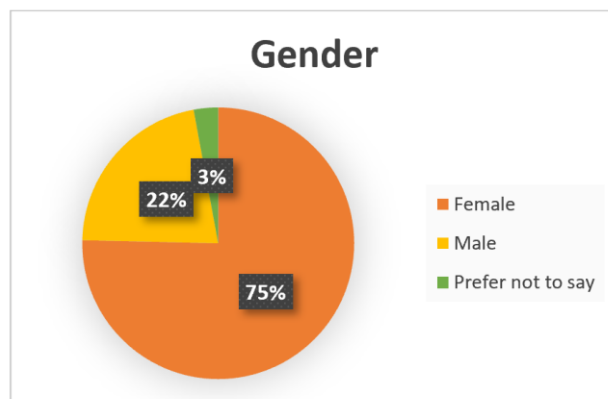
Figure 29. Overview of question A1 regarding the gender of the participants
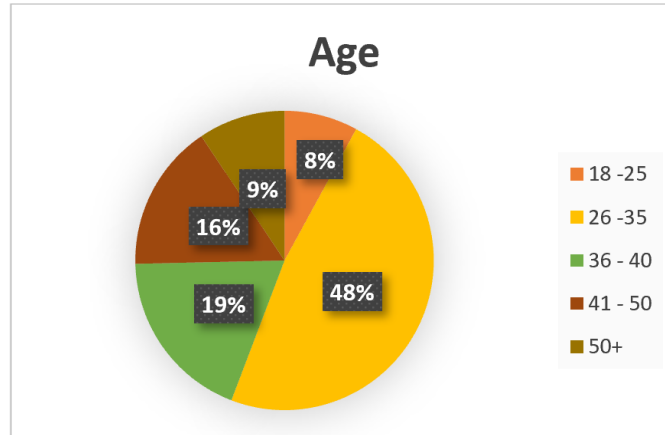
Figure 30. Overview of question A2 regarding the age of the participants

The age group 26 – 35 is an active group in terms of professional working status, for which we could say that its participants have already completed their academic qualifications and they are now out in the market. Therefore, it is the ideal group to be studied in terms of how well-advanced they are in terms of technology, as well as how technology affects them in terms of job prosperity. Another interesting age group, which occupies 19% of the sample, is the age group 36 – 40, which is the age group that in theory would require re-training or training for the first time in terms of technology (e.g., there are participants who have never had training before but learnt through experience). Generally speaking, the sample is rather well-divided in terms of age groups as it spreads out in different categories and does not exclude any of the options that were provided by the questionnaire.

In terms of the language of the participants as well as their country of origin, based on the data below, the sample is mainly Greek-speaking (to be precise, 58% are native speakers of Greek and 42% are native speakers of European Spanish). In the case of Cyprus (as a locale), there is very little participation (n=1), but this was anticipated, as the audiovisual industry in Cyprus is non-existent. This could be happening because Greece and Cyprus share the same language and hence there was never an opportunity for a market to develop. However, this is only one interpretation and it would be interesting to

study this phenomenon in future studies. The data regarding the country of origin and the native language of the participants are shown visually in figures 31 and 32, respectively.
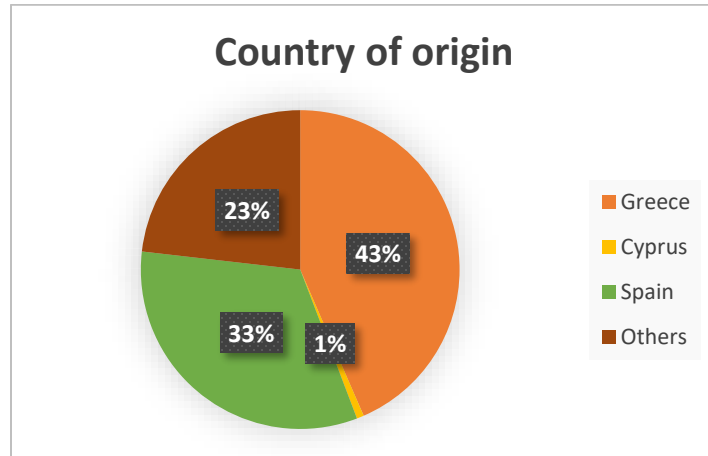
Figure 31. Overview of question A3a regarding the country of origin of the participants
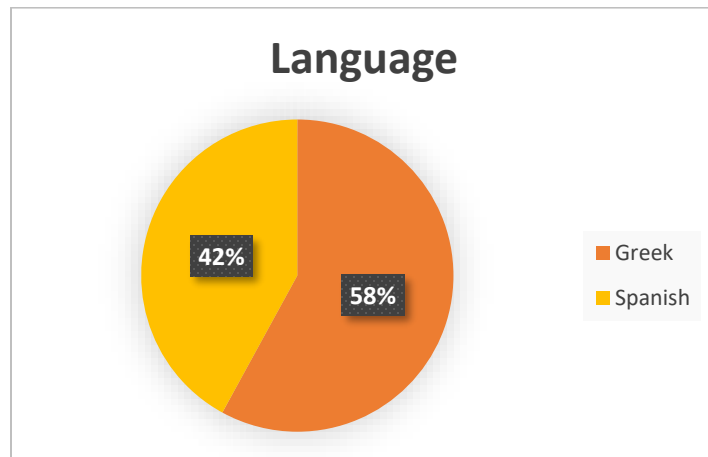
Figure 32. Overview of question A3b regarding the native language of the participants

Regarding the educational background of the participants, the majority (63%) has obtained a postgraduate degree and the second highest choice (20%) was the completion of a university/college degree. Thus, this seems to confirm the previous assumption that the age group 26 – 35 is indeed part of the market, since a big percentage of the sample comes mainly from the age group 26 – 35. Moreover, according to the data of the sample,

it is quite surprising that there are professional subtitlers with only high school qualifications (5%). Although the percentage is relatively low, this shows that there are professional subtitlers in the field who did not receive higher education training, but are still part of the AVT industry. Further information regarding the training of this group is given in the correlation section. The data for the educational background of the participants are presented in figure 33.
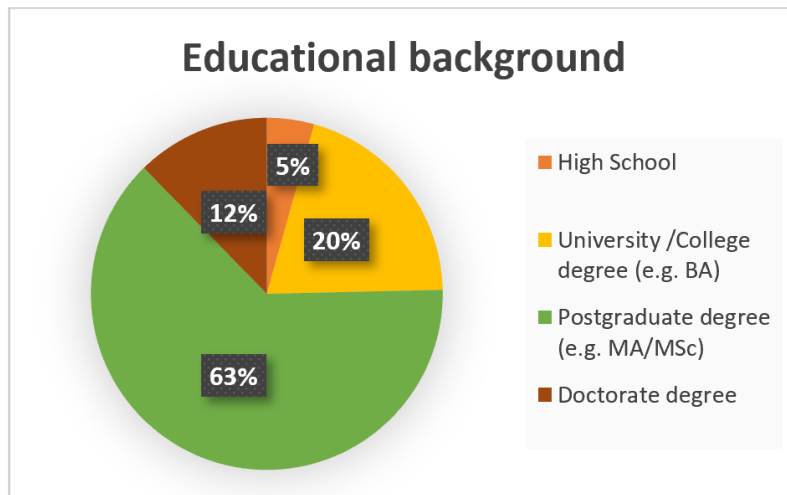
Figure 33. Overview of question A4 regarding the education background of the participants

3.1.1.2. Data analysis for section B of the questionnaire: Subtitling, training and technology

With regards to the years that have passed since the respondents' last highest academic qualification, the sample is almost evenly divided among the options that were given by the questionnaire, with the slight exception of the option '13+ years ago' (22%), which received the biggest number of responses. Hence, based on these numbers, one out of five participants has completed his/her highest qualification 13+ years ago, which could be considered a long time ago when it comes to the evolution of technology and its

processes. The option '1-3 years ago' is the second highest choice (21%) with only 1% difference from the first choice of the participants. One interpretation of the high numbers of the option 1-3 years ago could relate to the participants' age. In other words, since population of the sample is relatively young, this answer reflects the fact that they have just completed their academic qualifications. However, there could be a second interpretation. The choice of the group of participants who selected the option '1-3 years ago' could suggest a re-training need in a higher level than the one the participants already acquired. To be precise, since the question is phrased in a way as to obtain data that relate to the highest qualification of the respondents, the participants who chose the option '1-3 years ago' could have been in need of a higher qualification from the one that they may originally had. Figure 34 illustrates visually question B5.
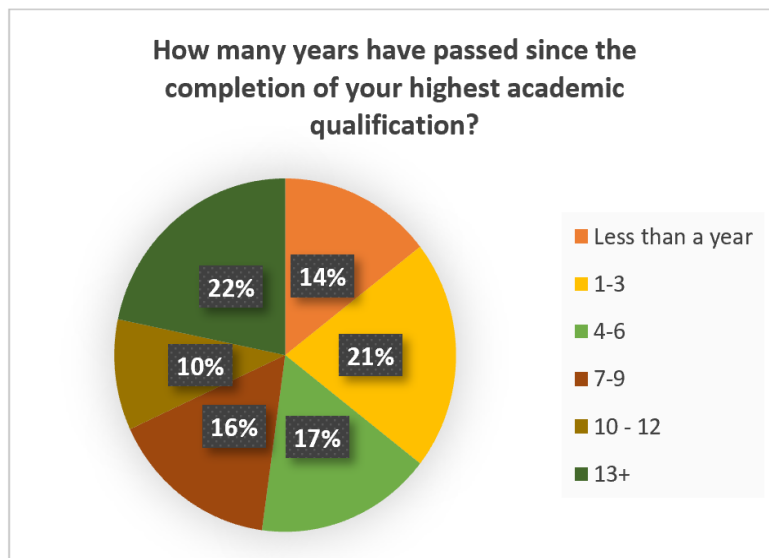
Figure 34. Overview of question B5 regarding the years that passed since the completion of the highest qualification of the participants

Regarding question B6, this was a multiple-choice answer, in which participants could choose more than answer. As far as the main medium that the participants subtitle for, there is a clear edge to the video-on-demand/streaming platforms as this option reached 111 responses. The options of TV (69 responses) and Cinema (30 responses) follow second

and third respectively. This points to the fact that the current subtitling jobs are directed towards online and easily accessible platforms, which is basically another reason why technology is pivotal in the profession of subtitling. The option 'Other' includes answers like documentaries, corporate videos and festivals, which do not relate to the question, as the question revolved around the audiovisual mediums and not different audiovisual products and forms of subtitling. It is interesting, however, that a small group of subtitlers did not understand the question, since there seems to be a confusion between the mediums of audiovisual translation and audiovisual products. The aforesaid data are presented in figure 35.
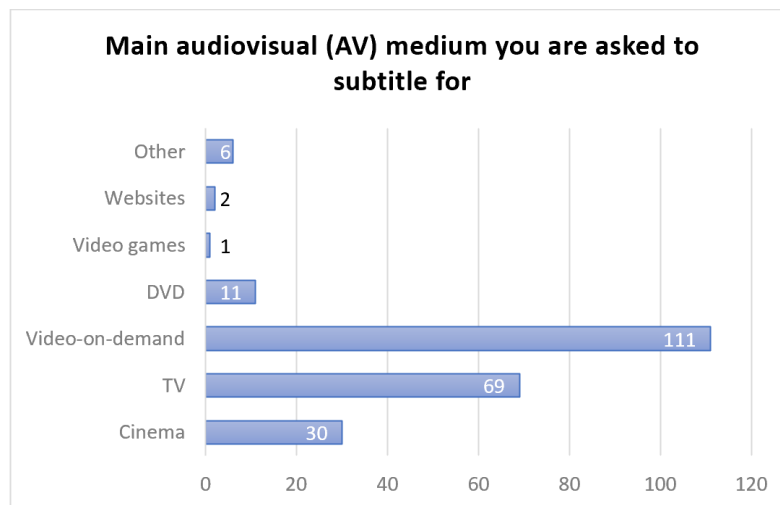
Figure 35. Overview of question B6 regarding main audiovisual medium

Regarding the training-specific questions, the data coming from questions B7 -B11 are particularly interesting. Question B7 (figure 36) shows that most respondents (33%) obtained their technical skills from a postgraduate degree. In other words, it seems that very little training regarding technology is offered at BA level, so subtitlers need to continue their studies if they wish to specialise further or opt for other options, like training in a company. In addition, the second highest choice (25%) suggests that the participants acquired their technical skills while being employed, which is a rather large

percentage, as it means that 1 out 4 subtitlers are trained on the job (as far as the technical skills are concerned). This raises the question of whether the industry has a better understanding of the technical needs of a professional subtitler or simply whether it is a more affordable option for subtitlers. This might be an indicator that these skills need to be taught in a lower academic level (like a BA) so that they are more accessible for everyone. Surprisingly, the percentages for 'I have not received any training' and 'The training was part of my bachelor's degree' are identical. This confirms what has been said above regarding the teaching of subtitling technology at BA level. The above data are presented visually in figure 36.

Figure 36. Overview of question B7 regarding where subtitlers acquired their technical skills

Concerning the opinion of the participants regarding whether their training has equipped them for the rest of their career, the majority replied positively (38%). One interpretation of this result could be that since the population's age group is relatively young and few

years have passed since the participants graduated, the recent graduates are confident that their training is enough, because it has been adjusted to the current market needs. However, if the second and third highest choices ('No' and 'Maybe', accordingly) are combined (55%), it could be said that the participants seem to be uncertain about the future regarding their technical skills. This could be caused by a number of reasons, but two of the most likely interpretations could be:

a) the development of technology is causing uncertainty to the professional subtitlers;
b) the group of participants who answered negatively may have been trained many years ago.

The data regarding question B8 are presented visually in figure 37.
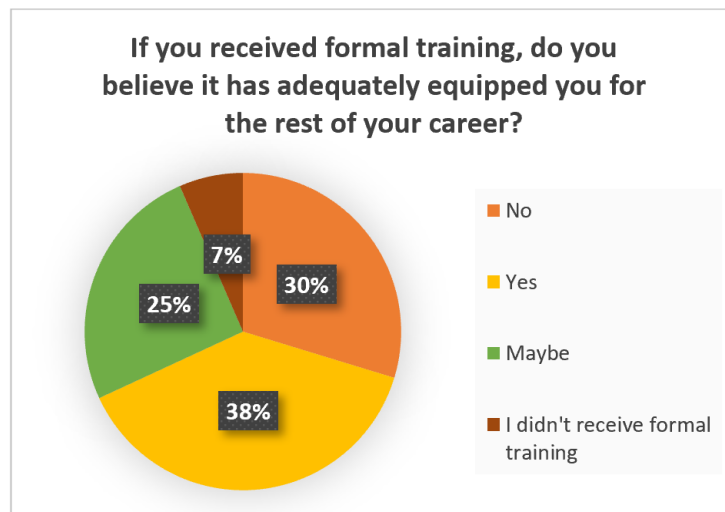
Figure 37. Overview of question B8 regarding the participants' opinion whether their technical training is adequate for the rest of their career

As far as the preferences of the respondents regarding the trainers by whom they would like to be educated, there is a clear preference for academic schools (65%) over industry stakeholders. Even though, as it is presented in figure 37, 25% of the participants were trained in the industry in terms of technical skills, participants allude to a clear preference

for academic schools in question B9. Also, since the majority of participants comes from the professional status of freelancers (as seen in figure 49), the data from figure 38 could indicate the following two possible scenarios, which are not mutually exclusive:

a) the industry training is not sufficient;
b) the academic level may be higher when compared to the industry, but it is also more costly and it takes longer.

The data from question B9 are illustrated in figure 38.

Figure 38. Overview of question B9 regarding training preferences

As for the topic of post-editing training, as shown in figure 39, very little training is conducted in academic institutions as part of an academic degree (5%). In addition, it seems that the majority of the participants had to learn about post-editing on their own (41%), through their own interaction with the subject. However, the answer 'I did not receive any training and I do not post-edit' has only 1% difference from the highest choice. The difference between the answer 'I did not receive any training and I do not post-edit' and the answer 'I did not receive any training but I've learnt through my interaction with the subject' lies in the fact that in the latter answer the participants chose to interact with

post-editing and learn about it, whereas in the former answer, the participants do not interact with it at all and do not seem interested in learning about it. A positive interpretation of these results is that it seems that the perspective of the participants seems to be shifting towards a positive learning curve regarding post-editing (4 out of 10 participants are learning about post-editing). However, the same number of participants (4 out of 10 participants) appears to reject post-editing. Thus, the interpretation of this question depends on the perspective of the reader. In addition, the answer 'I was trained at a public/private company' was chosen by 19 participants, but it remains a rather small percentage (14%). Another important note that must be made regarding question B11 is that, although participants are interested in post-editing and they are learning on their own, the source of their knowledge and their overall experience remain unclear. Although these questions are out of the scope of this doctoral dissertation, they are critical questions which can be explored in future studies. The data from question B10 are presented visually in figure 39.
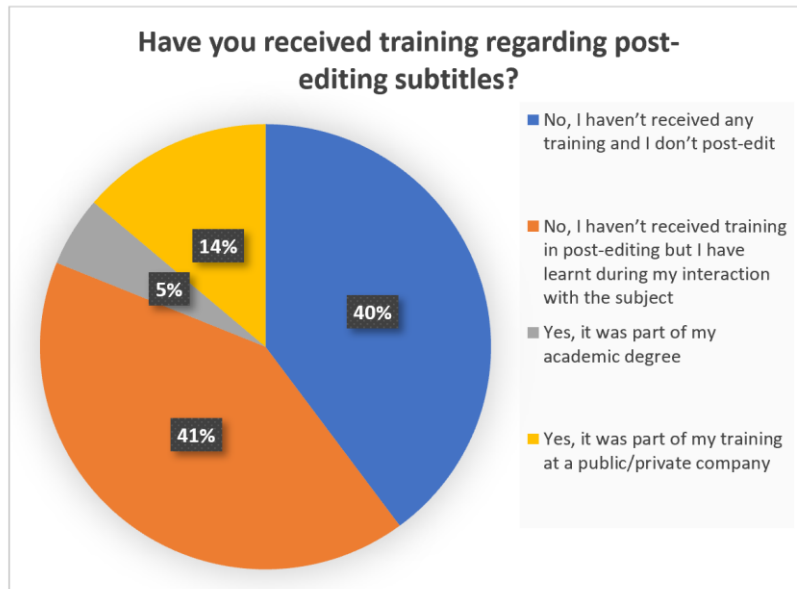
Figure 39. Overview of question B10 regarding the participants' post-editing training

When the respondents were asked if post-editing is part of their job requirements, the majority replied negatively (62%). This only indicates that the participants of this sample

do not work with clients who require post-editing in their subtitling projects. However, according to figure 40, over a third of participants (38%) are post-editing as part of a subtitling job, which could indicate a subtle increase in post-editing jobs, which has not reached its climax just yet. This subtle increase in post-editing can be backed up by question B12, which shows that post-editing has become more common is the last three years. Question B11 is presented visually in figure 40.
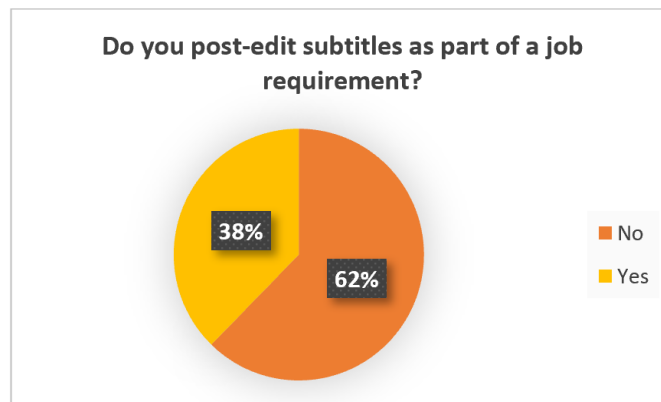
Figure 40. Overview of question B11 regarding post-editing as part of a job requirement

Regarding the group of participants who replied positively in figure 40, half of them (50%) started post-editing between 1-3 years ago, whereas the second highest choice, which received 30%, shows that this group of participants started post-editing only a year ago. Bearing in mind these data, it could be said that post-editing is just starting to flourish, as 80% of the sample started post-editing professionally only three years ago. The results from question B12 are shown in figure 41.
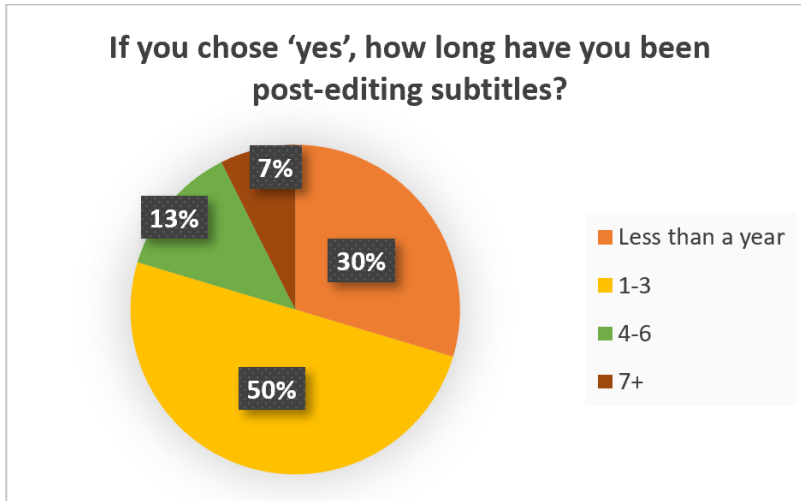
Figure 41. Overview of question B12 regarding duration of post-editing

3.1.1.3.   Data analysis for section C of the questionnaire: Skills & Technology

Regarding the way the respondents rate their skills, as it is shown in figure 42, 49% of the sample rate themselves as 4 out of 5 (1 is the lowest and 5 is the highest). The second highest choice is level 5 out of 5, which reached 33%. This indicates that the subtitlers seem confident regarding their technical skills, which could be a product of intense training and professional experience. As it was seen above in figure 39, the participants are usually trained in either academic institutions or while working in the industry, which seems to boost their confidence in their skills. Figure 42 shows the aforementioned data in an illustrated version.
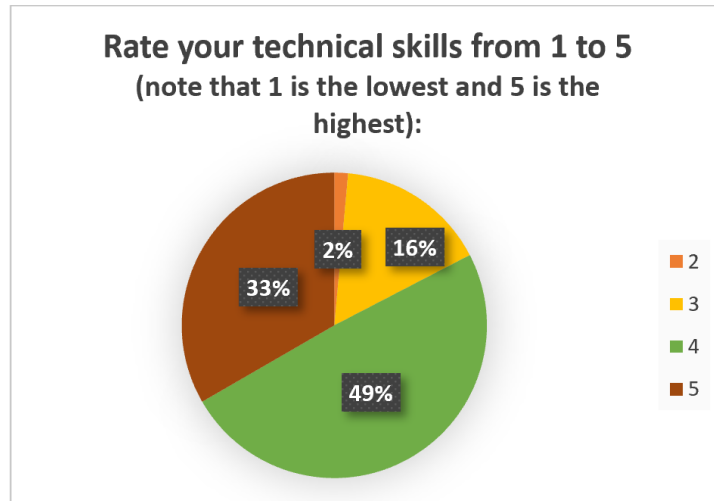
Figure 42. Overview of question C13 regarding the participants' rating of their technical skills

Moreover, when it comes to rating the technical competence that is required in the chosen AV medium, respondents keep option '4' as the highest option (40%), as it is seen in figure 42. Figure 43, which shows the participants' opinion regarding the technical competence that is required in the audiovisual medium they subtitle for, provides a similar picture as figure 42, but in figure 42 the second highest option is '3'. This is quite interesting, as the participants seem to think that they have more skills than those required to do the job.
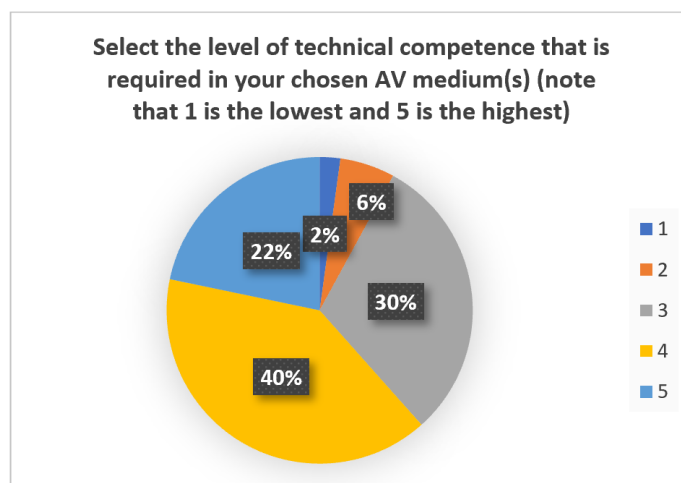
Figure 43. Overview of question C14 regarding required technical competence

Although as it was shown in figures 42 and 43, the majority of the respondents had confidence in their technical skills, in question C15 there is an indication that they are never sure whether they need to acquire more knowledge regarding technology. The majority of the participants (69%) indicated they felt that the development of technology made them need an upskill. The data coming from question C15 are shown in figure 44.
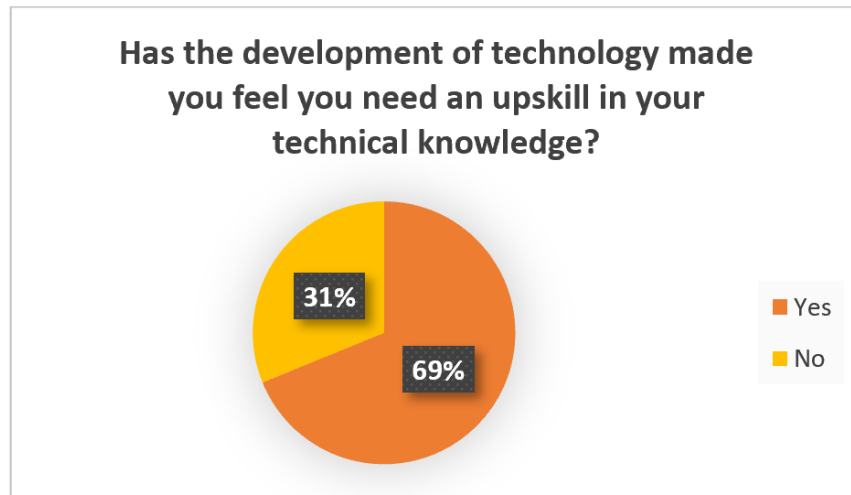
Figure 44. Overview of question C15 regarding the need for upskill

Figure 45 seems to confirm that participants proceeded to training after feeling the need to train (or perhaps re-train), since as it can be interpreted below, 63% of the sample has taken action regarding this feeling of upskill. Even the second highest answer, which reached 34%, is a positive answer towards training since the respondents seem to consider taking action to upskill their technological skills. In addition, the answer 'No' received a low percentage (3%), which seems to indicate that most participants are aware of the need to keep ahead of technology. The data from question C16 are presented in figure 45.
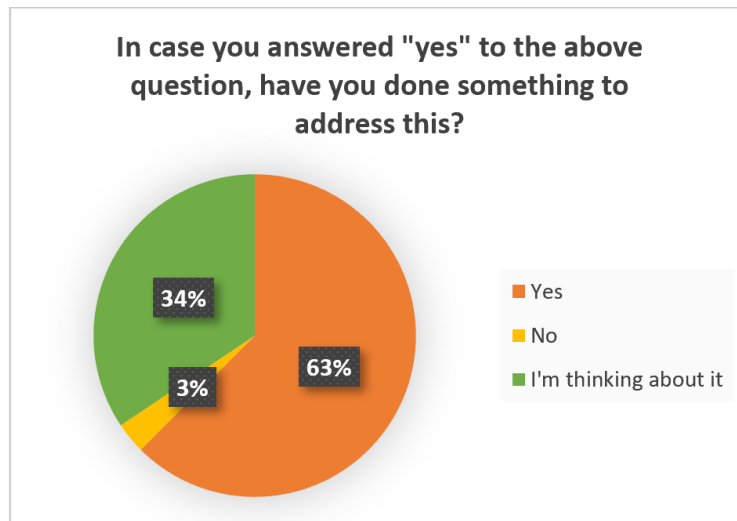
Figure 45. Overview of question C16 regarding actions to address the possible need for upskill

Question C17 focuses on the perspective of the participants regarding a possible action they would like to take in case they have not addressed their need for upskill. As it is clearly portrayed in figure 46, the majority of the participants (65%) would like to proceed with another type of seminar or course that would deal with subtitling technology. Regarding the remaining answers that were received, these vary from very little thought on the subject to specific suggestions. In fact, 5% of the sample feels like they are up to date with their skills, whereas 10% of the sample believes that the company should be responsible for training them. One out of six participants is still thinking about possible actions (15%), whereas 5% would like to receive guidance from the industry to assess their skills and suggest possible training. The responses from question C17 are presented visually in figure 46.

If you haven't done something to address the need for upskill, what would you like to do?

- I would like to do another seminar/professional course/interactive training, especially if it is focused on technology
- I haven't really thought of it
- I expect the company to train me
- I am up to date with my skills
- Guidance from the industry

65%
15%
10%
5% 5%
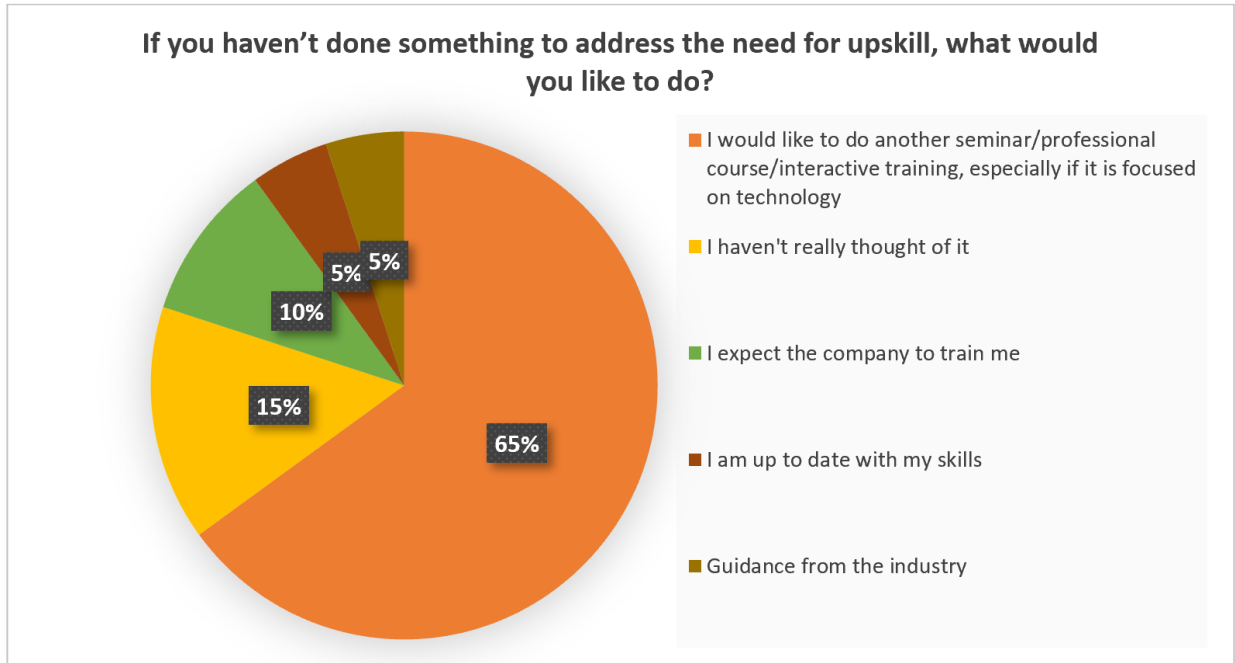
Figure 46. Overview of question C17 regarding preferred actions for upskill

Question C18 was an open-ended question, so the results had to be summarised in the five answers that are shown in pie chart 18. The answer 'No, the skills are not the same as there are other factors in play' received the highest percentage (55%), as more than half of the respondents chose this answer. It becomes evident that the participants firmly think that this is the case, as all the other options are quite low (14% and under). Figure 47 presents the data of question C18.
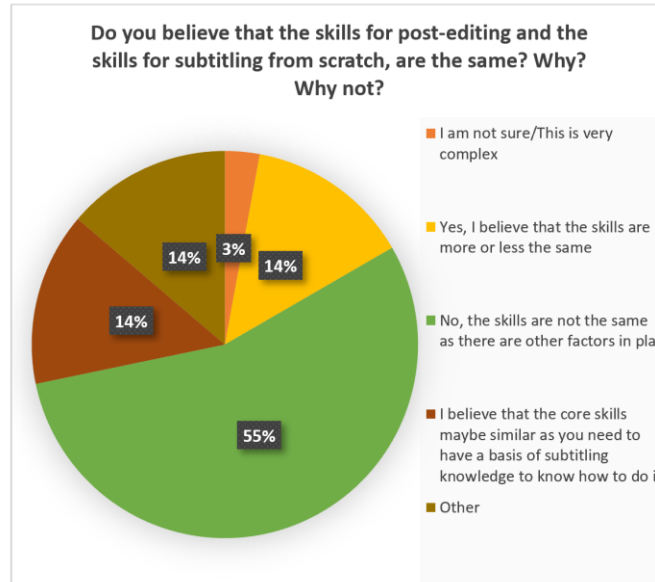
Figure 47. Overview of question C18 regarding the possible differences in terms of skills between post-editing and subtitling from scratch

Question C19 is the last question of the section that deals with Skills & Technology. In C19 the participants had to rank different skills (translation, technical, communication skills) according to their importance in the subtitling process, based on their opinion. Translation skills was the skill that was considered the most important (119 responses as most important), followed by technical skills (91 responses as important) and leaving the communication skills as last (96 answers as least important). This question basically shows the priorities that the respondents seem to have in mind when they are asked to describe a standard subtitling practice. The data from question C19 are illustrated in figure 48 in the form of a chart.
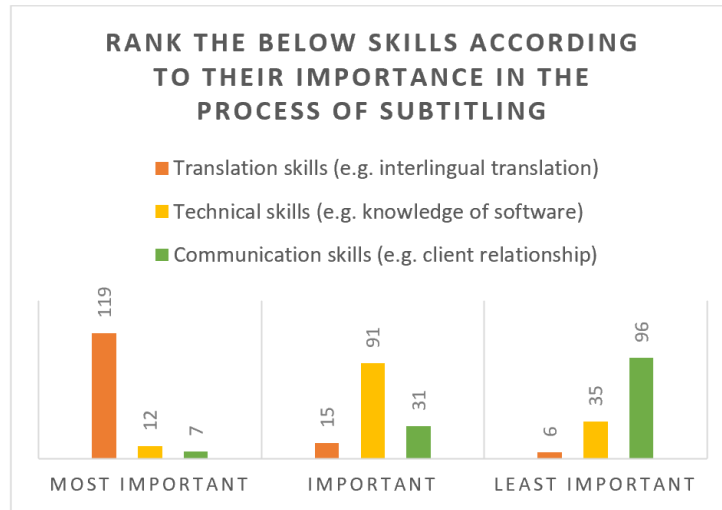
Figure 48. Overview of question C19 regarding participants' ranking of various skills in the process of subtitling

3.1.1.4.   Data analysis for section D of the questionnaire: Work opportunities & Technology

Question D20 marks the beginning of section D, which deals with the work opportunities and the role of technology in creating (or not) such opportunities. D20 is a question for profiling the respondents and deals with whether the respondents are freelancers, are working in-house or a combination of the two. As it can be seen in figure 49 below, the sample is comprised mainly by freelancers (78%). This is not surprising, as most audiovisual translators work as freelancers and it is common in this profession.
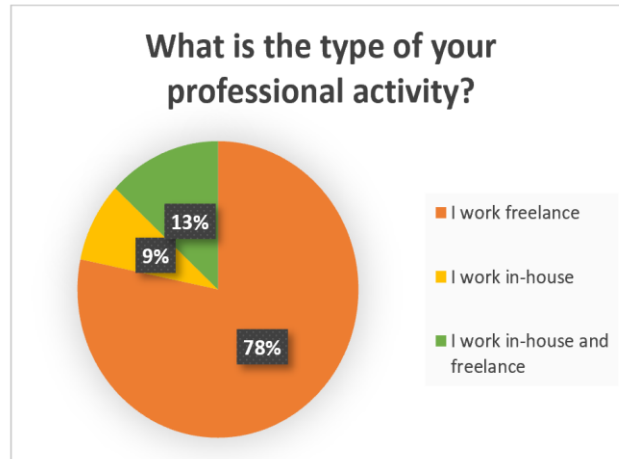
Figure 49. Overview of question D20 regarding the professional status of the participants

Moreover, since the sample comes mainly from freelancers, question D21 becomes very important under this light. Question D21 focuses on whether the development of technology has affected the respondents' work opportunities. As it can be seen in figure 50, more than half of the participants (52%) of the questionnaire seem to believe that the companies that they subtitle for are expecting more work with less cost from them due to the development of technology. However, 28% of the overall sample shows a positive attitude towards the use of technology. In addition, for 6% of the sample, technology had no effect on them. Furthermore, a percentage of 14% seems to feel uncertain regarding the effect that technology has on their work opportunities. Question D21 is presented visually in figure 50
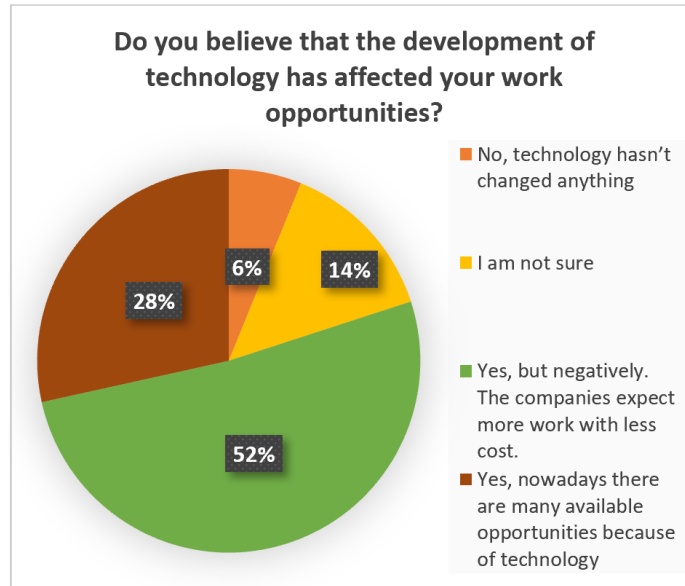
Figure 50. Overview of question D21 regarding participants' opinion on the effect that technology had on their work opportunities

Question D22 (figure 51) sheds light on how technology has affected participants, as it is an open-ended question where the participants had the opportunity to write their opinion regarding the way technology affects their professional lives. As it can be seen in figure 51, there are various types of answers. Out of the 78 answers that this question received (as it was not obligatory), 52 were positive in the sense that technology has helped the career of subtitlers: e.g., it has given them flexibility to work remotely (13%), it has allowed them to work with international clients (19%) and so on. However, 35% of the replies revolved around the negative influence technology has had on the professional lives of the respondents. It should be noted that the answers had to be categorised by the researcher, as otherwise they would have been very fragmented if these were presented as they were written in the questionnaire. This question provides a small insight to the issues that subtitlers face daily. It should be noted, however, that these issues are not necessarily in a causal relationship with the development of technology. The data from question D22 are presented in figure 51.
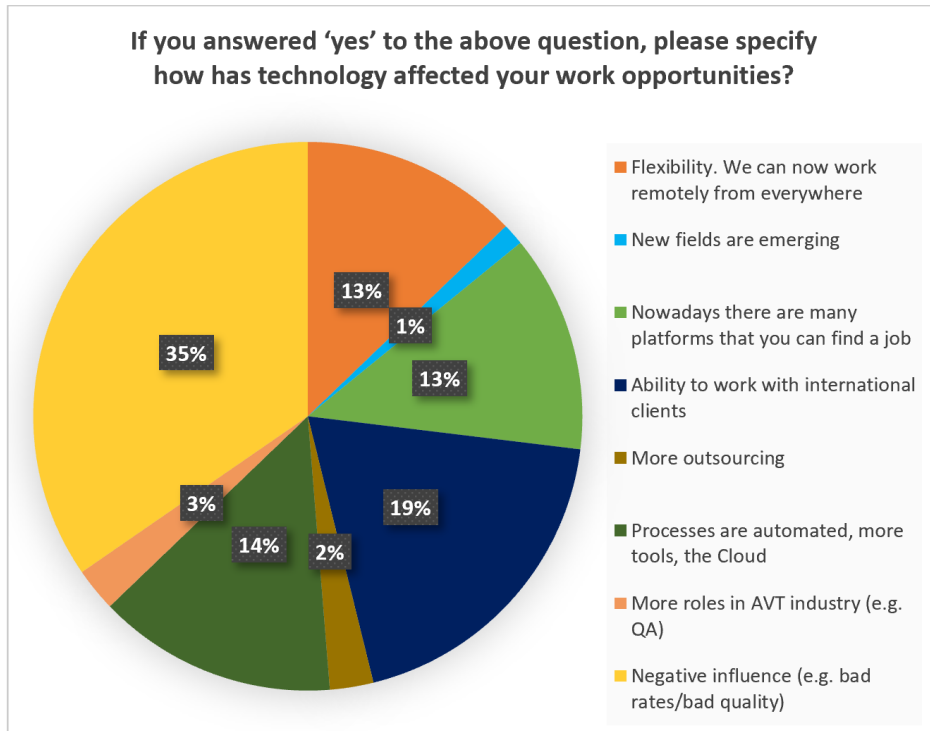
Figure 51. Overview of question D22 on the way technology affected participants' work opportunities

Question D23 deals with a slightly different topic from the above questions. D23 provides data regarding the participants' interaction with the clients. As it has been seen in figure 51, the flexibility to work remotely from everywhere allows subtitlers to have international clients and it is considered by them as a positive aspect of the technological development. The results from question D23, which show whether participants had been asked by clients to have a particular set of technical knowledge or software, indicate that technological knowledge is considered an important commodity. According to the sample, more than half of the respondents (51%) have come across a few times employers who asked them to be capable users of certain software or have certain technical skills, as a prerequisite to give them the job. In addition, the option 'yes, rarely' accounts for 33% of the respondents. If these two options are combined, then this entails that 84% of the sample has encountered such requests which, since the sample basically comes from freelancers, gains even more relevance. Thus, according to the data,

technology plays a significant role for subtitlers (especially freelancers) to obtain more work opportunities and hence lead them potentially to financial prosperity. The results of question D23 are presented in figure 52.
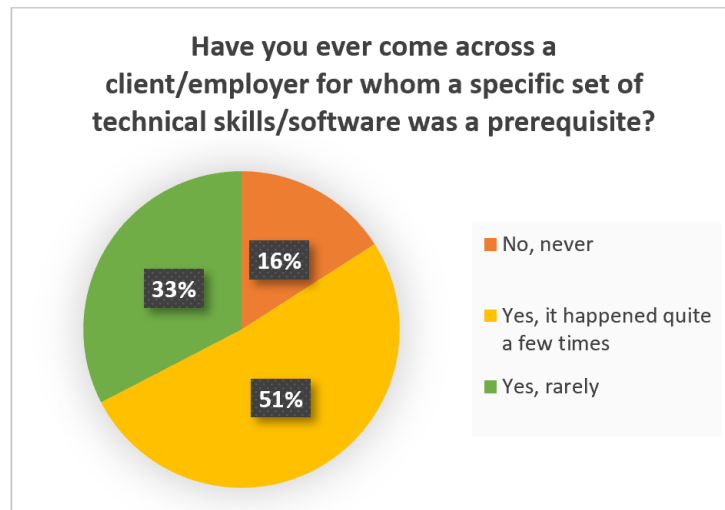
Figure 52. Overview of question D23 regarding clients' requests in relation to a specific set of technical skills/software

Regarding the frequency with which subtitling companies are requesting post-editing for subtitles, more than half of the respondents (51%) replied 'rarely'. This is logical in terms of the sample, since as it was shown in question B12 (figure 41), most of the respondents do not have post-editing experience for more than 3 years. The second highest response, that is 'Never', is not surprising, as it follows the same logic as the argument above; that is, most subtitlers have very little experience in post-editing, so the possibility to encounter such job becomes slimmer. Nevertheless, there were some responses that included the answers 'usually' and 'always'. To be exact, 12% of the respondents chose the option 'usually' and 4% chose the answer 'always', indicating that this group of participants deal with clients with a number of post-editing jobs. Generally speaking, it seems that subtitlers are required to have some experience and knowledge in the area of post-editing in order to attract clients and jobs that are focused on post-editing.
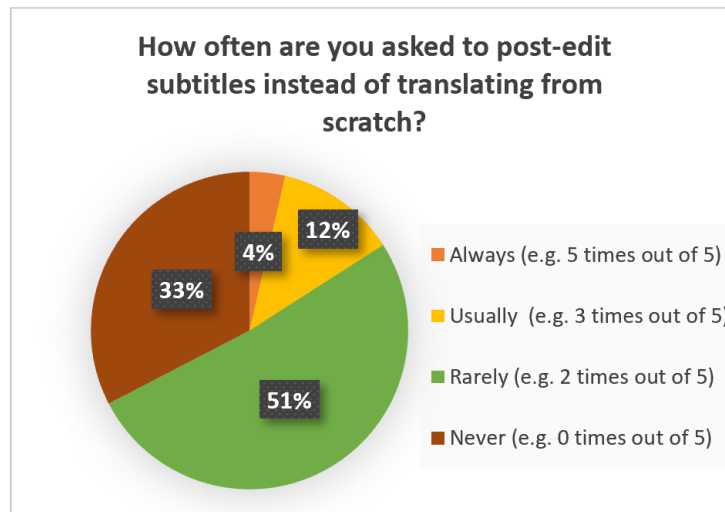
Figure 53. Overview of question D24 regarding the frequency of post-editing requests

Question D25 deals with the financial compensation of the professional subtitlers. According to the respondents' answers, the amount of effort and work that they are asked to provide are not reflected in their financial compensation. The answer 'No, the rates do not reflect the amount of work that is demanded by the task' accounts for 91% of the participants' opinion so it is safe to say, according to the data of this sample, that subtitlers are not pleased with the financial compensation they are given for post-editing subtitles.
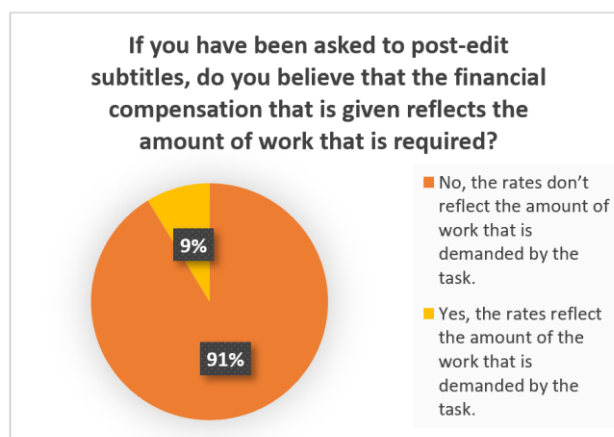
Figure 54. Overview of question D25 regarding the financial compensation of subtitlers for post-editing subtitles

3.1.1.5.   Data analysis for section E of the questionnaire: Subtitling technologies

Section E of the questionnaire covers the area of subtitling technologies. Question E26 has as a focal point the use of CAT tools in the subtitling workflow. The majority of the participants (65%) argue that they don't use any tools. However, almost one third of the sample (28%) uses the tools during subtitling. Only 4% of the sample uses the tools before, for instance, for some preparation. Similarly to the group that uses the tools before subtitling, only 3% use the tools after subtitling, for example, for quality assurance processes. Figure 55 presents these data visually.
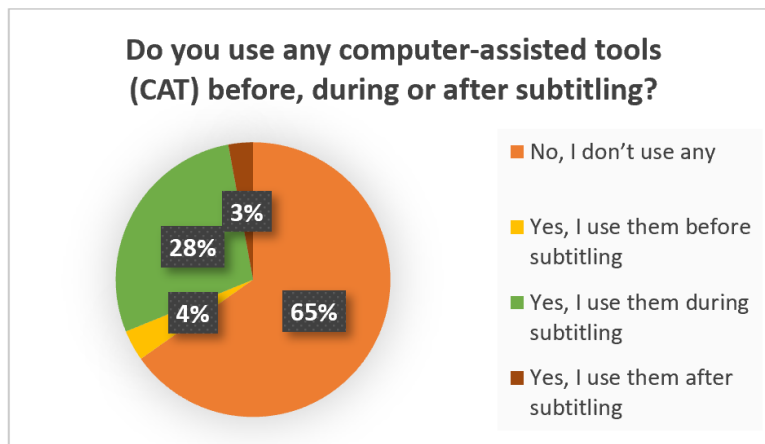
Figure 55. Overview of question E26 regarding participants' use of CAT tools in subtitling

Similarly, to question E26, question E27 asks if respondents use machine translation tools. The picture we get from the participants is the same in terms of the percentages and their choices. The option 'No, I don't use any' is still the highest (68%), followed by the answer 'Yes, I use them during subtitling' in the second place (25%) and 'Yes, I use them before subtitling' and 'Yes, I use them after subtitling' in the third (5%) and forth (2%) positions, respectively. The only slight change between E26 and E27 is the option 'No, I don't use any', which is 3% higher in E27. The results from question E27 are presented in figure 56.
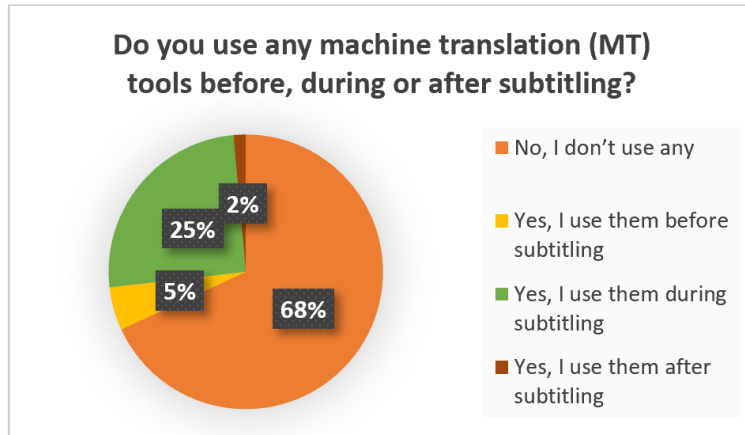
Figure 56. Overview of question E27 regarding subtitlers' use of MT tools in subtitling

Question E28 deals with the type of software that subtitlers use when working. The answers are split almost evenly in three parts, with the option 'I use a combination of the two' superseding the other two options with a slight edge (38%). The option 'I use professional subtitling software' received 30% of the responses and the answer 'I use freeware software' reached 32% of the sample responses. These data could imply that neither the professional nor the freeware software cover all the needs of the respondents. The reasons could be multiple, as on the one hand the professional software may work with less issues or bugs, that one finds in freeware software, but professional software usually have very specific capabilities (e.g., synchronisation, editing of timecodes and so on). Hence, it could be the case that the subtitler may need another professional software (e.g., in order to use a built-in text to speech software to create a script). However, another paid software would increase subtitlers' costs. Thus, a financially viable solution would be to look for alternative and less costly options like freeware software. Another interpretation of the data is that there are clients who require different software and hence the only financially viable option is to use the already existing professional software and use a freeware for conversions or other tasks that the requested professional software cannot fulfil. On the other hand, freeware subtitling software have limited functionality and in most cases, there are bugs or unexpected errors. Thus, at some point the subtitler would need to invest in a

professional software or, if possible, ask to be provided with a professional software by the subtitling company. Question E28 is illustrated visually in figure 57.
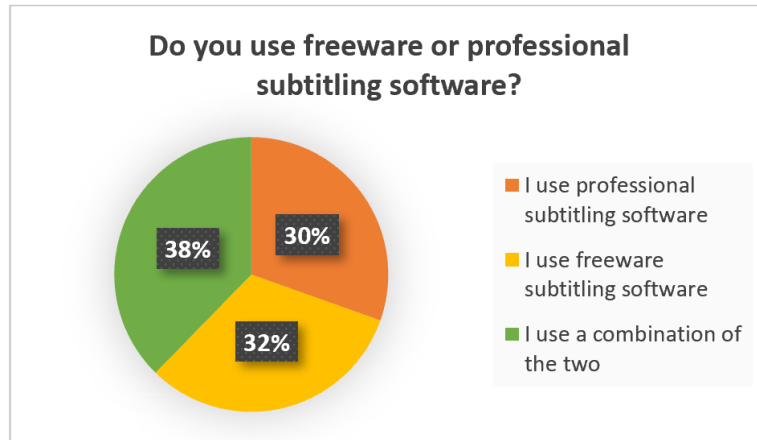
Figure 57. Overview of question E28 regarding the use of freeware or professional software.

Question E29 dealt with the quality of translation and whether this is affected by the technology. It should be noted that the word 'translation' refers to subtitling in terms of linguistic transfer. Since it was an open question, the data had to be categorised by the researcher in the categories shown figure 58 (e.g., 'Both because like all tools, it depends how you use it and on the context', 'Overall, I believe that it has a positive effect', 'Overall, I believe that it has a negative effect', 'Other'). The participants (53%) seem to lean towards a positive effect, possibly because of the quality assurance process that can be performed after the actual translation takes place. In addition, the option 'Both because like all tools, it depends how you use it and on the context' received the second highest percentage (33%), which indicates that the participants of this sample place an important focus on the context in which various tools are used. The option 'Other' (3%) included answers that related to financial compensation and quality and were not deemed directly relevant to the question, so these answers were classified as 'Other'. The data from question E29 are shown in figure 58.
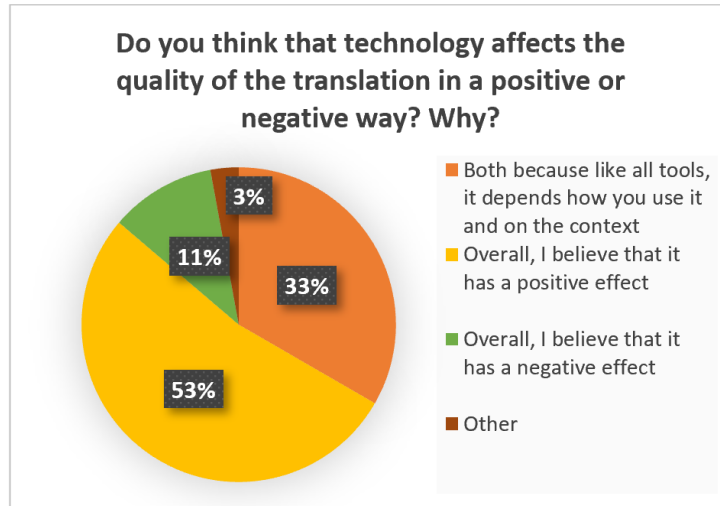
Figure 58. Overview of question E29 regarding the influence of technology on the translation quality

The questionnaire concludes with question E30. Question E30 asks for a prediction by the participants regarding the future direction that the subtitling profession will take. As it is shown in figure 59, the majority of the respondents (79%) believe that the future will involve a combination of human subtitling and post-editing. The option 'No, I don't think this will ever happen' accounts for the 15% of the responses and could either be an indicator that they do not share this opinion, or that they hope that this would not happen.
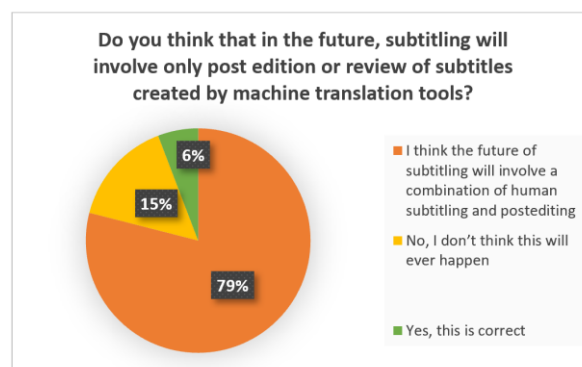
Figure 59. Overview of question E30 regarding subtitlers' opinion on the future of the subtitling practice

The data analysis of the survey's questions of the sample, that includes both contexts, is completed with question E30. A comparative analysis between the Greek-speaking context and the Spanish context will follow in section 3.1.2. In addition, the correlations between the data of the Greek-speaking sample will be provided in section 3.1.3. and the correlations between the data of the Spanish context will be presented in section 3.1.4.

3.1.2.   Comparative analysis between the Greek-speaking context and the Spanish context

Section 3.1.2 provides a comparative analysis between the Greek-speaking context and the Spanish context in order to be able to draw comparisons between the two contexts. It should be noted that in the case of Spain, the sample number is lower than the sample size of the Greek-speaking context, but the market is bigger than the Greek-speaking context. Thus, the results cannot be generalised and should be confirmed or rejected in future studies. The ISO language codes have been used to identify the contexts. EL refers to the Greek-speaking context and ES refers to the Spanish context. The pie charts that include the ISO code EL next to the title of the pie chart represent the data that come from the Greek-speaking context and the pie charts that include the ISO code ES next to the title of the pie chart represent the data that come from the Spanish context. The sample size of the EL sample reached up to 80 participants and the sample size for the ES sample reached up to 58 participants. It should also be noted that all the data are presented on a percentage basis in order to be comparable. Lastly, the subsections below follow the structure of the questionnaire.

3.1.2.1.   Comparative analysis between the EL and ES sample of section A of the questionnaire: Demographics

As far as the gender of the population of the sample is concerned, although it is clearly dominated by females, in the ES sample there seems to be higher participation by males.

In fact, 33% of the Spanish participants are males, whereas males occupy only 14% in the Greek sample. Figure 60 presents the comparative data of question A1 visually.
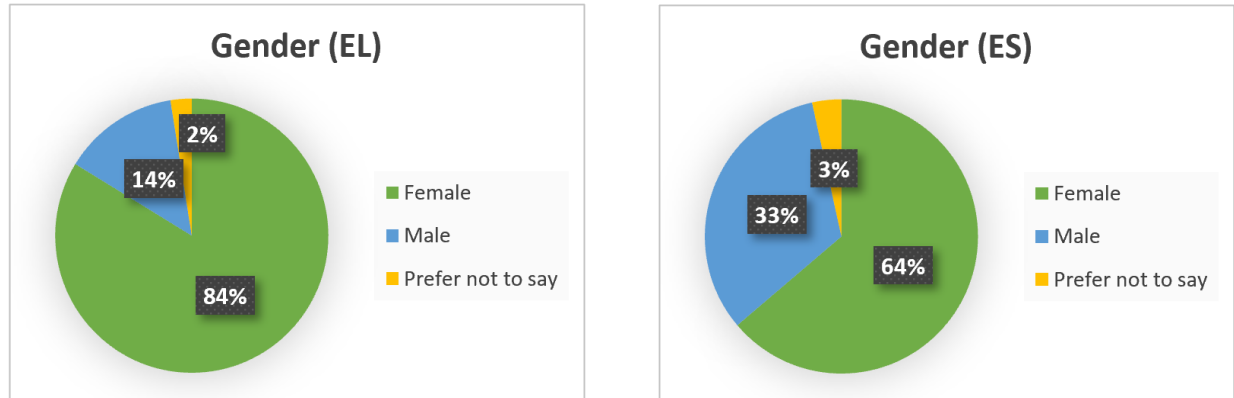
Figure 60. Comparisons between the EL and ES sample for question A1 regarding the gender of the participants

Moreover, regarding the age group of the population of the sample, it could be observed that in the EL sample the participants come mainly from all the age groups, but especially the age groups between 26 – 35 (40%) and 36 – 40 (26%). The Spanish participants, however, come primarily from the age group 26 – 35 (58%). It is worth noting also that that the age group 18 – 25 is 4% higher in the ES sample, denoting a younger population. In fact, if we look closely at the ages from 18 to 35, in the EL sample these ages are covered by 46% of the participants whereas in the ES sample these ages are covered by 68% of the participants. In other words, EL sample has a slightly older population. The comparative data for question A1 are presented in figure 61.
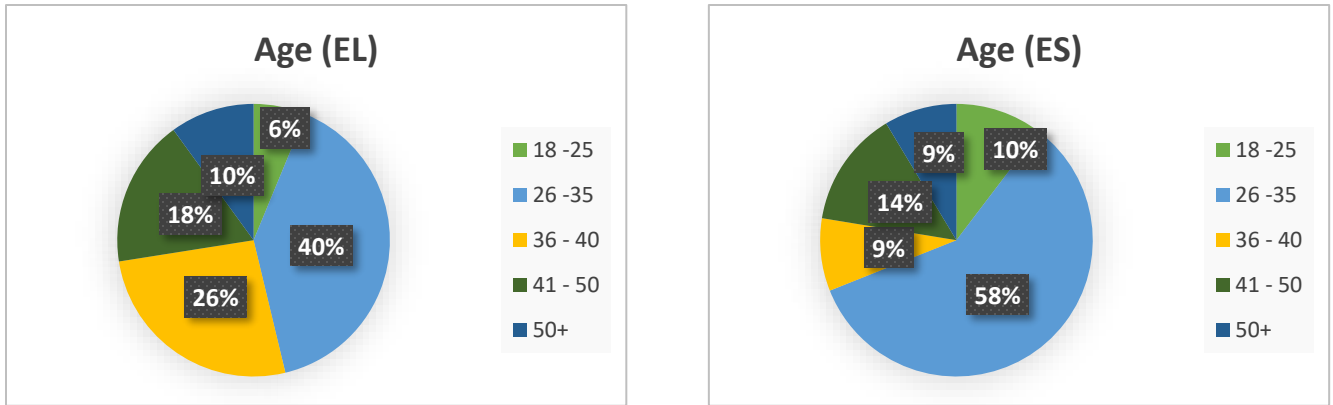
Figure 61. Comparisons between the EL and ES sample for question A2 regarding the participants' age

In relation to the countries that the participants come from, the EL sample comes mainly from Greece (75%) and abroad (21%) whereas the respondents of the ES sample come mainly from Spain (74%) and abroad (26%). The ES sample does not include any Spanish participant living in Greece or Cyprus whereas the EL sample includes 2 Greek participants who live in Spain. These data are illustrated in figure 62.
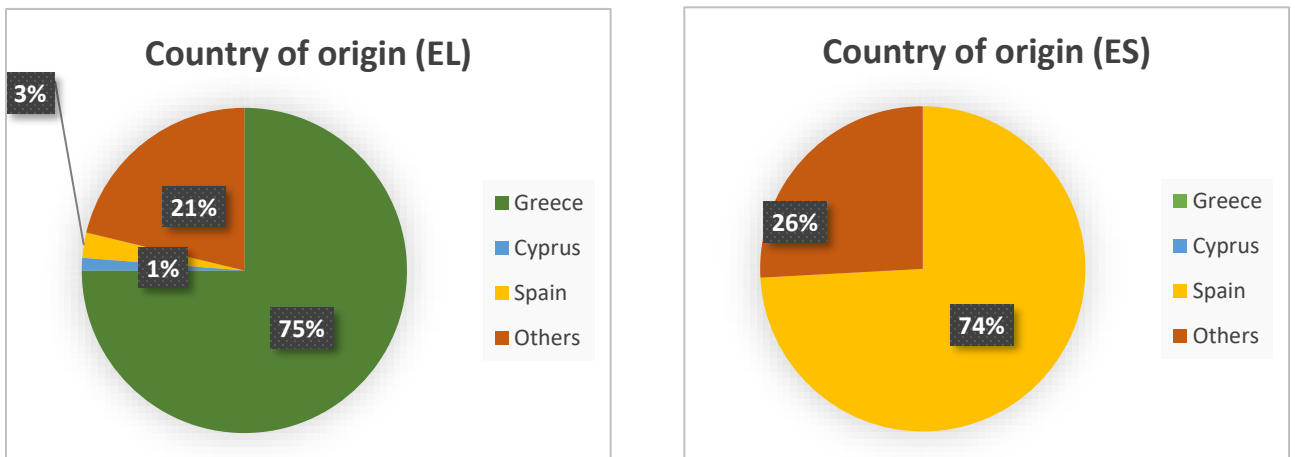
Figure 62. Comparisons between the EL and ES sample for question A3 regarding the participants' country of origin

Regarding the educational background of the participants, in the sample population that comes from the Greek-speaking context, the participants come from all the educational

backgrounds but mainly from the postgraduate level (59%) and the bachelor's level (24%). Similarly, the majority of the participants originating from the ES sample come from the postgraduate level (69%). However, in the ES sample, 16% of the respondents have a doctorate, whereas 15% of the participants have obtained a bachelor's degree. There are no participants whose educational background is limited to High school in the ES sample. Thus, it could be said that even though the EL sample is characterised by all the possible educational backgrounds, the ES sample is characterised by higher qualifications, as 85% of the respondents of the ES sample have a postgraduate degree and higher. In the case of the EL sample, only 69% of the participants have obtained a postgraduate degree and higher. The comparative data of question A4 are presented in figure 63 below.
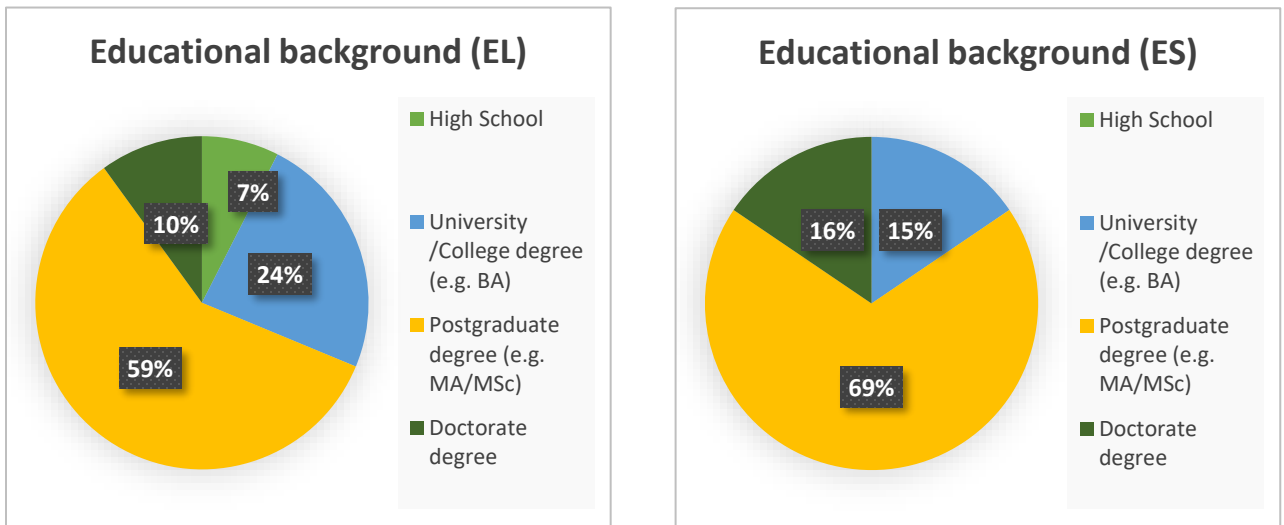
Figure 63. Comparisons between the EL and ES sample for question A4 regarding participants' education background

Question A5 presents the number of years that have passed since the completion of the highest qualification of the participants. In the EL sample, the option 13+ years ago received the majority of the answers (28%). This is expected, since as it was discussed in question A2, the EL sample has an older population. In addition, the second highest option was 1-3 years ago, which consists only of 17% of the participants. In contrast, 26% of the respondents of the ES sample have completed their highest qualification only 1-3 years

ago and 20% of the participants have obtained their highest qualification only 4-6 years ago. Thus, this is aligned with the average age of the ES sample, which falls under the age group of 26-35. Also, only 14% of the Spanish participants chose the option 13+ years ago. A comparison between the EL and ES context for question A5 is presented in figure 64 below.
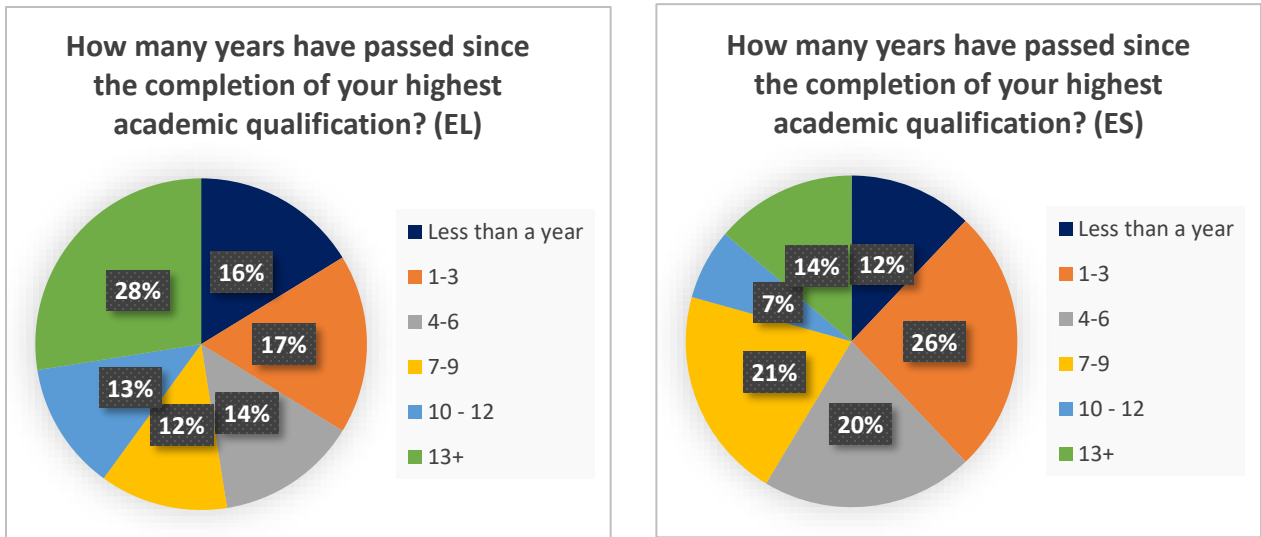
Figure 64. Comparisons between the EL and ES samples for question A5 regarding the years that have passed since the participants' highest qualification

3.1.2.2.   Comparative analysis between the EL and ES sample of section B of the questionnaire: Subtitling, training and technology

Question B6 marks the beginning of section B, that is subtitling, training and technology. Question B6 deals with the audiovisual mediums that the subtitlers create the subtitles for. As it can be seen in figure 65, in both samples, VOD occupies the first place (91% in the EL sample and 94% in the ES sample), followed by TV and then Cinema. Although DVD is quite low in terms of numbers, it is still being used as a medium of audiovisual dissemination. These data are presented in figure 65 below.

Select the main audiovisual (AV) medium that you subtitle for (EL)

Medium	Value
Other	4
Websites	1
Video games	0
DVD	5
Video-on-demand	64
TV	48
Cinema	19

Select the main audiovisual (AV) medium that you subtitle for (ES)

Medium	Value
Other	2
Websites	1
Video games	1
DVD	6
Video-on-demand	47
TV	21
Cinema	11
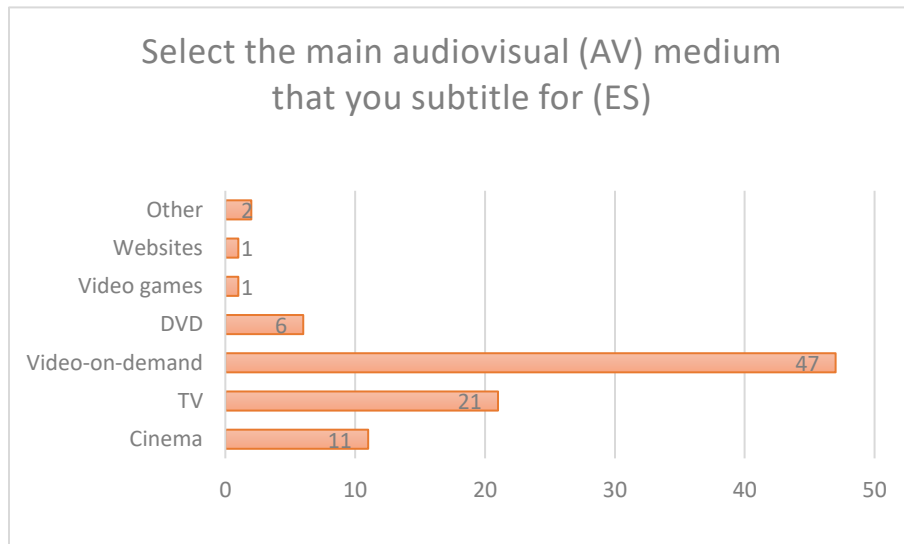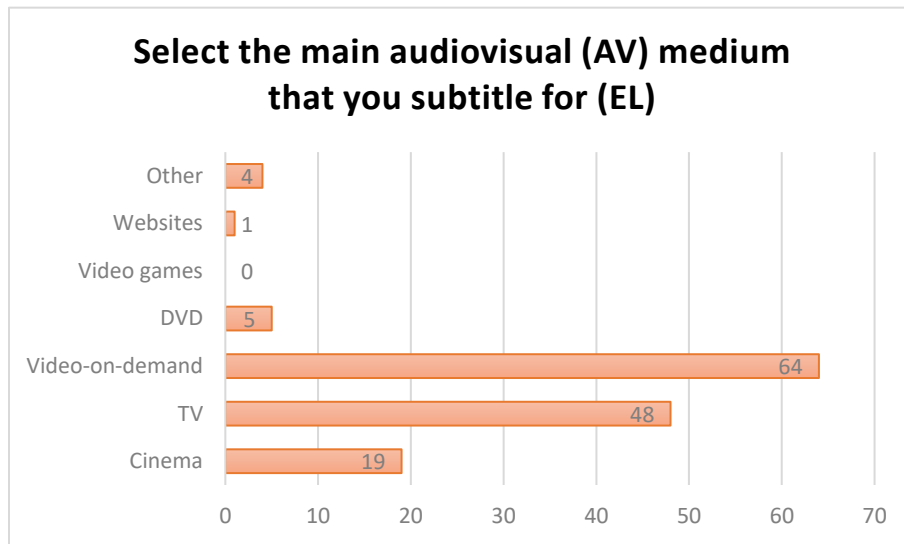
Figure 65. Comparisons between the EL and ES sample for question B6 regarding AV mediums that participants subtitle for

Question B7 presents the respondents' training in terms of technical skills. The participants from the EL sample, seem to acquire their technical skills either while working at a company (31%) or by attending a specialised course outside the bachelor or postgraduate degree (23%). However, with only 1% difference from the option with the specialised course, the option 'The training was part of my postgraduate degree' comes third (22%), showing a need to specialise at a higher level. As far as the ES sample is

concerned, the Spanish participants seem to acquire their technical skills at the academic level, especially at the postgraduate level (48%). Only 16% of the participants of the ES sample acquire their technical skillset at a company while working, which comes in contrast with the EL sample, in which 31% of the respondents were trained in a company. This could denote a tendency in the EL population to be more industry-oriented or that the Greek subtitling curricula do not cover the necessary technical skills that are required by the industry.
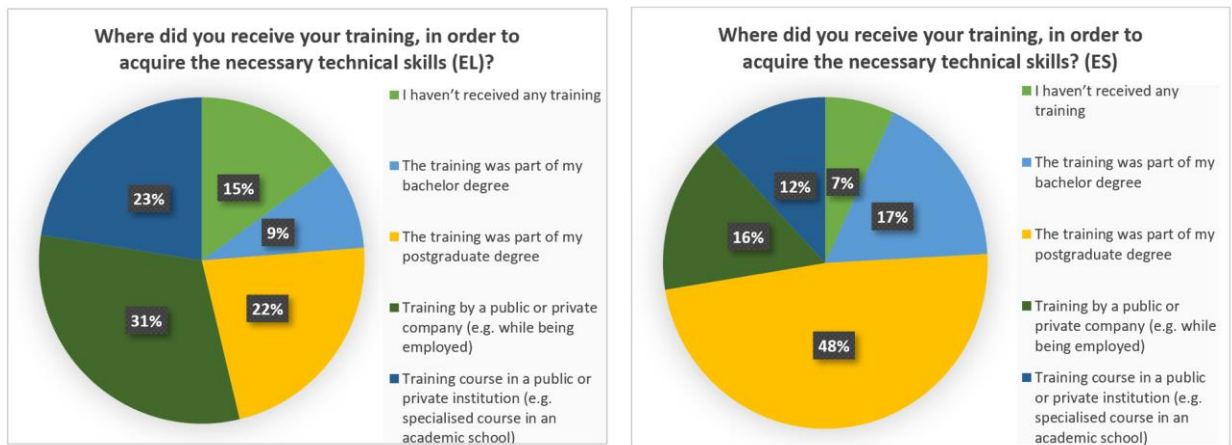
Figure 66. Comparisons between the EL and ES sample for question B7 regarding the participants' training to acquire the necessary technical skills

As far as question B8 is concerned, the Greek participants seem to be less confident than the Spanish respondents regarding their formal training, as 34% believe that the training has not equipped them satisfactorily and 29% of the EL sample do not seem certain. Although 30% of the Greek sample seems to believe that this training is adequate, in the ES sample, the same option was chosen by 50% the population. Nevertheless, 24% of the Spanish respondents do not think that this training is enough. The comparative data that come from question B8 are illustrated below in figure 67.
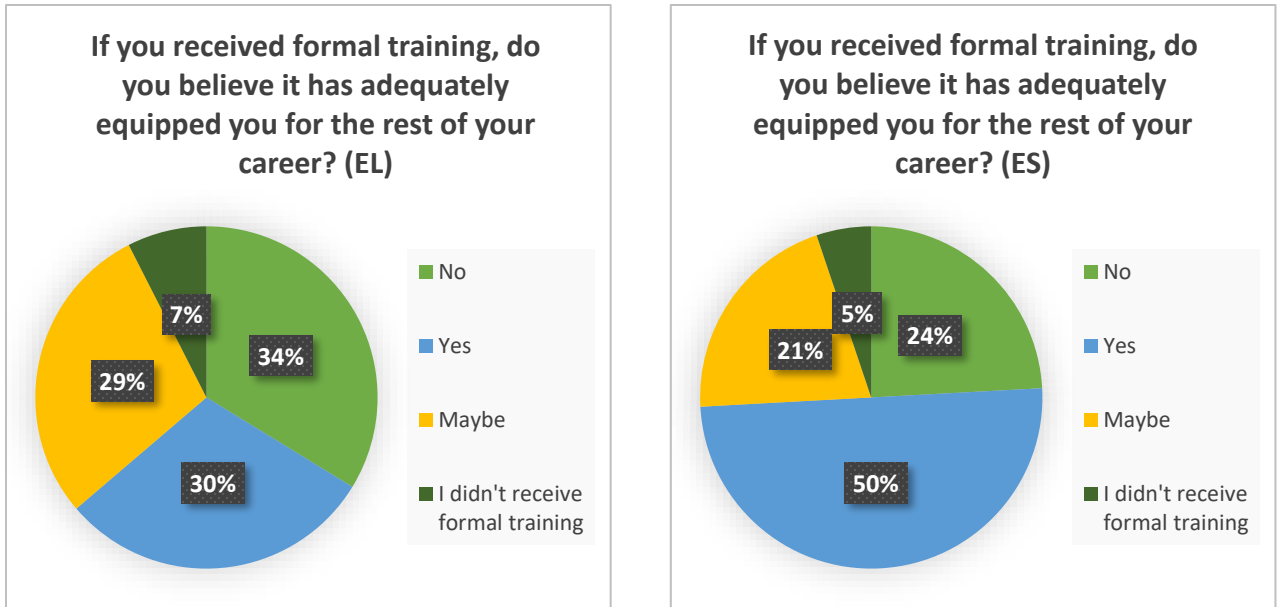
Figure 67. Comparisons between the EL and ES sample for question B8 regarding formal training

Regarding the preference of the participants in relation to the subtitling technology trainers, the results from both samples present the same picture. Most of the respondents seem to trust more the academic institutions (62% for the EL sample and 69% for the ES sample) instead of the industry (38% for the EL sample and 31% for the ES sample). However, there seems to be an indication in the EL sample that the Greek subtitlers trust the industry more than the Spanish participants (38% vs 31% accordingly). The comparative results of question B9 are given in pie figure 68.
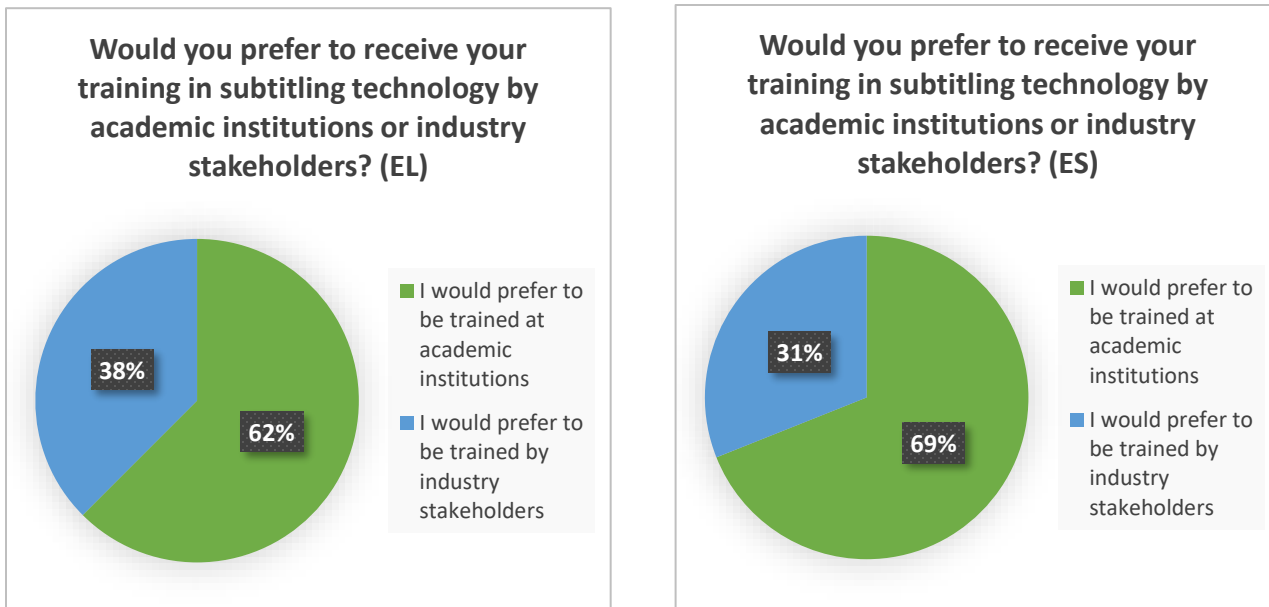
Figure 68. Comparisons between the EL and ES sample for question B9 regarding the participants' preference for training

Question B10 provides information on the training that the subtitlers received. In both samples, two answers stand out. Regarding the reply 'I didn't receive any training and I don't post-edit', in the EL sample, it seems to be the second highest answer (39%), whereas in the ES sample, it received as many responses as the first answer (41%), in which subtitlers stated that they did not receive training but have learnt on their own through their contact with the subject. In relation to the answer 'No, I have not received any training, but I have learnt through my interaction with the subject', in the EL sample, this answer received 41% of the responses. The same answer received an identical percentage in the ES sample; thus, it could be said that there is a lot of personal effort involved by the participants when it comes to more in-depth learning about post-editing. The answer 'Yes, it was part of my academic degree' received the lowest percentages in both samples, suggesting a need for a more inclusive syllabus in terms of technology in general and post-editing specifically. The data for question B10 are presented in figure 69.
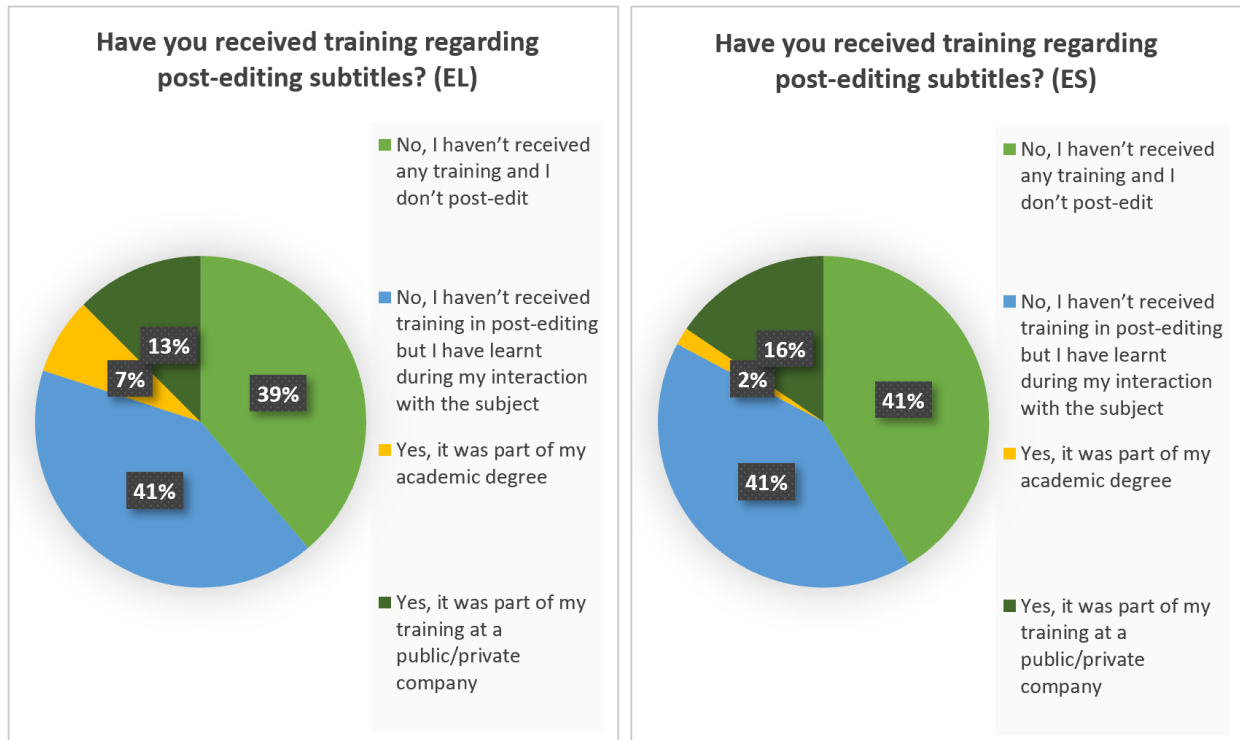
Figure 69. Comparisons between the EL and ES sample for question B10 regarding post-editing training

Regarding B11, which deals with whether subtitlers post-edit as part of a job requirement, both samples present the same picture. In both samples, the option 'No' received the highest percentages (57% in the EL sample and 69% in the ES sample). However, according to the EL sample, 43% of the respondents are post-editing as part of a job requirement, which is a relatively high percentage as this suggests that 4 out of 10 participants post-edit as part of their job requirements. In contrast, by looking at the ES sample, there seems to be an indication that post-editing is in the process of becoming part of subtitling requests, as 3 out of 10 participants indicated that they are post-editing as part of job requests. Also, the gap between the positive and the negative answers in the ES sample is significantly larger (31% for the answer 'No' and 69% for the answer 'Yes') when it is compared to the difference between the positive and negative answers in the EL sample (43% for the answer 'No' and 57% for the answer 'Yes'). One interpretation could be because the subtitling industry in Greece is younger than the Spanish subtitling industry,

so the Greek subtitling industry is embracing technology. In addition, another interpretation could be that the Greek subtitling industry is trying to reduce costs. The comparison between the EL and ES sample regarding question B11 is illustrated below.
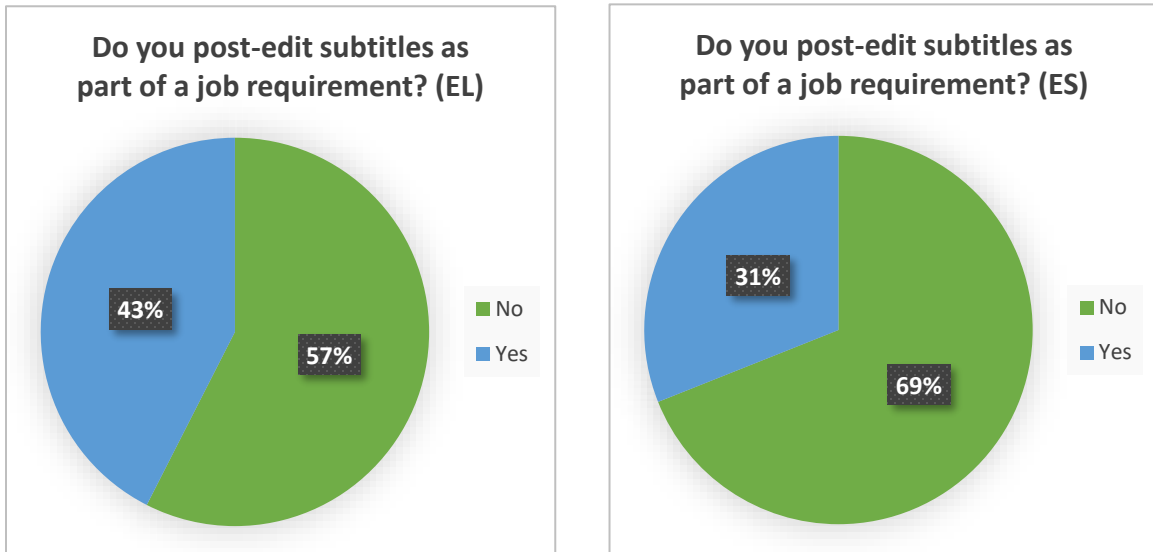
Figure 70. Comparison between EL and ES sample for question B11 regarding post-editing as part of a job requirement

Furthermore, B12 deals with the participants who replied positively in B11. Both samples show that post-editing is a relatively new job requirement as in the EL sample the majority of the participants (76%) do not have more than 3 years of experiences and in the ES sample, 85% of the respondents also do not have more than 3 years of professional contact with post-editing as a job requirement. The comparisons regarding question B12 are presented visually in figure 71.
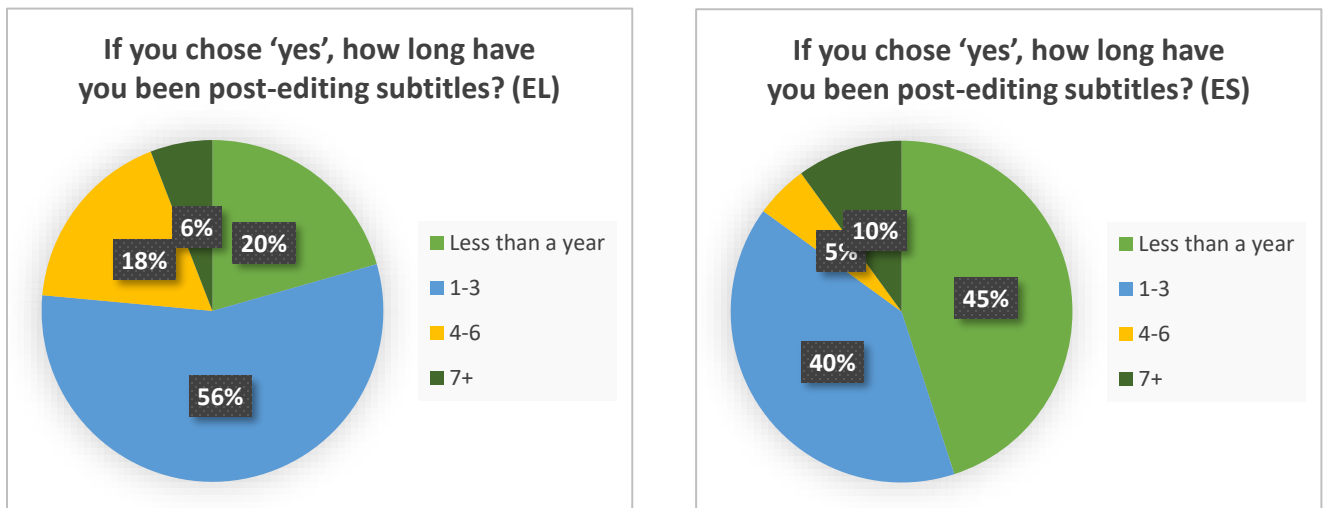
Figure 71. Comparison between EL and ES sample for question B12 regarding participants' years of experience in post-editing

3.1.2.3.   Comparative analysis between the EL and ES sample of section C of the questionnaire: Skills & Technology

Question C13 provides information regarding the confidence that the participants portray in their technical skills. Participants from the EL sample show an above the average certainty in their skills (the option '3' is considered the average in this case), as the answer '4' received the highest percentage (54%). In addition, the second highest response was '5' which reached 28% of the population. Similarly, the participants from the ES sample demonstrate an equal confidence in their technical skills with 43% of the respondents replying that their technical skills are in the level of 4 out 5. In addition, 41% of the Spanish participants chose the answer '5', which is the highest grade in this scale. Furthermore, no participant coming from the ES sample chose the options '1' or '2'. Figure 72 presents the aforementioned data.
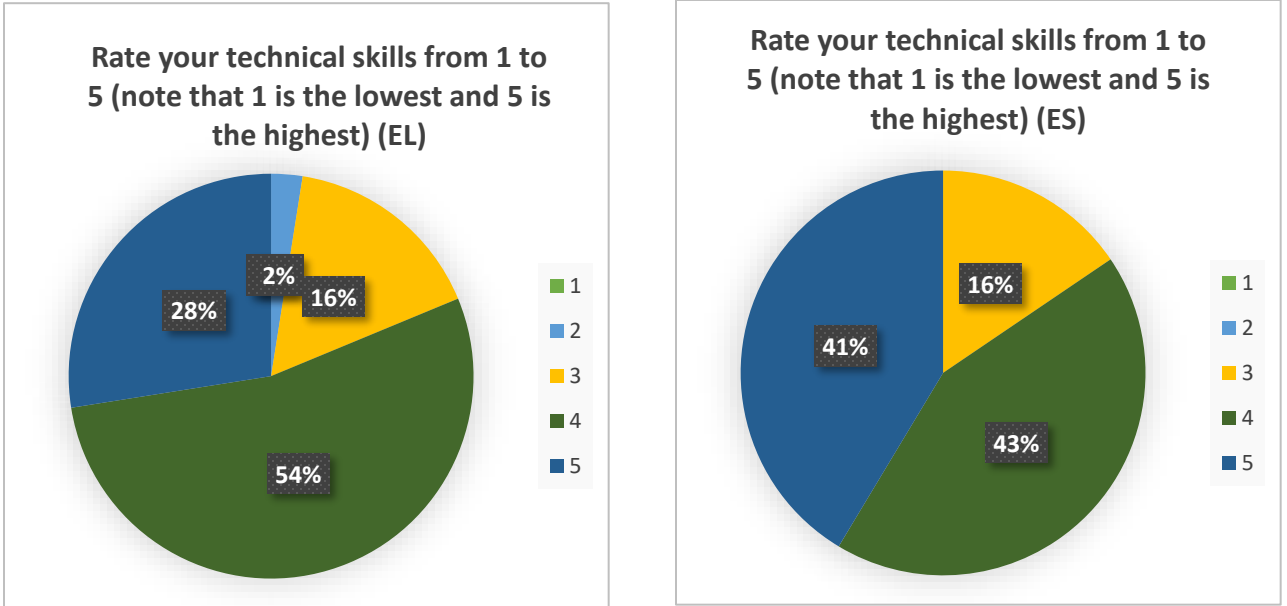
Figure 72. Comparison between EL and ES sample for question C13 regarding participants' perception of their technical skills

Figure 73 presents the data that come from question C14, as it is seen below. In question C14, it could be observed that answer '4' received the majority of the responses in both samples (42% in the EL sample and 36% in the ES sample). In addition, answer '3', which is the in the middle of the Likert scale, received very similar percentages, that is 30% and 31%, in the EL and the ES samples respectively. This indicates that the participants seem to believe that the technical competence that is required in their chosen AV medium(s) starts from average and above.
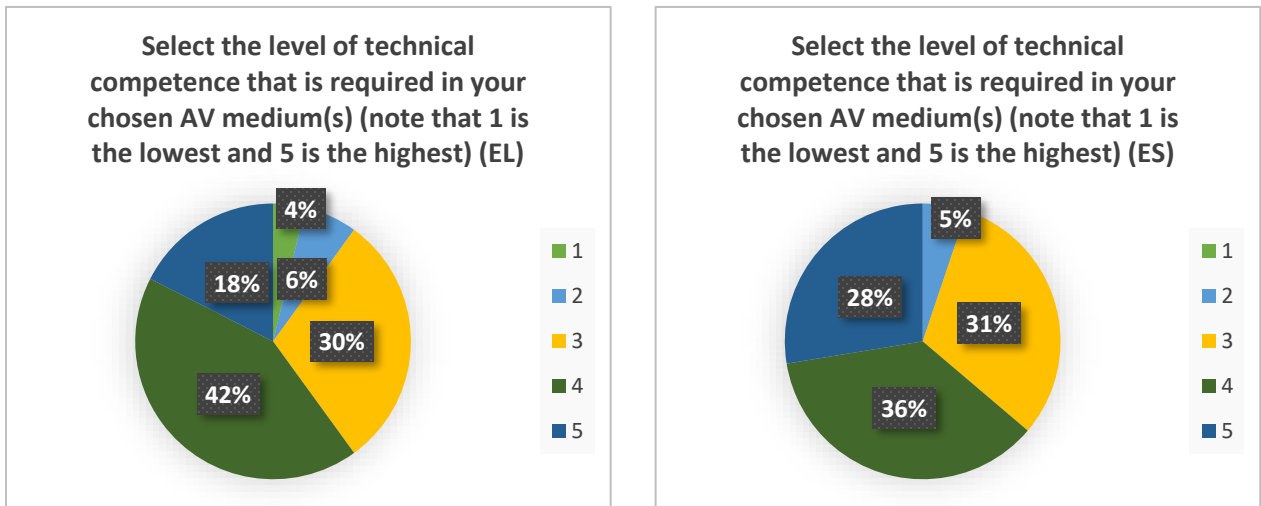
Figure 73. Comparison between EL and ES sample for question C14 regarding the level of technical competence that is required in participants' chosen AV medium(s)

Question C15, which deals with whether participants feel that the development of technology has made them to need an upskill in their technical knowledge, seems to present a similar picture in both samples. For instance, there is a clear preference over the answer 'Yes' (71% in the EL sample and 66% in the ES sample). The only difference is perhaps that in the EL sample, the answer 'No' received 5% less responses (29%) when compared to the ES sample, in which the answer 'No' received 34%. Question C15 is presented in figure 74.
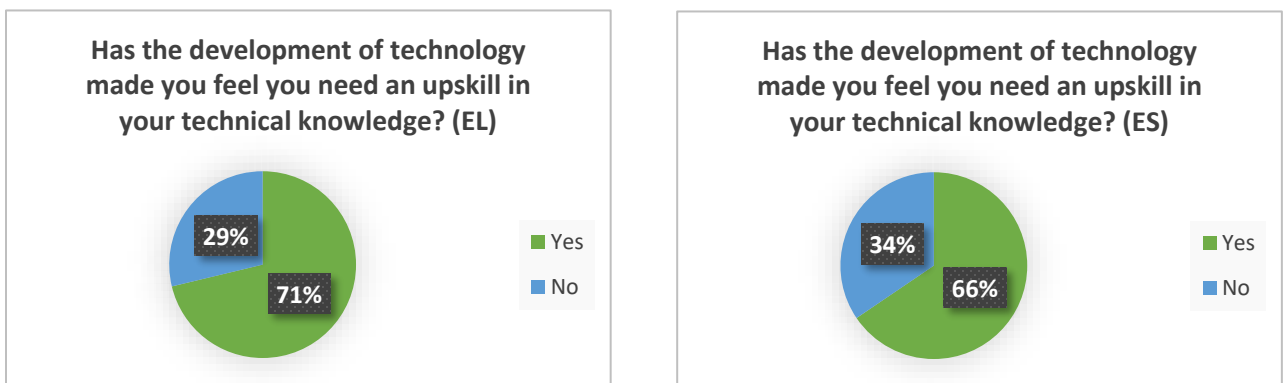
Figure 74. Comparison between EL and ES sample for question C15 regarding participants' years of experience in post-editing

Question C16 focuses on the respondents who replied positively in question C15. Both samples offer a similar overview, as seen in figure 75, regarding the participants' actions to address a possible need for upskill in their technical knowledge. The majority of the Greek participants (62%) replied positively when it came to taking action to address their need for upskill. A percentage of 33% answered with a vaguer answer like 'I'm thinking about it', which has a positive connotation rather than a negative one. A small group that represents 5% of the Greek participants replied negatively (e.g. 'No'). In the case of the ES sample, the results are quite similar to the EL sample, as it can be seen in figure 75, with the difference that no participant replied negatively in taking action to address the need for upskill.

In case you answered "yes" to the above question, have you done something to address this? (EL)

- Yes
- No
- I'm thinking about it

33%
5%
62%

In case you answered "yes" to the above question, have you done something to address this? (ES)

- Yes
- No
- I'm thinking about it

37%
63%
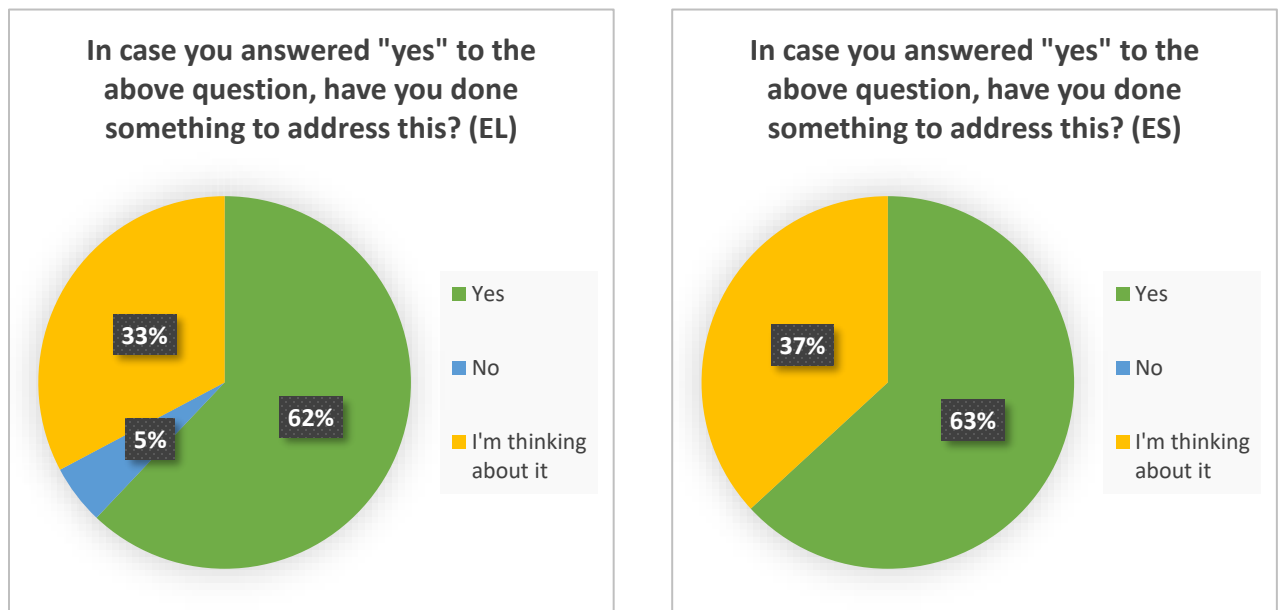
Figure 75. Comparison between EL and ES sample for question C16 regarding participants' actions to address their need for upskill

Regarding question C17, it is clear that in both samples the answer that revolves around additional courses regarding technology, received the majority of responses (55% for the EL sample and 78% in the ES sample). However, in the ES sample, the answers are only limited to three options: attending a course, no thought was given to the subject and that the participants are up to date with their training). The EL sample is more diverse in terms

of answers, as 18% of the respondents expect the company to train them, whereas another 9% would like guidance from the industry in order to assess their skills. The comparative data for question C17 are shown in figure 76 below.
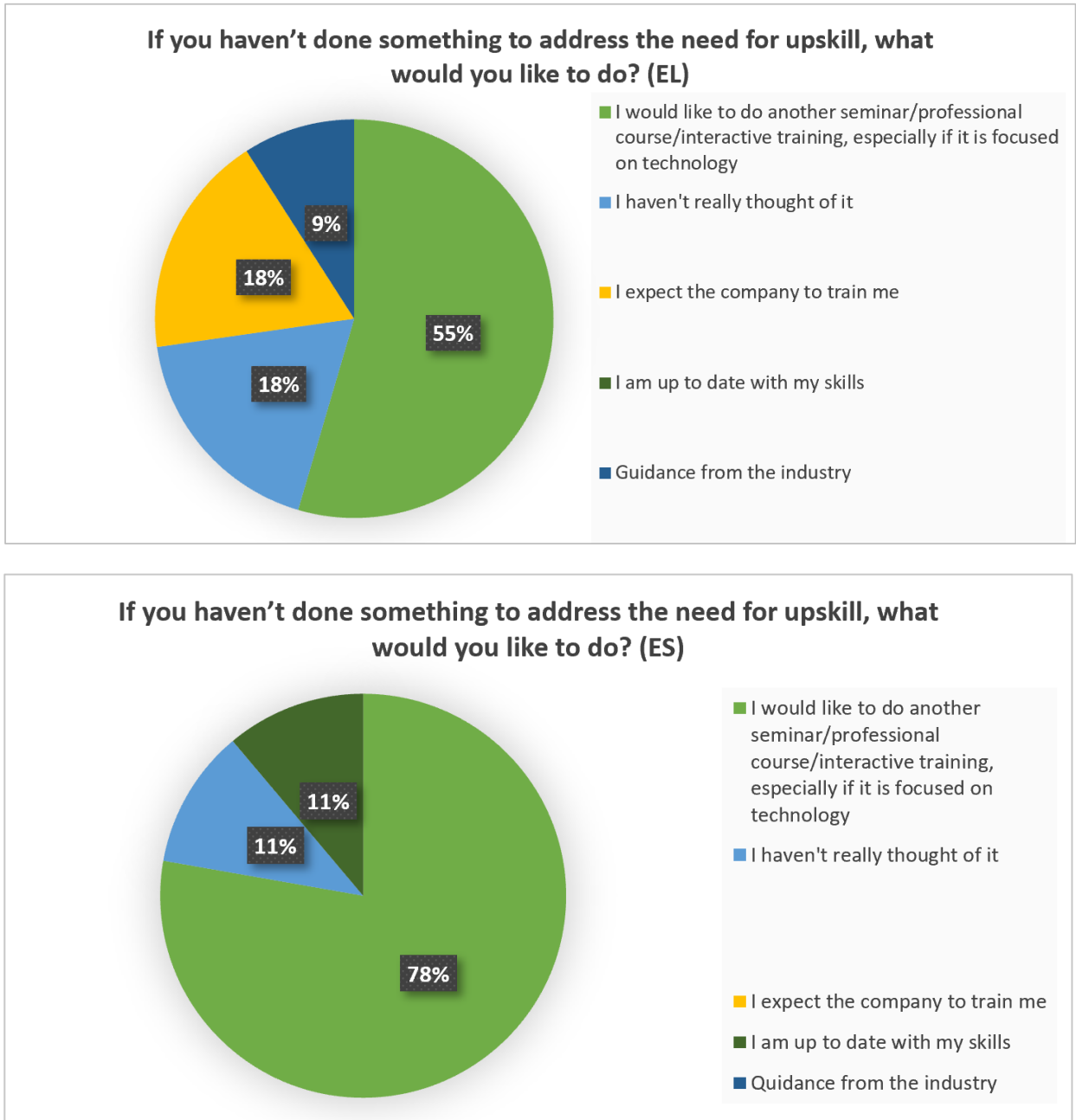
Figure 76. Comparison between EL and ES sample for question C17 regarding participants' preferences regarding possible actions for upskill in their technical knowledge

Question C18 is an open-ended question, which means that the data had to be grouped according to the content of the answers. In this case, the two samples seem to diverge slightly from each other. For instance, in the EL sample, only 9% of the respondents seem to think that the skills for post-editing and subtitling from scratch are the same, whereas in the ES sample, a percentage of 21% of the respondents perceive these skills as identical. Regarding the answer that refers to the core skills as being identical, in the EL sample it received 4% less responses when compared to the ES sample, indicating perhaps a perception that these two practices do not share the same core skills. In addition, as it can be interpreted by the charts below, the majority of the participants believe that the skills for post-editing and subtitling from scratch are not the same due to other factors that come into play (57% in the EL sample and 52% in the ES sample). The option 'Other' refers to answers that were not relevant to the question at hand and this is the reason that these were classified in this group. An example from the category 'Other' is the following: 'Not something regarding subtitling, but I would like to learn how to use Trados in a better way'. The comparison between the EL and ES samples for question C18 is presented below (figure 77).
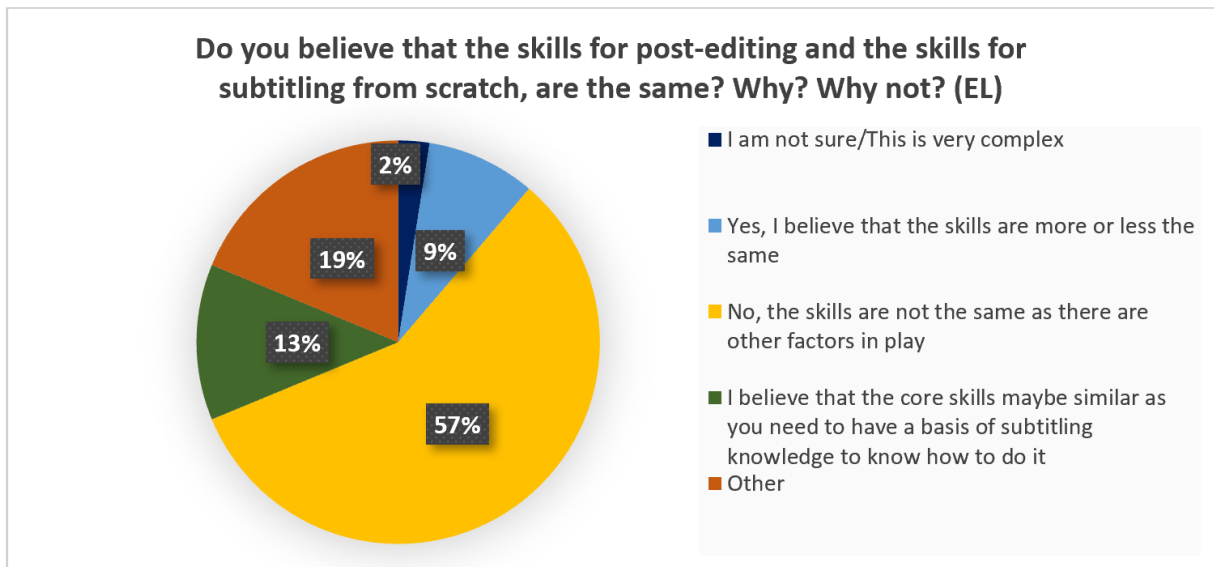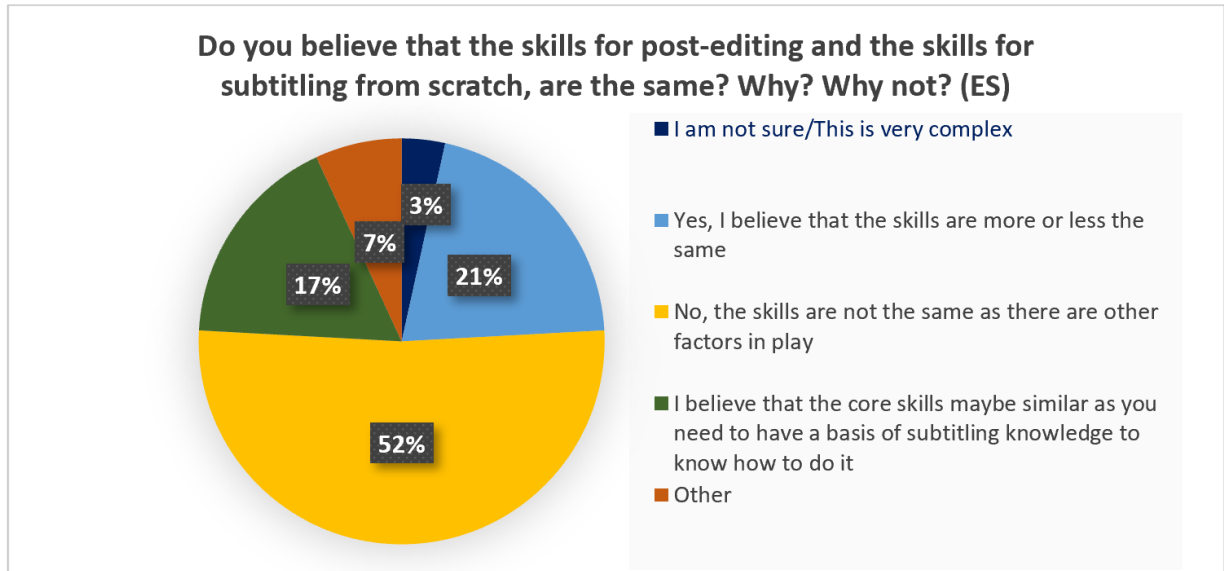
Figure 77. Comparison between EL and ES sample for question C18 regarding participants' opinion in terms of the skills that are required in post-editing and subtitling from scratch

As far as question C19 is concerned, both samples display a similar picture. Translation skills are considered the most important skill when subtitling in both samples (70/80 participants in the EL sample (87%) and 49/58 participants in the ES sample (84%)). The second most important skill is the option with the technical skills (55/80 Greek respondents (69%) and 36/58 (62%) Spanish respondents). In addition, the least important skill out the aforementioned options is the answer that focuses on communication skills (56/80 participants in the EL sample (70%) and 40/58 participants in the ES context (69%)). These data are shown visually in figure 78.
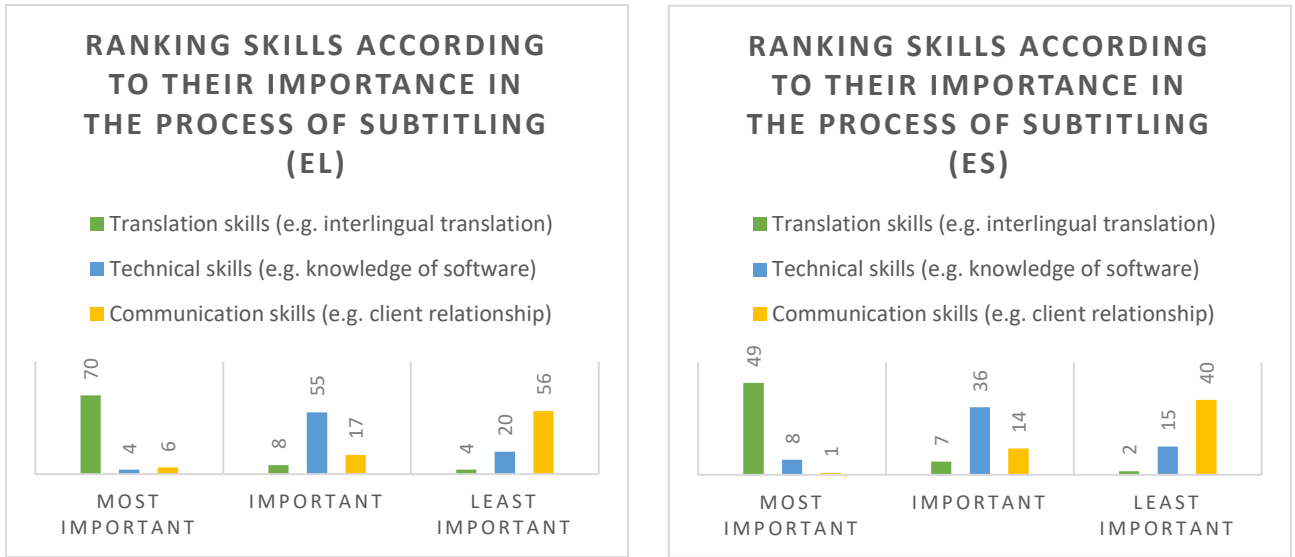
Figure 78. Comparison between EL and ES sample for question C19 regarding participants' rating of important skills in subtitling

3.1.2.4. Comparative analysis between the EL and ES sample of section D of the questionnaire: Work opportunities & Technology

Question D20 deals with the professional status of the participants. The EL sample is comprised by 77% of freelancers, whereas in the ES sample 81% of the participants are freelancers. In addition, 11% of the Greek participants work in-house in contrast to a much smaller percentage of 5% of the Spanish respondents. When it comes to a combination of in-house and freelance subtitlers, both samples display very similar numbers (12% in the EL sample and 14% in the ES sample). These data of question D20 are presented in figure 79.
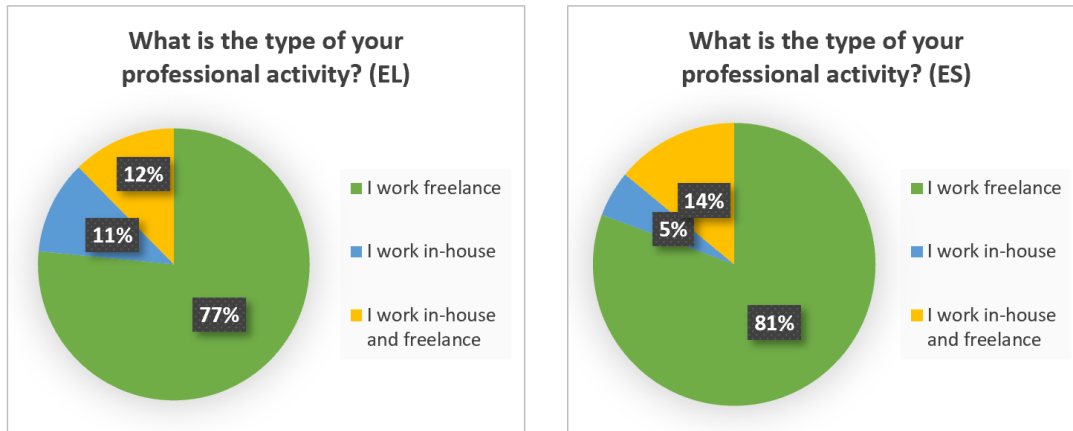
Figure 79. Comparison between EL and ES sample for question D20 regarding participants' professional status

Question D21 revolves around the perceptions of the participants, as far as the influence of technology is concerned. There are a few observations that can be made when comparing the two samples. For instance, in the EL sample, 57% of the respondents seem to believe that technology has affected their professional lives, but in a negative way. Furthermore, 1 out of 5 participants seems to be uncertain on whether technology plays a role in their professional trajectory. Lastly, 19% of the participants of the Greek sample seem to lean towards a positive influence of technology to their subtitling workflow. In the ES sample, there is clear dominance from the answers that state that technology influences the work opportunities of the subtitlers. To be precise, 45% of the respondents seem to think that technology influences them negatively, whereas 40% of the participants believe that technology has helped them. The Spanish participants do not seem to be as uncertain as the Greek participants when it comes to the role of technology in their work prospects. One interpretation of this result could be that, as it hasbeen said above, the ES sample is characterised by younger age groups, hence, it could be argued that these participants are more used to the available technologies and it is not something new that could potentially make them feel insecurity regarding the job prospects. These data are presented in figure 80.

Do you believe that the development of technology has affected your work opportunities? (EL)

- No, technology hasn't changed anything
- I am not sure
- Yes, but negatively. The companies expect more work with less cost.
- Yes, nowadays there are many available opportunities because of technology

4% 20% 19% 57%

Do you believe that the development of technology has affected your work opportunities? (ES)

- No, technology hasn't changed anything
- I am not sure
- Yes, but negatively. The companies expect more work with less cost.
- Yes, nowadays there are many available opportunities because of technology

8% 7% 40% 45%

Figure 80. Comparison between EL and ES sample for question D21 regarding participants' beliefs regarding the influence of technology on subtitlers' job prospects

Question D22 was an open-end question. It also basically expands on question D21. In the EL sample, the category 'ability to work with international clients' received 22% of the answers. However, the answers 'nowadays there are many platforms that you can find jobs' and 'Negative influence (e.g., bad rates/bad quality)' reached 20% each of the overall responses in the EL sample. These data indicate that the participants are divided between the positive and negative effects that technology can have in their professional lives, but they seem to acknowledge its influence in one way or another. On the other hand, the Spanish participants seem to be more confident when it comes to the influence of technology in their work prospects as they seem to lean towards a negative influence which includes low rates and bad quality as 56% chose the option 'Negative influence (e.g., bad rates/bad quality)'. Figure 81 illustrates the comparisons between the data of question D22.
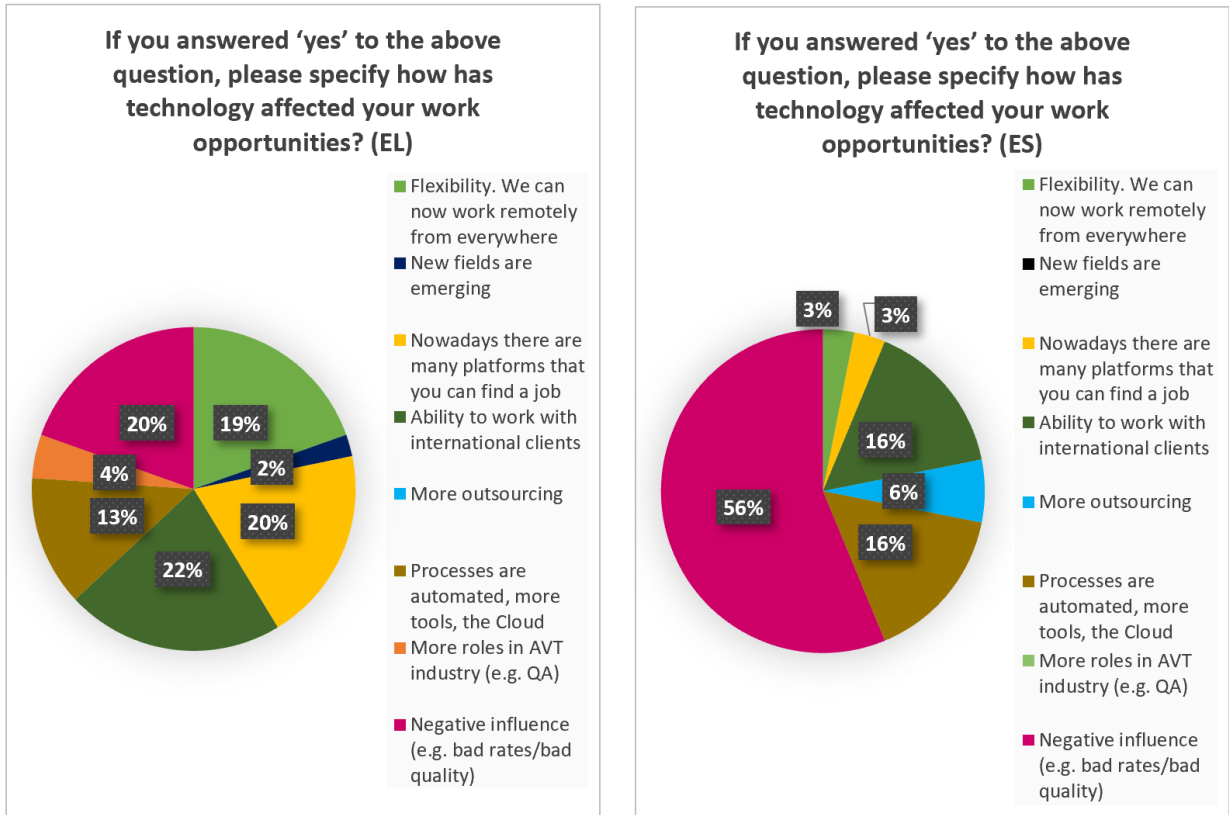
Figure 81. Comparisons between the EL and ES sample for question D22 regarding participants' opinion on how technology affected their work opportunities

Question D23, as illustrated in figure 82, shows whether the participants encountered clients who requested specific technical skills/software. Both samples demonstrate similar professional landscapes. For instance, in the EL sample, it becomes evident that 80% of the participants have encountered such clients (no matter the frequency). The ES sample also shows such high percentage in the terms of coming across clients with such specific requests. In fact, in the ES sample, this percentage reaches even 90% of the sample.
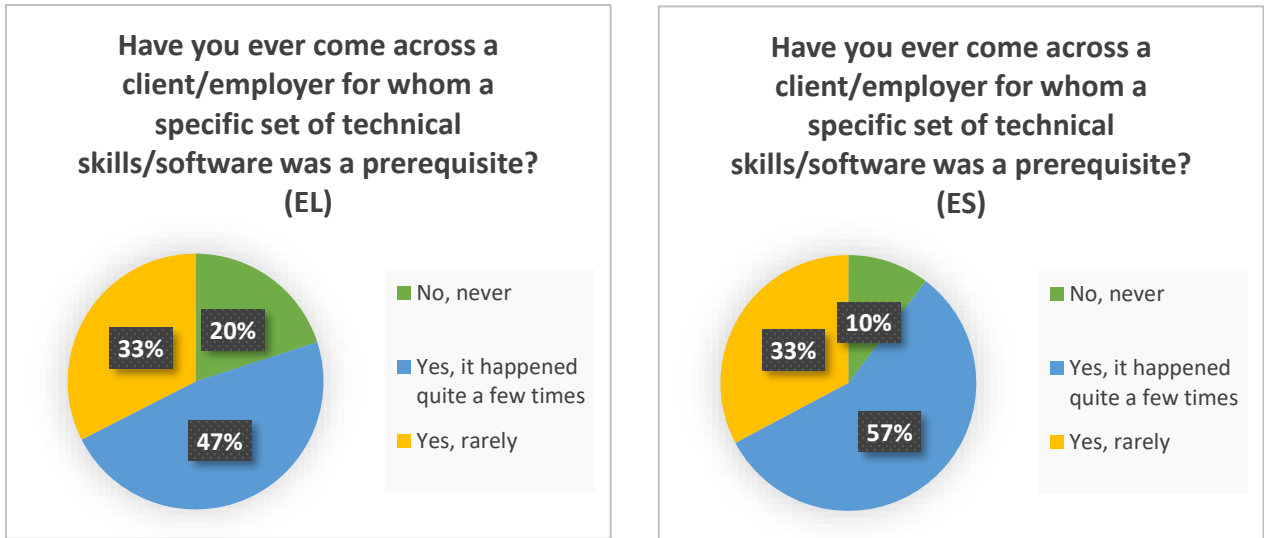
Figure 82. Comparisons between the EL and ES sample for question D23 regarding participants' encounters with clients with specific requests in terms of technical skills/software

Question D24 shows the frequency of post-editing requests. In both samples the answer 'Rarely' has obtained the highest percentages (47% in the EL sample and 57% in the ES sample). The second highest response is 'Never' (38% in the EL sample and 26% in the ES sample). As it can be seen, in the EL sample, this response 'Never' has received 12% more participation, indicating the type of client requests that the population of the EL sample receives (i.e., only subtitling jobs instead of post-editing jobs). Regarding the option 'Usually', this response received similar percentages in both samples (11% in the EL sample and 14% in the ES sample), Although it received 3% more responses in the ES sample, indicating perhaps that the Spanish AVT market is starting to slowly move towards post-editing. With regards to the response 'Always', this answer received almost identical responses (4% in the EL sample and 3% in the ES sample). The comparative data from question D24 are presented in figure 83.
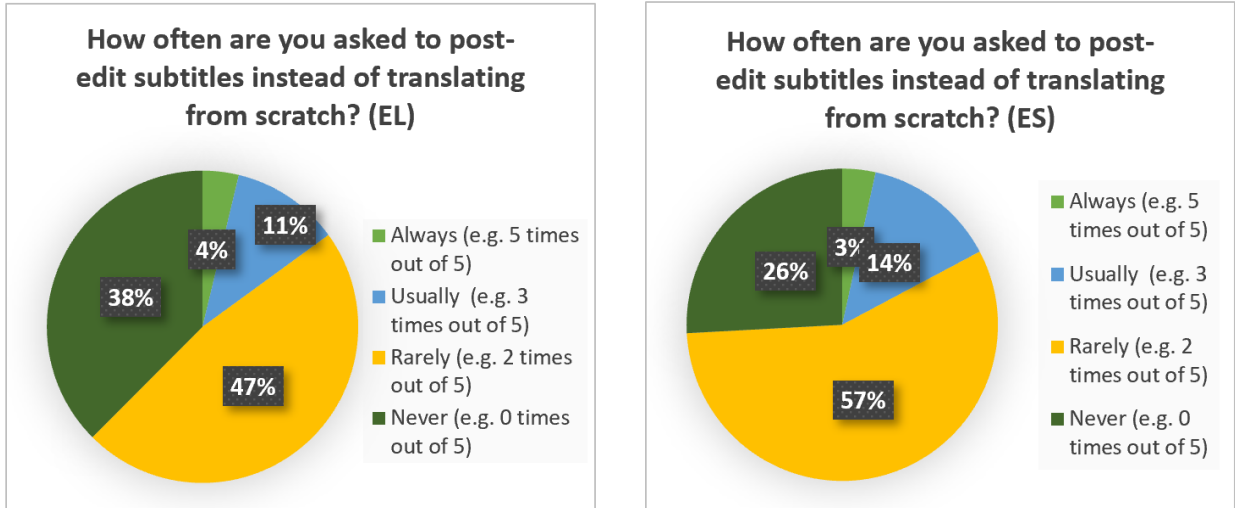
Figure 83. Comparisons between the EL and ES sample for question D24 regarding the frequency in which translators are asked to post-edit instead of translate from scratch

Regarding the financial compensation for post-editing, as this is shown in D25 in figure 84, there are not any significant observations to be made, since it becomes clear in both samples (90% in the EL sample and 93% in the ES sample) that the participants believe that the rates they are given, do not reflect the effort and work that is required by the task. The comparative data from question D25 are presented in figure 84.
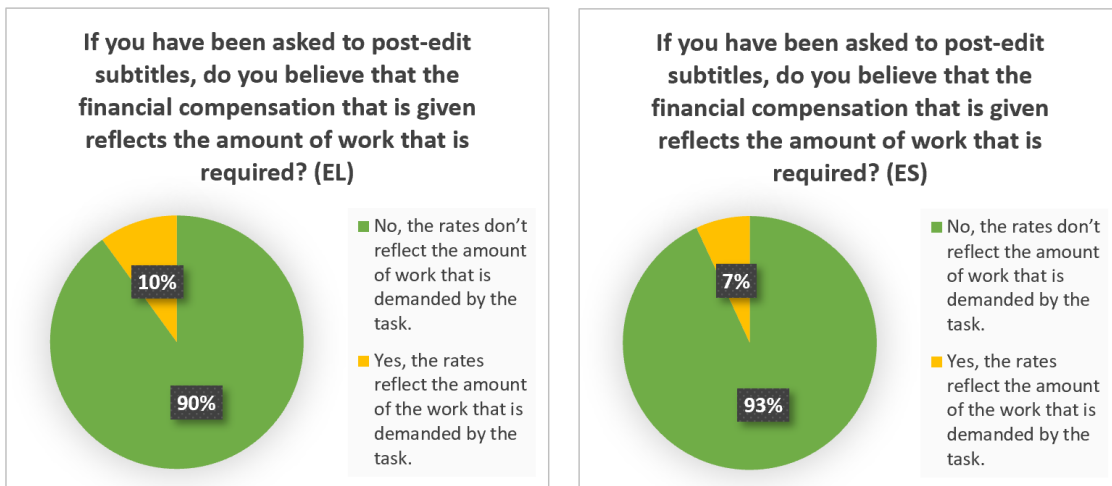
Figure 84. Comparisons between the EL and ES sample for question D25 regarding participants' financial compensation for post-editing

3.1.2.5.   Comparative analysis between the EL and ES sample of section E of the

questionnaire: Subtitling Technologies

Question E26 presents the use of CAT tools in subtitling. As it can be seen in figure 88, the majority of respondents answered using the option 'No, I do not use any' (67% in the EL sample and 62% in the ES sample). Regarding the participants who use CAT tools in subtitling, this happens during the subtitling task (24% in the EL sample and 34% in the ES sample). Thus, both samples show similar tendencies when it comes to the use of CAT tools and the step in which they use it (i.e. during subtitling).
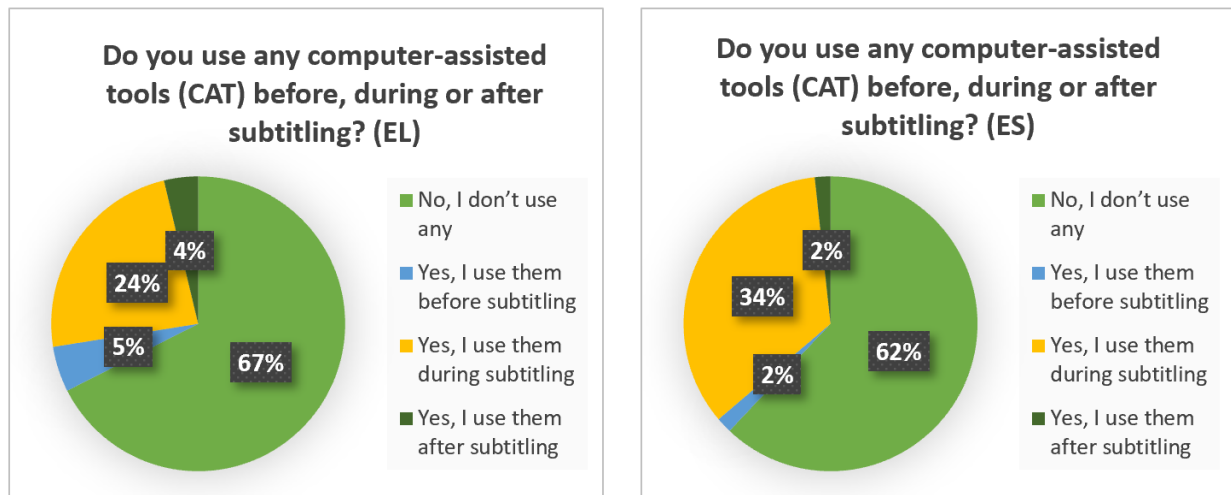
Figure 85. Comparisons between the EL and ES sample for question E26 regarding the use of CAT tools in subtitling

Question E27 presents the use of MT tools in post-editing. The structure of the question is similar to question E26. Both samples seem to reflect the same picture in figure 86. However, the answer 'No, I do not use any' (72%) is 10% higher in the EL sample when compared to the ES sample (62%). There could be a number of interpretations regarding the Greek participants and MT tools as:

a) they might not be familiar with MT tools in the same way that the Spanish participants are;

b) they might not be aware of the capabilities of MT tools;

c) this phenomenon could indicate a gap in the subtitling curricula (i.e., post-editing might not be included in subtitlers' training);

d) they might have tried using such tools but they did not like them or they did not have a positive experience.

The list of possible interpretations regarding this question is not limited to the above possible scenarios and further research is required in this area, as this is out of the scope of this doctoral dissertation. The comparisons of the two samples regarding question E27 are illustrated in figure 85.
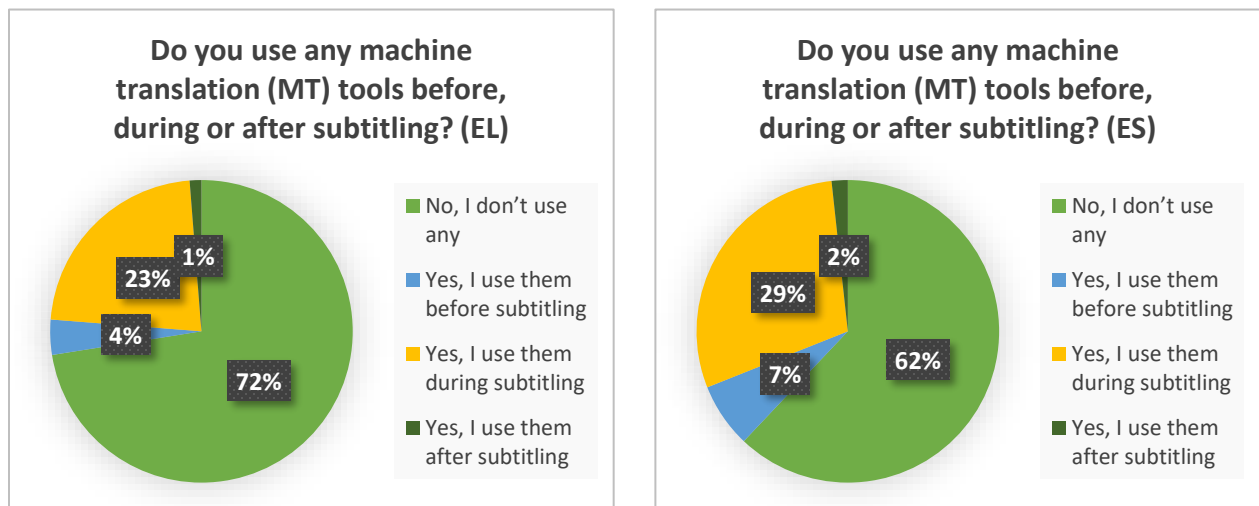
Figure 86. Comparisons between the EL and ES sample for question E27 regarding the use of MT tools in subtitling

Concerning question E28, the participants of the EL sample seem to be leaning towards professional software (37%), whereas the respondents of the ES sample tend to use a combination of freeware and professional software (45%). In the EL sample, the second highest option is the answer 'I use a combination of the two' (33%), whereas in the ES sample the second highest answer is the use of freeware software (34%). These data are presented visually in figure 87.
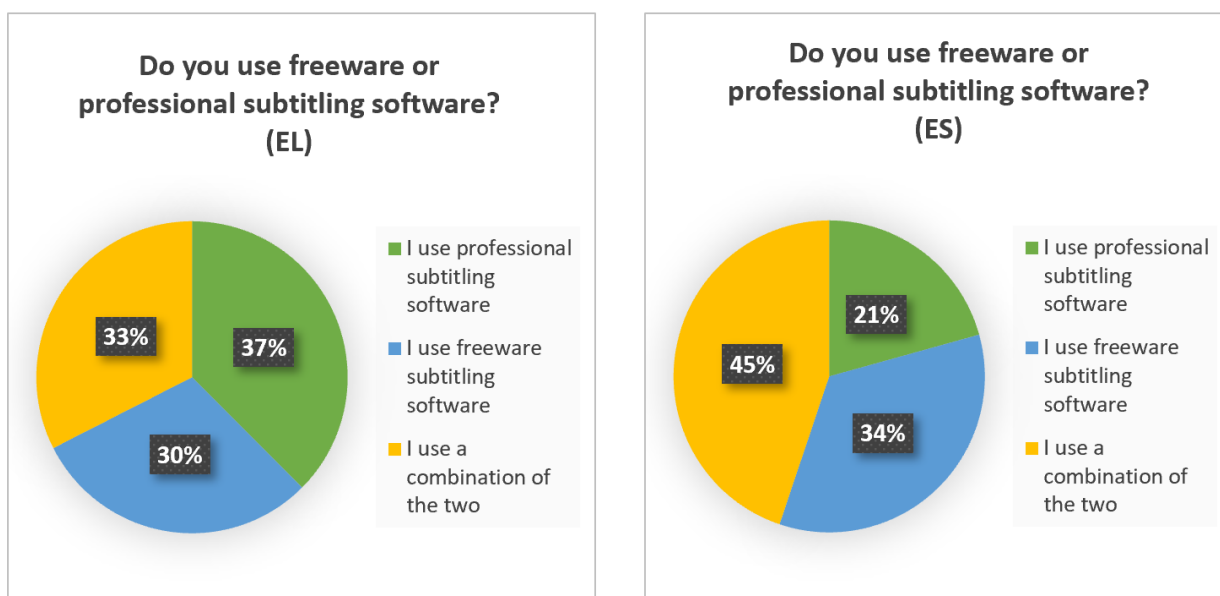
Figure 87. Comparisons between the EL and ES sample for question E28 regarding the type of software that the participants use

Question E29 revolves around the influence of technology on the translation quality. As mentioned above, the word 'translation' refers to subtitling in terms of linguistic transfer. In both samples the same answers are highlighted as the most popular. To be precise, the answer 'Overall, I feel it has a positive effect' received the highest percentage in both samples (59% in the EL sample and 45% in the ES sample). The second highest reply is the combination of positive and negative effects, that is 'Both, because like all tools, it depends how you use it and on the context' (32% in the EL sample and 36% in the ES sample). Thus, it could be said that the respondents perceive technology as a way to maintain quality, without excluding the importance of context. The option 'Other' included comments that did not answer the question directly, and hence were categorised as 'Other'. One example is the following answer which is vague since it is not clear whether the participant believes if the quality is affected by technology and in which way: 'Sometimes we tend to rely too much on technology and we overlook its mistakes and its flaws'. The comparative data for question E29 are presented visually in figure 88.
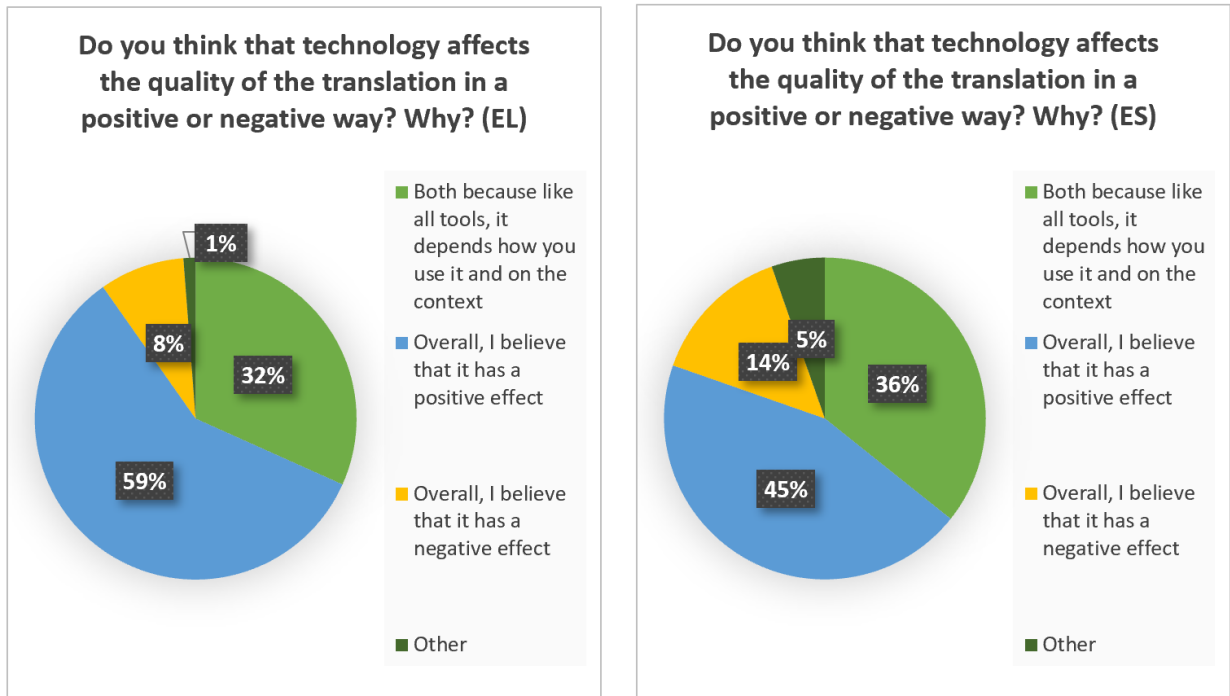
Figure 88. Comparisons between the EL and ES sample for question E29 regarding participants' beliefs on whether technology affects the quality of translation

The last question of the questionnaire, E30, deals with the perception that the participants have regarding the future tools that will be used in subtitling. Question E30 displays similar results in both samples. The highest response is the one that includes a combination of human subtitling and post-editing (81% for the EL sample and 76% for the ES sample). The second highest option 'No, I do not think this will ever happen' received the percentage of 14% in the EL sample and 17% in the ES sample. Lastly, the option 'Yes, this is correct' received the lowest percentages (5% in the EL sample and 7% in the ES sample), indicating that there is only a small group of participants who believe that the future will involve only post-editing of subtitles. The comparative data regarding question E30 are presented in figure 89.
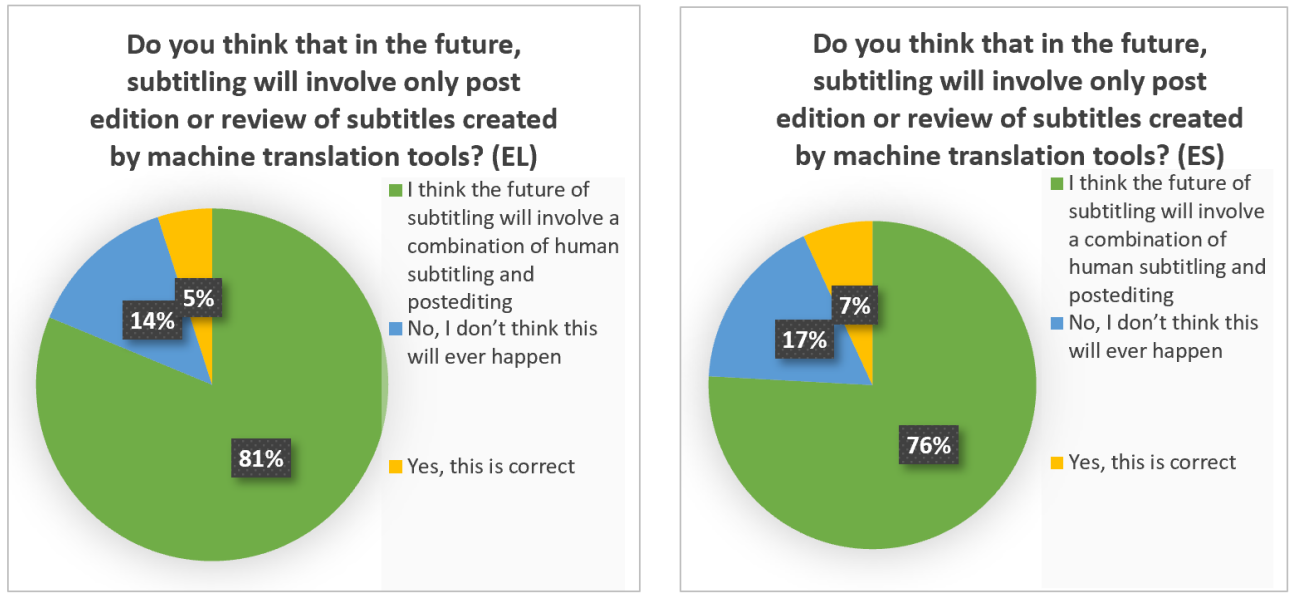
Figure 89. Comparisons between the EL and ES sample for question E30 regarding participants' beliefs of the future of subtitling in terms of technology

Taking into account the aforementioned comparisons, several observations can be made regarding the EL and the ES sample. Even though the EL sample is almost double in terms of size (80 participants) when it is compared to the ES sample (38 participants), there are still various similar tendencies that can be recorded, especially when it comes to:

a) educational background (question A4)

b) audiovisual medium(s) that the participants subtitle for (question B6)

c) whether or not the participants received training in post-editing (question B10)

d) the confidence that the participants displayed in their technical skills (question C13)

e) the technical difficulty of the AV medium(s) of the participants (question C14)

f) the actions that the participants took to address their need for upskill (question C16)

g) prioritising the skills for subtitling (question C19)

h) the professional status of the participants (question D20)

i) the financial compensation regarding post-editing jobs (question D25)

j) the use of CAT tools in subtitling (question E26)

k) the use of MT tools in subtitling (question E27)

l) the future of subtitling in terms of post-editing (question E30)

Regarding the educational background of the two samples, it seems that the plurality of the participants comes from the postgraduate level (83% in the EL sample and 84% in the ES sample). In addition, as far as the audiovisual medium(s) that the participants subtitle for, the majority of the respondents subtitle for VoD (91% in the EL sample and 94% in the ES sample). As far as the participants' training in post-editing is concerned 41% of the participants did not receive any training in both samples.

In addition, with regards to the confidence that the participants displayed when they were asked to rate their technical skills, in both samples, the option '4' out of 5 (1 being the lowest and 5 the highest) was chosen as the highest response (43% in the EL sample and 54% in the ES sample). Moreover, in the question regarding the technical competence that is required from the subtitlers, the respondents from both samples chose again option '4' (1 being the lowest and 5 the highest) with 42% coming from the EL sample and 36% coming from the ES sample. Furthermore, when participants were asked to prioritise the skills that are required in subtitling, 87% of the EL sample and 84% of the ES sample prioritised translation skills as the most important skill. The second most important skill is the option with the technical skills in both samples (69% in the EL sample and 62% in the ES sample). Lastly, the least important skill was the option with communication skills. In fact, 70% of the EL sample and 69% of the ES sample chose this answer as the least important skill.

In addition, another common characteristic between the two samples is the professional activity of subtitlers. In fact, the majority of each sample comes from the professional status of freelancers (77% in the EL sample and 81% in the ES sample). Additionally, the greater part of participants in both samples seems to agree that the financial compensation that they receive for post-editing does not reflect the work and effort they invest (90% in the EL sample and 93% in the ES sample). Furthermore, according to the majority of participants in both samples, using CAT tools in subtitling is not something

that subtitlers tend to do (67% in the EL sample and 62% in the ES sample). Similarly, regarding MT tools, the plurality of participants seems to converge to the idea of not using them in subtitling (72% in the EL sample and 62% in the ES sample). The last tendency that appears in both samples concerns the future of subtitling which, according to the majority of the participants in each sample, seems to be a combination of post-editing and human involvement (81% in the EL sample and 76% in the ES sample).

Despite the aforementioned common tendencies between the two samples, significant differences were recorded, especially when it came to:

a) gender (question A1)

b) age group (question A2)

c) the location that the participants acquire their skills (e.g., academia or industry) (question B7)

d) the confidence of the participants regarding their training for the rest of their career (question B8)

e) the preference of the participants when it comes to their trainers (question B9)

f) post-editing for job requirements (question B11)

g) the number of years that the participants have been post-editing (question B12)

h) the similarity of skills for post-editing and subtitling from scratch (question C18)

i) to the influence that technology has in terms of subtitlers' work opportunities (question D21)

j) to the way technology influences subtitlers' work opportunities (question D22)

Regarding the gender of the participants, although both samples were dominated by females, in the EL sample only 14% of the sample were males, whereas in the ES sample, males occupied 33% of the sample, which is more than double, when compared to the EL sample. Thus, the ES sample displays greater male participation. In addition, another different characteristic of the ES sample, is the average age group of the participants. The

population of the ES sample is characterised by younger age groups (68% of the ES sample is between the ages of 18 – 35). In contrast, only 46% of the Greek participants are between the ages 18 – 35. Hence, another key difference is the age group between the two samples.

Moreover, regarding where the respondents receive their post-editing training, in the ES sample, they are mainly trained while attending postgraduate courses (48%) since this training is part of their degree. However, in the EL sample, only 22% of the respondents are trained in the university at a MA level. The EL sample seems to be receiving such training through the industry as 31% of the respondents replied that they receive post-editing training while being employed in a company. In the ES sample, the respondents who chose the answer 'Training by a public or private company' represent only 16% of the sample. Thus, this shows that the EL sample tends to be more industry-focused when it comes to post-editing training whereas the ES sample is more academically inclined.

Moreover, as far as the confidence of the participants in the skills they acquired through their training is concerned, the ES sample displays greater confidence in their training (50% of the sample replied that their training is enough to equip them for the rest of their careers), in contrast with EL sample in which only 30% replied that their training is enough for the rest of their careers. In addition, when participants were asked to choose the type of trainers that they would like to train them (e.g., industry or academia), Although in both samples, the option 'I would like to be trained at academic institutions' is the highest response, in the EL sample the option 'I would like to be trained by industry stakeholders' received 7% more responses, indicating subtly a tendency towards industry-oriented approaches. Moreover, another difference between the two samples is the post-editing jobs they are doing In the EL sample a percentage of 43% post-edits as part of job requirements whereas in the ES sample only 31% post-edits as part of a subtitling task.

Regarding the skills for post-editing, it seems that there is a key difference between the samples. For example, in the ES sample, the participants seem to believe that the skills for post-editing and the skills for subtitling from scratch are very similar (22%), whereas in the EL sample, very little respondents seem to believe that the aforementioned skills are similar (9%).

Regarding the influence of technology on subtitlers' work opportunities, a difference in terms of perspectives seems to be observed. For instance, 40% of the Spanish respondents seem to believe that technology has provided them with more job opportunities whereas only 19% of the Greek subtitlers believe the same, which is almost half of them. In addition, in the EL sample, there seems to be an uncertainty regarding the influence of technology as 20% of the respondents chose the option 'I am not sure', whereas only 7% of the Spanish sample population chose this answer.

3.1.3. Correlations in the Greek-speaking context

Based on the responses of the participants, some correlations between the data can be observed. It should be noted that the below correlations refer only to the EL sample. The correlations that refer to the ES sample are presented in section 3.1.4. The correlations are presented in the form of a table with 2 or more variants (i.e. questions) in each table which are correlated with each other. It should be noted that the left column of each table displays the variants (i.e. questions) that each table presents. The order of the questions (as seen in figure 90) in the title section (e.g., A2: Age group, E20: Type of professional activity) represent the order that is followed in the table. For instance, as seen in figure 90, question A2 is the first title in the left title section which means that in the table it is the first variant (e.g., 18 -25). Question E20 is the second title in the left title section, which signifies that it is the second variant. The right column shows the number of participants of one of the variants in the left column, in the case of figure 9, question A2. This is interpreted in the following way: from the Spanish sample as a whole, there were

5 participants who chose the age group 18 – 25 years old. From those 5 participants, 2 work as freelancers, 2 as in-house staff and 1 as in-house staff and freelancer.

A2: Age group E20: Type of professional activity	Number of participants (A2)
18 - 25	**5**
I work freelance	2
I work in-house	2
I work in-house and freelance	1

Figure 90. Example of the structure of the correlation tables

In addition, the analysis for each table is given before the table, as it has been done throughout the thesis. The list of possible connections is not exhaustive, as more correlations could be explored. The correlations presented below, however, could be considered representative for the Greek-speaking context.

Table 5 presents the correlations between two questions, A2 which concerns the age group of the participants and E20 which focuses on the type of professional activity (e.g. freelancers, in-house staff). First of all, it is important to note that the Greek participants seem to start working after the age of 25, as only 5 participants are working, either as freelancers or as in-house staff or both, in that age group. Regarding the most active age group (i.e., 26-35), in terms of working status, it is clear that the participants choose freelancing instead of working as in-house staff. However, this could also be an indicator that there are very few in-house positions available. The age group 36-40 displays a similar professional activity, but with the difference that the answer which combines both options ('I work in-house and freelance') received only one answer, whereas in the age group 26-35 this option received 7 answers, indicating perhaps a job flexibility that is no longer available as the age increases. This trend seems to be duplicated in the age group 41 – 50, in which there are only freelancers and only one participant who works as an in-house subtitler; which is logical if we take into account the age range. The overall picture that this table presents can be summarised into three main conclusions:

a) the vast majority of subtitlers are working as freelancers, which could be a hint on the lack of in-house job vacancies;

b) if there is a moment in the professional career of the subtitlers in which they can work as both as freelancers and as in-house staff this seems to be when there are between 26 to 35 years old;

c) as the age increases, the more likely is for subtitlers to shift their work as freelancers. These data are presented in table 5 below.

Table 5. Correlations between the participants' age group (A2) and the participants' professional activity (E20) in the EL sample

A2: Age group E20: Type of professional activity	Number of participants (A2)
18 - 25	5
I work freelance	2
I work in-house	2
I work in-house and freelance	1
26 - 35	32
I work freelance	23
I work in-house	2
I work in-house and freelance	7
36 - 40	21
I work freelance	19
I work in-house	1
I work in-house and freelance	1
41- 50	14
I work freelance	13
I work in-house	1
50+	8
I work freelance	5
I work in-house	2
I work in-house and freelance	1
Grand Total	80

In table 6, the correlations between question B7, that is the source through which the participants received their training to acquire their technical skills and question A5, which focuses on the number of years that passed since the participants received their highest qualification, are presented in the form of a table. As it can be seen in table 6, the training

that occurred as part of a bachelor's degree or as part of a postgraduate degree seems to be happening mainly when not more than 6 years have passed since the participant has graduated from an academic institution. To be more precise, if the training occurred as part of a bachelor's degree, the majority of the participants (n=6) graduated less than a year ago, whereas only one participant graduated between 4-6 years ago. If the training happened during a postgraduate degree, the majority of the participants (n=8) graduated between 1-3 years ago, whereas the second highest choice was the option '4-6 years ago' (n=4). In addition, as it has been mentioned in section 3.1.2, the EL sample seems to display an industry-oriented tendency when it comes to training that deals with technical skills. Regarding the participants who were trained by a company (n=25), the majority of those (n=10) received their highest qualification 13+ years ago, which could lead to the assumption that the more time has passed since the award of the highest qualification, the more likely is the subtitler going to be trained outside of academic institutions.

Moreover, in the group of participants who have never received training, the option '13+', which refers to the years that have passed since the award of the highest qualification of the participant, received the highest number of responses (n=6). This could be an indicator of an older professional landscape that seems to be changing, as more and more participants are receiving training. The group of participants who attended a training course (n=18) provides an insight into the relationship between the years that passed since the participants received their highest qualification and the source of their training. To be more precise, if the options '13+' and '7-9' are combined (n=10), it can be observed that these participants have received their highest qualifications 7 years ago, at the earliest. This could be interpreted as a need for re-training, in terms of technical skills.

Thus, based on table 6, the following conclusions can be drawn:
a) Technical training seems to be happening at a bachelor's and/or a postgraduate level, especially when the participants have received their highest qualification

between 1 to 6 years ago. This could be an indicator of a stronger influence of technical training in subtitling curricula in the last 6 years.

b) The majority of the group that needed re-training with a training course come from a population who has graduated 7 years ago (at the earliest), which is not considered a very long time ago. Hence, this could attest to the fact that technology makes great leaps of development and leaves the subtitlers stranded, since as it can be seen below, although these subtitlers received an academic degree within a decade, they had to be re-trained.

c) The majority of participants in the EL sample seem to be training at a company. As it has been noted in the comparison section above, the EL sample is characterised by the big time gap they have in terms of the years that passed since the completion of their academic degrees (i.e. 13+). This can lead to the possible interpretation that the respondents who received their highest qualification 13+ years ago were trained in the industry instead of academic institutions. In other words, in the Greek-speaking context, the AVT industry seems to be playing the role of the educator for the group of participants who have graduated at least 6 years ago. Moreover, it should be noted that the industry seems to be playing a crucial role for those who graduated in less than a year as well, probably due to internships. Hence, the industry seems to be an important stakeholder in the education of young and older professional subtitlers.

The data from the correlation between questions B7 and A5 are presented below in table 6.

Table 6. Correlations between source of training (B7) and years since the participants graduated (A5) in the EL sample

B7: Participants' source of technical training A5: Years passed since highest qualification	Number of participants (A5)
I haven't received any training	12
10-12	2

1-3	3
13+	6
7-9	1
The training was part of my bachelor's degree	**7**
4-6	1
Less than a year	6
The training was part of my postgraduate degree	**18**
10-12	2
1-3	8
13+	1
4-6	4
7-9	2
Less than a year	1
Training by a public or private company (e.g. while being employed)	**25**
10-12	3
1-3	2
13+	10
4-6	4
7-9	2
Less than a year	4
Training course in a public or private institution (e.g. specialised course in an academic school)	**18**
10-12	3
1-3	1
13+	5
4-6	2
7-9	5
Less than a year	2
Grand Total	**80**

Table 7 presents the correlations between four questions: A2, A4, A5 and C15. In other words, this table links question C15, which illustrates whether the participants believe that they need an upskill in their technical knowledge, with the age group (question A2), the educational background (question A4) and the number of years that passed since the award of the highest qualification of the participants (question A5). All the data of table 7 point to one main conclusion. The participants who come from the educational background of a postgraduate degree, no matter the age or the numbers of years that passed since the participants received their highest qualification, seem to think that they need an upskill in their technical knowledge. This is a strong indicator that there is uncertainty when it comes to technology and that there is a constant need for training. The data from the correlations between the questions A2, A4, A5 and C15 are illustrated below in detail.

Table 7. Correlations between the participants' age group (A2), the participants' educational background (A4), the number of years that passed since the highest qualification of the participants (A5) and the participants' need for upskill (C15) in the EL sample

A2: Age group A4: Educational background C15: Need for upskill regarding participants technical skills A5: Number of years since the highest qualification	Number of participants (C15)
18 -25	**5**
Postgraduate degree (e.g. MA/MSc)	**3**
Yes	3
1-3	1
Less than a year	2
University /College degree (e.g. BA)	**2**
Yes	2
Less than a year	2
26 - 35	**32**
Doctorate degree	**4**
No	2
1-3	1
4-6	1
Yes	2
1-3	1
Less than a year	1
High School	**2**
No	1
10-12	1
Yes	1
13+	1
Postgraduate degree (e.g. MA/MSc)	**20**
No	7
1-3	5
4-6	2
Yes	13
1-3	2
4-6	5
7-9	1
Less than a year	5
University /College degree (e.g. BA)	**6**
No	3
10-12	2
7-9	1
Yes	3
10-12	1
7-9	2

36 - 40	**21**
Doctorate degree	**2**
No	1
7-9	1
Yes	1
7-9	1
High School	**2**
Yes	2
13+	2
Postgraduate degree (e.g. MA/MSc)	**15**
No	4
4-6	1
7-9	2
Less than a year	1
Yes	11
10-12	1
1-3	4
13+	3
7-9	2
Less than a year	1
University /College degree (e.g. BA)	**2**
No	1
13+	1
Yes	1
4-6	1
41- 50	**14**
Doctorate degree	**1**
Yes	1
10-12	1
High School	**1**
No	1
13+	1
Postgraduate degree (e.g. MA/MSc)	**6**
No	1
13+	1
Yes	5
10-12	3
13+	1
Less than a year	1
University /College degree (e.g. BA)	**6**
Yes	6
13+	6
50+	**8**
Doctorate degree	**1**
Yes	1
13+	1
High School	**1**
Yes	1
13+	1
Postgraduate degree (e.g. MA/MSc)	**3**

No	2
10-12	1
13+	1
Yes	1
4-6	1
University /College degree (e.g. BA)	**3**
Yes	3
13+	3
Grand Total	**80**

In addition to the above correlation, table 8 displays the connections between the educational background of the participants (question A4) and their beliefs regarding the adequacy of the training they received (question B8). As it can be seen below, the majority of the group of participants that obtained a postgraduate degree feels that this training is either not adequate for the rest of their career (n=14) or that that their future is not necessarily secured with the training they received (n=14). Only 17 respondents from the group that holds a postgraduate degree seem to believe that the training they received will help them until the end of their career. Thus, it seems that technology is not a constant which subtitlers can capitalise on through an one-off interaction with the subject. Moreover, regarding the group of participants who holds a BA degree, it seems that the participants who do not believe that their training is sufficient for the rest of their careers (n=7) or who are not sure if this training is adequate (n=6) are more than double when these are combined (n=13) and compared to the participants who consider their training as fully adequate for the rest of their career (n=4).

In addition, if we compare the group of participants who hold a PhD and the group of participants who only graduated from High school, despite the academic difference between those groups, both groups show the same uncertainty regarding the adequacy of their training. In other words, no matter the educational background of the participants, technology is causing uncertainty to subtitlers when it comes to training or re-training, as technology seems to move forward in a pace that is simply very hard to keep up with. The data from the correlations between B8 and A4 are shown below in the form of a table (table 8).

Table 8. Correlations between the participants' educational background (A4) and participants' beliefs regarding the adequacy of their training (B8) in the EL sample

A4: Educational background B8: Has your technical training equipped you for your career?	Number of participants (A4)
Postgraduate degree (e.g. MA/MSc)	**47**
I haven't received training	1
It was a very good start.	1
Maybe	14
No	14
Yes	17
University/College degree (e.g. BA)	**19**
I haven't received training	2
Maybe	6
No	7
Yes	4
Doctorate degree	**8**
Maybe	2
No	3
I haven't received training	1
Yes	2
High School	**6**
No	4
Yes	2
Grand Total	**80**

Table 9 presents the correlations between three questions: A2, B10 and B11. Question B10 revolves around the training that the subtitlers received regarding post-editing. Question B11 focuses on whether subtitlers post-edit subtitles as part of a job requirement. In addition, these data are categorised based on the age groups of the participants (question A2) in order to be able to observe in which age group the training for post-editing and the industry requirements coincide. According to the data from table 9, the majority of participants of the group that does not post-edit (n=46) did not receive any training and is not willing to start post-editing (n=30). Looking at the age group of these participants, it becomes clear that participants who are older than 25 years old do not seem to be inclined towards post-editing. In addition, from the group which does not

post-edit, the option 'No, I haven't received training in post-editing, but I have learnt through my interaction with the subject' is the second highest with 11 responses. Although this group does not post-edit as part of a job requirement, the participants do not seem to be disinclined towards post-editing as they seem to be making the effort to learn about post-editing on their own. As far as the group of participants which post-edits as part of a job requirement (n=34) is concerned, the majority of participants (n=22) seem to have learnt on their own through the interaction with the subject. This becomes very clear in the age group 26-35. Furthermore, inside the group of respondents who post-edit for clients, there is a small group (n=8) which has been trained in post-editing at a company. This small group falls under the age categories of 26-40. Thus, the correlations between the questions A2, B10 and B11 can be summarised in the following way:

a)   there seems to be a general tendency of reluctance to learn about post-editing;

b)   among those who are willing to learn about post-editing, there seems to be a gap between the training that the professional subtitlers receive and the demands of the industry, as most subtitlers had to resort to learning through their own personal effort;

c)   the age group 26-35 is the most active group in terms of whether or not to take the decision for training in post-editing.

The aforementioned correlations are presented visually in table 9.

Table 9. Correlations between the participants' age group (question A2), post-editing training (B10) and post-editing jobs (B11) in the EL sample

B11: Do you post-edit subtitles as part of a job requirement? B10: Training regarding post-editing A2: Age group	Number of participants (B11)
No, I don't post-edit as part of a job requirement	46
No, I haven't received any training and I don't post-edit	30
18 -25	2
26 - 35	10
36 - 40	8
41- 50	7
50+	3

No, I haven't received training in post-editing but I have learnt during my interaction with the subject	**11**
26 - 35	4
36 - 40	3
41- 50	3
50+	1
Yes, it was part of my academic degree	**3**
26 - 35	1
36 - 40	1
41- 50	1
Yes, it was part of my training at a public/private company	**2**
36 - 40	1
50+	1
Yes, I post-edit as part of a job requirement	**34**
No, I haven't received training in post-editing but I have learnt during my interaction with the subject	**22**
18 -25	2
26 - 35	11
36 - 40	4
41- 50	2
50+	3
Yes, it was part of my training at a public/private company	**8**
26 - 35	4
36 - 40	4
Yes, it was part of my academic degree	**3**
18 -25	1
26 - 35	2
No, I haven't received any training and I don't post-edit	**1**
41- 50	1
Grand Total	**80**

Table 10 illustrates the correlations between three questions, that is A2, A4 and E28. Question E28, which revolves around the type of software that the subtitlers use, is related to question A4, which focuses on participants' educational background and question A2, which presents the age group of the sample, in order to observe any relationships between the type of software that is being use with the age and the educational background of the participants. To be precise, the majority of participants are using professional subtitling software (n=30). This group has the following two attributes:

a) the participants hold a postgraduate degree;

b) there is almost an equal response from ages between 26 -50 years old.

Moreover, regarding the second highest response (i.e., combination of both types of software), which reached 26 responses, it seems that the majority of this group of participants also come from the postgraduate level. This group is dominated by participants between the ages of 26-40. Last but not least, the last group, which uses freeware subtitling software (n=24), is also dominated by the age groups of 26-40 and characterised by the level of postgraduate studies. Thus, according to table 10, the academic background of an MA, seems to dominate all ages and all the types of subtitling software. However, especially, the ages from 26-40 seem to lean towards the use professional subtitling software.

Table 10. Correlations between participants' age group (question A2), education background (question A4) and type of subtitling software (question E28) in the EL sample

E28. Do you use freeware or professional subtitling software? A4: Educational background A2: Age groups	Number of participants (E28)
I use professional subtitling software	**30**
Postgraduate degree (e.g. MA/MSc)	**16**
26 – 35	6
36 – 40	4
41- 50	5
50+	1
University /College degree (e.g. BA)	**8**
26 – 35	2
41- 50	4
50+	2
Doctorate degree	**4**
26 – 35	2
41- 50	1
50+	1
High School	**2**
36 – 40	1
41- 50	1
I use a combination of the two	**26**
Postgraduate degree (e.g. MA/MSc)	**16**
18 -25	2
26 – 35	6
36 – 40	7
50+	1

University /College degree (e.g. BA)	5
18 -25	1
26 – 35	3
36 – 40	1
Doctorate degree	**3**
26 – 35	1
36 – 40	2
High School	**2**
26 – 35	2
I use freeware subtitling software	**24**
Postgraduate degree (e.g. MA/MSc)	**15**
18 -25	1
26 - 35	8
36 - 40	4
41- 50	1
50+	1
University /College degree (e.g. BA)	**6**
18 -25	1
26 - 35	1
36 - 40	1
41- 50	2
50+	1
High School	**2**
36 - 40	1
50+	1
Doctorate degree	**1**
26 - 35	1
Grand Total	**80**

Table 11 portrays the relationships that can be drawn between questions E26 and D24. D24 focuses on the frequency of post-editing requests and E26 deals with the type of tools that subtitlers use. As table 11 illustrates below, the options 'Rarely (e.g., 2 times out of 5)' and 'Never (e.g., 0 times out of 5)' received the highest number of responses, n=38 and n=30, respectively. The majority of participants of these two groups do not use any CAT tool (n=47). However, within these two larger groups, a smaller number of participants uses such tools during subtitling (n=16). Thus, it could be summarised that no matter the frequency of post-editing requests that the subtitlers receive, subtitlers are not automating their processes or are not required to automate their processes by using, for example, CAT tools. Nevertheless, in the case that CAT tools are being used by participants, they are more likely to use them during subtitling. The data from the correlation between D24 and E26 are presented below in table 11.

Table 11. Correlations between the frequency of post-editing subtitles (question D24) and the use of CAT tools (question E26) in the EL sample

D24: How often are you asked to post-edit subtitles instead of translating from scratch? E26: Do you use any computer-assisted tools (CAT) before, during or after subtitling	Number of participants (D24)
Rarely (e.g. 2 times out of 5)	**38**
No, I do not use any	27
Yes, I use them during subtitling	9
Yes, I use them before subtitling	1
Yes, I use them after subtitling	1
Never (e.g. 0 times out of 5)	**30**
No, I do not use any	20
Yes, I use them during subtitling	7
Yes, I use them before subtitling	2
Yes, I use them after subtitling	1
Usually(e.g. 3 times out of 5)	**9**
No, I do not use any	6
Yes, I use them before subtitling	1
Yes, I use them during subtitling	1
Yes, I use them after subtitling	1
Always (e.g. 5 times out of 5)	**3**
Yes, I use them during subtitling	2
No, I do not use any	1
Grand Total	**80**

It should be noted that the conclusions for every correlation are given before each table as a way to facilitate the interpretation of the correlations.

3.1.4. Correlations in the Spanish context

Section 3.1.4. presents the correlations in the Spanish context. The correlations are presented in the form of a table with 2 or more variants (i.e. questions) in each table. The structure and content of the correlation tables are based on the structure and content of section 3.1.3. of the EL sample. The same questions with the Greek context were correlated in order for the data to be comparable. However, as it has been mentioned in

Chapter 2, the sample size for the Spanish context is relatively small when compared to the size of the AVT industry that exists in Spain, hence, the data need to be confirmed or rejected in future studies which will include a bigger sample.

Table 12 presents the correlations between two questions, A2, which deals with the age group of the participants and E20, which focuses on the type of professional activity (e.g. freelancers, in-house staff). It is important to note that the most active group in terms of work is the age group 26-35 (n=34). Regarding the age group 26-35, 88% of this group of participants is freelancing instead of working as in-house staff or combining freelance and in-house jobs. In fact, in all the age groups the number of freelance professionals is significantly bigger when compared to the to the other options 'I work in-house' and 'I work in-house and freelance'. The conclusions that can be drawn from table 12 are the following:

a) the professional status of freelancers dominates all age groups, even the age group 50+;

b) very little participants (n=4) work as in-house staff across all age groups.

Table 12. Correlations between the participants' age group (A2) and the participants' professional activity (E20) in the ES sample

E20: Professional status A2: Age group	Number of participants (A2)
18 -25	**6**
I work freelance	3
I work in-house	1
I work in-house and freelance	2
26 – 35	**34**
I work freelance	30
I work in-house	2
I work in-house and freelance	2
36 – 40	**5**
I work freelance	4
I work in-house and freelance	1
41- 50	**8**
I work freelance	4
I work in-house	1

I work in-house and freelance	3
50+	**5**
I work freelance	5
Grand Total	**58**

Table 13 presents the correlations between question B7, which revolves around the source of training of the participants in order to acquire their technical skills and question A5, which deals with the number of years that passed since the participants received their highest qualification. As it can be seen in table 13, the participants that have never received any training in order to develop their technical skills (n=5) are participants that have obtained their highest qualification 7 years ago, at the earliest, indicating perhaps that such training was not offered at an academic level. Regarding the training that was part of a bachelor's degree (n=10), this seems to occur, for most participants, 7-9 years ago (n=5). In addition, as far as the participants who hold an MA are concerned (n=28), the majority in this group (n=17) graduated at the earliest between 1-3 years ago (n=8) and at the latest 4-6 years ago (n=9). Regarding the group of participants who attended a training course (n=7), this group does not show any specific tendency as to the years that passed since the participants obtained their highest qualification as the participants are spread in various time spans.

The main conclusion that can be drawn from table 13 is that the training regarding the development of technical skills for the Spanish context happens:

a) in an academic level (e.g., BA and MA holders);

b) between 1-6 years ago, at the latest.

Table 13. Correlations between source of training (B7) and years since the participants graduated (A5) in the ES sample

B7: Participants' source of technical training A5: Years that passed since participants' highest qualification	Number of participants (A5)
I haven't received any training	**4**
10-12	1
13+	2

7-9	1
The training was part of my bachelor's degree	**10**
1-3	3
13+	2
7-9	5
The training was part of my postgraduate degree	**28**
10-12	1
1-3	8
4-6	9
7-9	5
Less than a year	5
Training by a public or private company (e.g. while being employed)	**9**
1-3	2
13+	3
4-6	2
7-9	1
Less than a year	1
Training course in a public or private institution (e.g. specialised course in an academic school)	**7**
10-12	2
1-3	2
13+	1
4-6	1
Less than a year	1
Grand Total	**58**

Table 14, as table 7, shows the correlations between four questions: A2, A4, A5 and C15. In other words, this table links question C15, which deals with participants' need for an upskill in their technical knowledge, with the age group (question A2), the educational background (question A4) and the number of years that passed since the participants obtained their highest qualification (question A5). All the data of table 14 point to the conclusion that the educational background of postgraduate level characterises the majority of participants of all ages. In addition, from the group of participants (n=40) who holds an MA/MSc degree, all the ages from 36-50+ (n=7) seem to believe that they need an upskill in their training. However, the age group between 26-35 years old (n=14) seem to be content with the training they received during their postgraduate studies, no matter when they received their highest qualification. It should also be noted, however, that there is a group of participants that is between 18-35 years old and holds a postgraduate qualification but believes that they need an upskill in their technical knowledge (n=14).

The aforementioned data indicate that:

a) no matter the age of the participants, the master holders exceed every other academic background, which shows an academically inclined sample group;

b) the ages between 36-50+ years old seem to believe that they need an upskill in their training, no matter how many years passed since their highest qualification;

c) the age group 26-35 seems to believe that the training they received is adequate in terms of technical skills;

d) there is a group of participants that, Although they hold a postgraduate degree and are found in the age groups 18-35, believe that still need an upskill in their technical training, which could be an indicator of the uncertainty that the rapid developmental pace of technology causes.

The data from the correlations between the questions A2, A4, A5 and C15 are illustrated below in detail.

Table 14. Correlations between the participants' age group (A2), the participants' educational background (A4), the number of years that passed since the highest qualification of the participants (A5) and the participants' need for upskill (C15) in the ES sample

A2: Age group A4: Educational background C15: Need for upskill regarding participants technical skills A5: Number of years since the highest qualification	Number of participants (C15)
18 -25	**6**
Postgraduate degree (e.g. MA/MSc)	**5**
No	3
1-3	3
Yes	2
1-3	1
Less than a year	1
University /College degree (e.g. BA)	**1**
Yes	1
1-3	1
26 – 35	**34**

Doctorate degree	**6**
Yes	6
1-3	4
13+	1
Less than a year	1
Postgraduate degree (e.g. MA/MSc)	**26**
No	14
1-3	2
4-6	4
7-9	6
Less than a year	2
Yes	12
1-3	3
4-6	6
7-9	2
Less than a year	1
University /College degree (e.g. BA)	**2**
No	1
7-9	1
Yes	1
7-9	1
36 – 40	**5**
Doctorate degree	**1**
Yes	1
10-12	1
Postgraduate degree (e.g. MA/MSc)	**2**
Yes	2
10-12	1
Less than a year	1
University /College degree (e.g. BA)	**2**
Yes	2
10-12	1
13+	1
41- 50	**8**
Doctorate degree	**2**
Yes	2
1-3	1
7-9	1
Postgraduate degree (e.g. MA/MSc)	**5**
No	1
4-6	1
Yes	4
13+	1
4-6	1
7-9	1
Less than a year	1
University /College degree (e.g. BA)	**1**
Yes	1
13+	1
50+	**5**

Postgraduate degree (e.g. MA/MSc)	**2**
No	1
13+	1
Yes	1
10-12	1
University /College degree (e.g. BA)	**3**
Yes	3
13+	3
Grand Total	**58**

Table 15 displays the connections between the educational background of the participants (question A4) and whether they feel competent from the training they received (question B8). As it can be seen below, the tendency that seems to be portrayed in table 16, is that no matter the educational background, the participants feel that their training is enough (n=30). Only 14 participants feel that their training is not adequate for the rest of their career. The majority of this group, seems to be coming from the postgraduate academic background (n=10), which could be another fact attesting to the inconceivably rapid development of technology that causes uncertainty to the participants rather than gaps in academic subtitling curricula.

The data from the correlations between B8 and A4 are shown below in the form of a table (table 15).

Table 15. Correlations between the participants' educational background (A4) and participants' beliefs regarding the adequacy of their training (B8) in the ES sample

A4: Educational background B8: Has your training equipped you for your career?	Number of participants (A4)
Doctorate degree	**9**
Maybe	3
No	2
Yes	4
Postgraduate degree (e.g. MA/MSc)	**40**
I have not received formal training	2
Maybe	5
No	10
Yes	23
University /College degree (e.g., BA)	**9**

I did not receive formal training	1
Maybe	3
No	2
Yes	3
Grand Total	**58**

Table 16 presents the correlations between three questions: A2, B10 and B11. Question B10 revolves around the post-editing training of the subtitlers. Question B11 focuses on whether subtitlers post-edit subtitles as part of a job requirement. In addition, these data are categorised based on the age groups of the participants (question A2) in order to be able to observe in which age group the training for post-editing and the industry requirements coincide, as also seen in table 9. Regarding the group that does not post-edit (n=40), 23 respondents of this group not only they do not post-edit but also, they do not show interest in learning about post-editing. A smaller group of the larger group who does not post-edit, however, have learnt about post-editing through their interaction with the subject (n=13). Looking at the age group of the participants who do not post-edit (n=40), they come mainly from the age group 26-35 (n=25), indicating perhaps that this age group is found in the middle of a changing landscape in subtitling technology and needs possible re-training in the future.

As far as the group of participants that post-edits as part of a job requirement (n=18) is concerned, the majority of this group (n=11) seems that they had to interact with the subject of post-editing to learn about it. Moreover, inside the group of respondents that post-edits for clients, there is a small group (n=5) that has been trained in post-editing at a public or private company. This small group falls mainly in the age group 26-35. Thus, the correlations between the questions A2, B10 and B11 can be summarised in the following way:

a) the Spanish participants seem to indicate a disinclination towards learning about post-editing;

b) amongst those who are willing to learn about post-editing, they seem to tend towards a self-pace learning through interaction with post-editing;

The aforementioned correlations are presented visually in table 16.

Table 16. Correlations between the participants' age group (question A2), post-editing training (B10) and post-editing jobs (B11) in the ES sample

B11: Do you post-edit subtitles as part of a job requirement? B10: Training regarding post-editing A2: Age group	Number of participants (B11)
No	**40**
No, I haven't received any training and I don't post-edit	**23**
18 -25	2
26 - 35	17
41- 50	2
50+	2
No, I haven't received training in post-editing but I have learnt during my interaction with the subject	**13**
18 -25	1
26 - 35	8
36 - 40	2
41- 50	2
Yes, it was part of my training at a public/private company	**4**
18 -25	1
26 - 35	1
41- 50	2
Yes	**18**
No, I haven't received any training and I don't post-edit	**1**
50+	1
No, I haven't received training in post-editing but I have learnt during my interaction with the subject	**11**
18 -25	1
26 - 35	4
36 - 40	3
41- 50	2
50+	1
Yes, it was part of my academic degree	**1**
18 -25	1
Yes, it was part of my training at a public/private company	**5**
26 - 35	4
50+	1
Grand Total	**58**

Table 17 illustrates the correlations between three questions, that is A2, A4 and E28. Question E28, which deals with the type of software that the subtitlers use (e.g., professional, freeware), is related to question A4, which focuses on participants' educational background, and question A2, which presents the age group of the sample, in order to observe any links between the type of software that is being use with the age and the educational background of the participants. To be precise, the plurality of Spanish participants utilise a combination of both professional and freeware subtitling software (n=26). This group has the following two attributes:

a) the majority of participants hold a postgraduate degree (n=15);
b) most of participants come from the age group 26-35.

Moreover, regarding the second highest response (i.e., use of freeware software), which reached 20 responses, it seems that the majority of this group of participants also come from the postgraduate level. This group is dominated by participants between the ages of 26-35. Regarding the choice that received the lowest percentages, that is 'I use professional software' (n=12), is also dominated by the age groups of 26-35 and characterised by participants who hold a postgraduate degree (n=8). Thus, the following conclusions can be drawn:

a) despite the age and the type of software that participants use, the majority of participants are MA/MSc holders;

b) the majority of the Spanish participants tends to lean towards a combination of subtitling software rather than choosing one or the other;

c) the subtitling software, no matter the type, are used by the age group 26-35.

Table 17. Correlations between participants' age group (question A2), education background (question A4) and type of subtitling software (question E28) in the ES sample

E28. Type of subtitling software A4: Educational background A2: Age groups	Number of participant (E28)
I use a combination of the two	**26**
Doctorate degree	**7**
26 - 35	4
36 - 40	1
41- 50	2
Postgraduate degree (e.g. MA/MSc)	**15**
18 -25	1
26 - 35	8
36 - 40	1
41- 50	4
50+	1
University /College degree (e.g. BA)	**4**
18 -25	1
26 - 35	1
36 - 40	2
I use freeware subtitling software	**20**
Doctorate degree	**1**
26 - 35	1
Postgraduate degree (e.g. MA/MSc)	**17**
18 -25	2
26 - 35	13
36 - 40	1
50+	1
University /College degree (e.g. BA)	**2**
26 - 35	1
50+	1
I use professional subtitling software	**12**
Doctorate degree	**1**
26 - 35	1
Postgraduate degree (e.g. MA/MSc)	**8**
18 -25	2
26 - 35	5
41- 50	1
University /College degree (e.g. BA)	**3**
41- 50	1
50+	2
Grand Total	**58**

Table 18 depicts the links that can be drawn between questions E26 and D24. Question D24 focuses on the frequency of post-editing requests and question E26 presents the type of tools that subtitlers use. As table 18 shows below, the options 'Rarely (e.g., 2 times out of 5)' and 'Never (e.g., 0 times out of 5)' received the highest number of responses, n=33 and n=15, respectively. Also, it should be noted that most participants of these two

groups do not use any CAT tool (n=30). Nevertheless, of the participants who are hardly asked to post-edit (option 'Rarely (e.g., 2 times out of 5)') and the participants who never receive post-editing requests (option 'Never e.g., 0 times out of 5)') there is a small group that uses CAT tools, which use them during subtitling (n=16). Thus, it could be concluded that:

a) no matter the frequency of post-editing requests that the subtitlers receive, subtitlers are hardly using CAT tools

b) if CAT tools are used by participants, they are more likely to use them during subtitling.

The data from the correlation between D24 and E26 are presented below in table 18.

Table 18. Correlations between the frequency of post-editing subtitles (question D24) and the use of CAT tools (question E26) in the ES sample

D24: How often are you asked to post-edit subtitles instead of translating from scratch? E26: Do you use any computer-assisted tools (CAT) before, during or after subtitling	Number of participants (D24)
Always (e.g. 5 times out of 5)	**2**
No, I don't use any	2
Never (e.g. 0 times out of 5)	**15**
No, I don't use any	8
Yes, I use them before subtitling	1
Yes, I use them during subtitling	6
Rarely (e.g. 2 times out of 5)	**33**
No, I don't use any	22
Yes, I use them after subtitling	1
Yes, I use them during subtitling	10
Usually (e.g. 3 times out of 5)	**8**
No, I don't use any	4
Yes, I use them during subtitling	4
Grand Total	**58**

Considering both samples and the correlations that were observed, it could be said that there some similarities and differences between the two samples. These comparisons

between the two samples are discussed in detail in section 3.1.2 . However, the following points, could be raised below, for a better overview of the correlations:

a) the EL sample seems to be led by an industry-oriented approach to post-editing, whereas the ES samples seems to incline towards an academic-focused approach;

b) the systematic academic training regarding post-editing seems to have started, at the earliest, 6 years ago;

c) the participants from the ES sample seem to choose a combination of subtitling software rather than professional software only as the Greek participants;

d) both samples indicated that they hardly receive post-editing requests;

e) subtitlers from both samples do not seem inclined in using CAT tools.

3.2.   Data analysis of the interviews with subtitling companies in the Spanish and Greek contexts: Interview group A

Section 3.1.4 summarises the findings that originated from the interviews with the representatives of the selected subtitling companies. The interviews with the subtitling companies are divided into the ES sample and the EL sample and these yielded the following results.

3.2.1.1.   Analysis of Section A of the interview: Profile

Regarding the ES sample (n=3) for section A of the interview, all the interviewees replied that they receive at least 200-300 minutes of content for translating into Spanish (Castilian) every month and that the main AV medium that they are required to subtitle for is the Video-on-demand (streaming) platforms and to a lesser degree movies for the cinema. The participants of the ES sample are anonymised and hence they will be refer to as participant 1 (P1), participant 2 (P2), participant 3 (P3).

The Greek sample (n=1) was comprised by only one participant (henceforth, participant 4 (P4)). P4 confirmed that the Greek company receives around 200-300 minutes of

content for translating into Greek every month and that this usually involves videos on websites (such as business videos, YouTube videos, videos for non-profit organisations).

3.2.1.2.   Analysis of Section B of the interview: Technological tools

With regards to question B3, which focuses on the type of subtitling software that the companies use, in the ES sample, 2 out of 3 participants (P1, P2) claimed to be using off the shelf professional subtitling software, like EZ titles (and/or Spot and Fab), whereas 1 out of 3 interviewees (P3) uses a proprietary cloud-based software. In the EL sample, P4 confirmed that the company uses the freeware Subtitle Edit subtitling software, since as the participant explained, the company does not consider the amount of subtitling requests as satisfactory in terms of revenue in order to invest further. However, as P4 mentioned, the Greek company intends to invest soon in professional subtitling software.

In question B4, which deals with the type of translation technology tools that the companies use, the interviewees provided a number of options. For instance, in the ES sample, P1 noted that the company uses a translation memory (OmegaT) for maintaining consistency and running quality assurance (QA) checks. Participant 2 (P2) of the ES sample stated that the company uses MT tools (e.g., Google Translate) for some language combinations and for some other language combinations like Catalan into Spanish and English into Spanish, the company uses EZ titles' automatic subtitling system, which provides them with good results in those specific languages. P3 of the ES sample simply specified that the company does not use any CAT or MT tools, but sometimes they might use a glossary for specific genres. As far as B4 is concerned, P4 stated that the company uses a proprietary automatic transcription tool along with the use of MT tools(e.g., Google Translate).

In question B5, which revolves around the subtitling workflow of the company in terms of technology, all respondents, from both samples, replied that they use the same

elements regarding the subtitling workflow, that is, automatic transcription, template creation if needed, use of subtitling software and QA.

3.2.1.3. Analysis of Section C of the interview: Post-editing

Section C of the interview revolves around the practice of post-editing. According to the Spanish sample, participants 1 and 2 replied negatively to question C6, which deals with whether companies use post-editing in their workflows, but P3 replied positively. Regarding the participants who replied negatively in question C6 (P1, P2), these participants also replied negatively to question C7, which deals with the presence of a dedicated project manager (PM) for subtitlers who need support regarding post-editing, and to question C8, which focuses on whether there is a company staff member who attended post-editing trainings. Regarding P3, who answered positively in C6, in C7 he pointed out that the company provides subtitlers with support in terms of guidelines and by adding a revision step after the post-edited content. In addition, regarding C7, P3 mentioned that although the project manager (PM) may not be dedicated for helping post-editors as such, this happens due to the small size of the company. In addition, in C8, P3 pointed out that most of the freelancers that work with the company have already been trained in post-editing in their academic studies and hence they have some knowledge on the subject matter.

The interviewee for the Greek sample (P4) confirmed, regarding question C6, that the company uses post-editing, but it always depends on the context or subject. Regarding question C7, participant 4 answered that the company only provides some general guidelines to subtitlers. Regarding question C8, P4 mentioned that some members of the company have attended workshops regarding post-editing by SDL.

3.2.1.4.   Analysis of Section D of the interview: Skills and Training

Section D concerns the Skills & Training of the subtitlers. Regarding question D9, that deals with the skills that companies look for in subtitlers and whether there are any entrance tests for subtitlers before the company starts working with subtitlers, in the ES sample, all participants (P1, P2, P3) said that the skills they look for in subtitlers are mainly two:

a) linguistic competence;
b) technical skills that can prove useful in the future (such as post-editing potential).

Regarding the existence of entrance tests, P1 and P2 mentioned that the entrance test is basically the first job that the subtitler receives. A reviewer is added to the workflow to ensure that everything is correct and assesses the new subtitler. P3 of the ES sample mentioned that there is an entrance test of a small 2-minute video.

P4, who comes from the EL sample, argued, in question D9, that there is an entrance test for the Greek company which involves subtitling a small video of 5 minutes. In addition, regarding the skills that the Greek company looks for in subtitlers, P4 argued that the company usually seeks out subtitlers that offer a combination of professional qualities such as:

a) years of experience;
b) technical skills;
c) linguistic competence.

In question D10, which deals with the interviewees' opinion regarding the similarity or difference of the skills that are required in post-editing and the skills that are needed for subtitling from scratch, the ES sample showed a tendency towards a negative reply, as

2/3 of the respondents (P1 and P2) answered that 'you need to be a subtitler first to be able to post-edit'. In addition, they added that the skills are not different but attention is given to specific elements such as spotting specific errors, such as typos, grammar and vocabulary mistakes. P3 of the ES sample argued that the aforementioned skills might be different in the sense that proofreading is different from translation. P4, that comes from the Greek sample, believes that this question belongs to a grey area. P4 believes that the skills are different in the sense that there are different key issues that need to be looked at in the case of post-editing, such as spelling mistakes, grammar syntax and terminology.

Question D11 focuses on whether the companies provide any post-editing training to their subtitlers. In the ES sample, P1 mentioned that she did not feel comfortable to do such training, as she has never done post-editing herself. P1 was also concerned by the low rates that exist in the market. According to P1,

> No. I have never done post-editing and I do not see myself able to train anyone. I would only do it if I had experience and if I was sure that the rates that are paid for post-editing are dignified and adequate. Right now that's not the case.

In contrast to this response, P2 from the ES sample, answered that there is no need to train the subtitlers, as the majority of freelancers already have the skills from their academic degrees. P3 replied negatively, as the company does not do post-editing at all. Regarding P4 from the EL sample, he mentioned that since there is no clear machine translation strategy in the company, no such training is required. That is to say that the company that P4 is employed by, does not deal with machine translation other than using it for a few projects.

Question D12 deals with the creation and implementation of industry certificates as well as the skills such certificate would include. Regarding the ES sample, all respondents seem to think that a certificate is not necessary, but, if it was created, it could prove useful. P1 highlighted that, certificates are not decisive. P2 emphasized that it is crucial to remember

that such certificate should not replace the university degrees, which cover theoretical and practical aspects of subtitling extensively. P3 gave the example of the test HERMES by Netflix, which was advertised as 'the first online subtitling and translation test and indexing system' (Slator, 2018). However, this initiative was shut down by Netflix after a short period of time, as it couldn't support the various languages and linguists on the system.

When it comes to the skills that such certificate would involve, P1, P2 and P3 of the ES sample, agreed that it should include linguistic metrics, as well as exercises of using specific aspects of technology. Regarding the EL sample, P4, was not certain whether such certificate would prove useful, since, as he highlighted, 'it depends who will be involved in creating it'. P4 highlighted the need for a section in such a test that deals exclusively with technology.

In question D13, regarding whether the participants believe that subtitlers should continue their training with technology, there is a unanimous answer by all participants in both the ES sample (P1, P2, P3) and EL sample (P4). In fact, all the interviewees highlighted that subtitlers should continue their technological training no matter when they graduated or how academically advanced degrees they hold, as they will never be able to catch up fully with technology.

Questions D14 and D15 revolve around subtitling templates. As far as question D14 is concerned, which questions whether subtitling companies look for subtitlers who can create templates, all the respondents from both samples (P1, P2, P3, P4) indicated that they are looking for subtitlers who can create and work with template files. In fact, P1 mentioned the fact that she prefers to work with subtitlers who can create and use template files instead of subtitlers who cannot.

Lastly, regarding question D15, which refers to any training that is provided to subtitlers regarding the creation of subtitling templates, all participants from both samples (P1, P2, P3, P4) seem to agree that, in case training is provided to subtitlers, this is done by means of an internship. In addition, the participants mentioned that the companies use freelancers who already have experience with templates, in order to avoid any other further in-house training that can cost the company money and time.

Taking the above into account, it should be noted that, although, the sample size for the Greek context is small, and cannot be considered representative of the Greek subtitling market, there are some observations that can be made when compared to the Spanish context. The conclusions from the above data analysis are summarised as follows:

a) the main difference that is observed between the two samples is that the type of subtitling software that is used by the participants of the ES sample is professional, whereas in the EL sample the subtitling software that is used is freeware, due to the reduced subtitling work that the Greek company receives;

b) another main difference between the two samples is the use of translation technology tools, such as CAT tools, in which the ES sample seems to be using them, instead of the EL sample, which does not use them at all;

c) regarding the way technology is incorporated in the daily company workflow, this is the same across the two samples;

d) regarding the support that the companies provide to subtitlers who post-edit, this is given in the form of guidelines in both samples;

e) as far as the skills that the companies are looking for in subtitlers, these are the same in both samples and include mainly the linguistic competence and the technical skills of the subtitlers;

f) regarding the skills for post-editing and the skills for subtitling from scratch, the participants from both samples seem to highlight that the skills for post-editing are related to specific elements such as spotting, grammatical and vocabulary errors.

3.2.2. Data analysis of the interviews with academics: Interview group B

Section 3.2.2. presents the results of the interviews with the academics from Greek-speaking and Spanish universities in order to gain a better understanding on subtitlers' training and skills with regards to technology. It should be noted that the names of the universities are anonymised and the participants will be referred to as participant 1, 2, 3 and so on. The only criterion that was set before conducting the interviews was that the academics must have taught a subtitling course the previous year in order to ensure that the lecturers teach such courses as recently as possible. The interviews with the academics are divided into the ES sample (n=5), the EL-GR sample (n=3) if they come from Greece and the EL-CY (n=1) sample if they come from Cyprus. In each case, the results from each sample are clearly stated. Although the overall sample is small (n=9), the interviewees offered insightful answers regarding the training of the subtitlers as well as the role of technology in subtitling from an academic perspective. The below subsections follow the structure of the interview.

3.2.2.1. Data analysis for section A of the interviews by interview group B: Teacher profile

In terms of the profile of the academics as a whole (n=9), 8 out of the 9 participants hold a PhD qualification and one out of the 9 interviewees holds a Master degree (i.e. MA). In addition, the population of the sample is well-distributed in terms of the time that has passed since the participants obtained their highest academic qualification since 2 out of 9 interviewees graduated less than a year ago, 2 out of 9 received their highest qualifications 4-6 years ago, 1 out of 9 has obtained a PhD degree between 7-9 years ago, 1 out of 9 respondents graduated 10-12 years ago, 2 out of the 9 participants obtained the highest qualification 13-15 years ago and lastly, 1 out of the 9 interviewees received

their highest qualification 16+ years ago. These data are shown below in the form of a pie chart (figure 91).
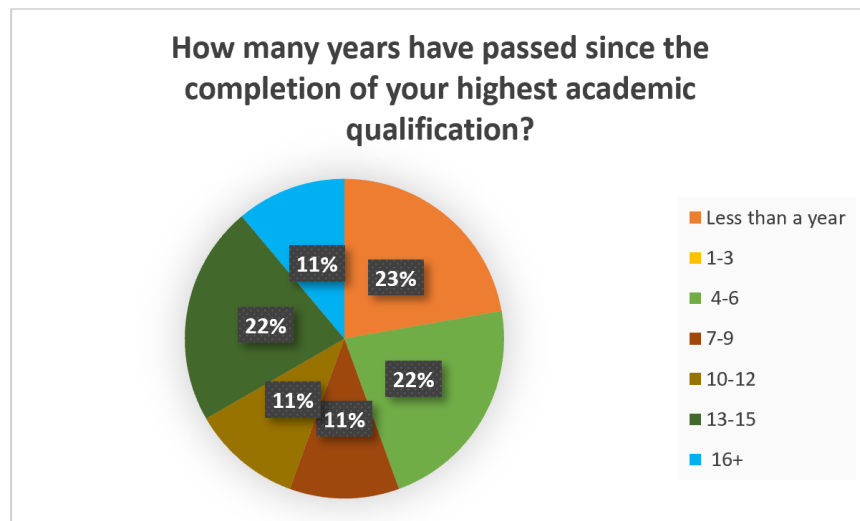
Figure 91. Overview of question A2 regarding the years that passed since the participants' highest qualification (interview group B)

Furthermore, regarding question A3, which revolves around the focus of the participants' highest qualification, it should be noted the participants coming from the ES sample have either focused on Audiovisual Translation (P1, P2, P3, P4) or Translation Studies in general (P5) for the purposes of completing their highest qualification. However, regarding the EL-GR sample, 2 out of 3 the participants (P6, P7) have focused on Audiovisual Translation. P8, who is part of the EL- GR sample, studied Film Adaptation from a Translation Studies perspective. P9, who is part of the EL-CY sample, focused on Drama Translation for completing his highest qualification. Thus, as it can be seen from these data, the lecturers who teach subtitling do not necessarily need to come from Audiovisual Translation studies. This is slightly more prominent in the Greek-speaking sample (including both EL-GR and EL-CY samples) as 50% of the participants focused on Translation Studies in general.

Question A4 concludes the profile section of the interview. Question A4 focuses on the way the academics learnt about subtitling if their degree was not directly related to subtitling. This question was applicable only to one of the participants of the ES sample,

that is P5. The degrees of the other 4 participants of the ES sample (P1, P2, P3, P4) were related to subtitling in a direct way. P5 mentioned that she learnt about subtitling through academic publications. Regarding the participants of the EL-GR sample, this question was relevant for one participant (P8). This participant pointed out that she came into contact with subtitling though industry experience and her master. As far as the EL-CY sample is concerned, P9 responded that although his degree was not related to subtitling, he learnt by researching in a theoretical level and teaching a course in the past at MA level in UK. Thus, it could be said that the participants who did not study subtitling during their highest qualification had to either read about it in a theoretical level or learn about it for specific purposes (e.g., in order to teach a course) in an *ad hoc* basis.

3.2.2.2. Data analysis for section B of the interviews by interview group B: General profile

Question B5 marks the beginning of section B, which deals with the general profile of the university. Question B5 focuses on the courses the university offers in terms of subtitling. Nevertheless, it should be noted that two participants from the ES sample teach in more than one university (P1, P2), so they provided their general experience about the courses and the universities, thus, further research needs to be carried out regarding this aspect. When this happens, it is indicated accordingly. In the ES sample, 4 out of 5 participants (P1, P3, P4, P5) replied that the university that they teach in offers a subtitling course at BA level. Moreover, 4 out of 5 participants (P1, P2, P4, P5) mentioned that the university they teach in offers a subtitling course at postgraduate level. As far as the EL-GR sample is concerned, the data indicate that the universities in Greece do not follow a unanimous approach to teaching subtitling. For instance, one of the three universities offers Subtitling courses at BA level as well as Diplomas in Subtitling (P6). P7 mentions that the university she teachers offers subtitling courses at MA level only and the P8 argued that the university she is part of offers subtitling courses at both BA and MA level. Regarding

the university of the EL-CY sample (P9), it offers only an elective subtitling course at BA level every 2 years.

Question B6 deals with the degree titles of the subtitling course(s). Regarding the ES sample, there seems to be some variation regarding the degree titles, as it seems that there is no unanimous approach. For instance, according to P4, if the subtitling course is in a BA level it is found under a language degree but if the subtitling course is in a postgraduate level it is under a Translation degree. However, according to P3, even though the university teaches subtitling at a BA level, this course is under a Translation degree. P2 mentions that one of the university she teaches offers the subtitling course in a MA level and it is under an Audiovisual and literary translation degree. In addition, P5 argued that the subtitling course that is taught at a BA level is under a Localisation and Audiovisual translation degree. Moreover, P5 added that the subtitling course that is taught in MA level is under the degree of Audiovisual Translation. It should be noted that the response by P1 was not clear to which university she was referring so this is not shown here. Generally speaking, according to the ES sample, it seems that subtitling (and AVT in general) has matured into a distinct discipline and has been separated from the language degrees. Regarding the EL-GR sample, two out of the three universities (according to P7 and P8) classify the subtitling courses under a translation degree and one out the three universities (according to P6) categorise the subtitling courses under a language degree. As far as the EL-CY sample is concerned, according to P9, the subtitling course is under a language degree. These data point to the fact that subtitling (as well as AVT in general) is just starting to flourish and gain its own space in the Greek-speaking context.

Question B7 deals with the faculty school of the degrees of the subtitling course(s). Regarding the ES sample, two out of five universities classify these degrees under School of Humanities, one out of five classify the degrees that include subtitling under the faculty of Translation and Interpreting one out of five universities makes the classification under the Business school (P2). The response of P1 was not clear regarding the university so this

response is not indicated here. Regarding the EL-GR sample, the degrees are spread across different schools. According to P6, the language degree is under the School of Fine Arts, (Centre of Lifelong Learning). According to P7, the translation degree is under the School of Foreign Languages/Interpreting and, according to P8, the translation degree is under the School of Humanities. In the EL-CY sample, according to P9, the language degree is under the School of Humanities. Hence, it is clear that there is no common line between the categorisations of the degrees that involve subtitling courses in the Greek-speaking context (Greece and Cyprus).

Question B8 focuses on the existence of internships and the possible professional collaborations that students are offered as part of their academic degree. Regarding the ES context, it should be noted that P2 and P4 mentioned that there are no internships as part of the degree but that they have ties with the professional world and that they bring speakers from the industry to teach some seminars. In addition, P3 mentioned that there is an internship program at the specific university they teach. According to P5, there is not an internship as such but there is another type of agreement. In fact, in her words:

> We have agreements with some subtitling companies by which students can do a 100 h collaboration with them and then they write their MA dissertation about the work they did. It is similar to an internship, but then they have to write a dissertation.

Regarding P1, it was not clear about which university she was referring to regarding question B8 so her answer is not shown here. As far as the Greek-speaking context (Greece and Cyprus) is concerned, no internships are included during the subtitling course, as all the participants confirmed (P6, P7, P8, P9). In addition, they all highlighted that they bring presenters from the industry to introduce students to the way the subtitling industry works.

As far as the main AV mediums that the teachers use for teaching subtitling are concerned (question B9), these seem to differ slightly when it comes to the samples. For example, in

the ES sample, we find more technologically advanced AV mediums like VoD, as all the Spanish participants confirm that they use them. In contrast, in the Greek-speaking context (EL-GR and EL-CY samples) the main AV mediums that are being taught are the older mediums like the Cinema and the TV.

3.2.2.3.   Data analysis for section C of the interviews of interview group B: Technological tools

Question C10 shows the type of subtitling software that is used to teach the practical component of subtitling. Three out of five participants of the ES sample (P1, P2, P5) confirmed that they use offline freeware subtitling software (such as Subtitle Edit, Subtitle Workshop or Aegisub). According to P3 and P4, they use cloud-based subscription software (like OOONA and OOONA Edu). In addition, there seems to be a preference over freeware offline software when the subtitling course is taught at BA level. This differentiation of software according to the level of the subtitling course is presented in detail in the form of a table (table 19). Regarding the EL-GR sample, two of the participants (P6, P7) indicated that they use offline freeware software (e.g., Subtitle Edit, Subtitle Workshop). P8 argued that they use a cloud-based subscription software (e.g., Wincaps). In addition, regarding the EL-CY sample, P8 indicated that the university uses online freeware software (e.g., Aegisub), which can be accessed by all operating systems.

Table 19. Presentation of the type of software that are used in subtitling courses

Participant ID	Sample	Level	Software
P1	ES	MA	Aegisub
P2	ES	MA	Subtitle Workshop
P3	ES	BA	Ooona
P4	ES	MA	Ooona Edu
P4	ES	MA	Ooona Edu

P5	ES	MA	Subtitle Edit
P5	ES	BA	Subtitle Edit
P6	El-GR	Diploma in subtitling	Subtitle Edit
P7	EL-GR	BA	Subtitle Edit
P7	EL-GR	BA	Subtitle Edit
P7	EL-GR	MA	Subtitle workshop
P8	EL-GR	MA	Wincaps
P9	EL-CY	BA	Aegisub

Question C11 deals with any tools (e.g., CAT tools) that are used in a subtitling course, except from the subtitling software. As the ES sample reveals, only one participant mentioned the use of MT engines, like Apptek, which is part of OOONA for teaching post-editing (P4). Three partipants from the ES sample (P1, P2, P3) argued that they only use glossaries in some cases in the form of an Excel file as a reference. However, according to P5,

> In the subtitling classroom we just use subtitling software, but we also have a subject called Postediting, where they do postediting of subtitles (8 hours). We also have another subject in which they see Useful resources for AVT translators (8 hours), and they see other subtitling software, like Aegisub, video editing tools, etc.).

The EL-GR and EL-CY samples present the same picture regarding question D11, with the exception of two cases (P6, P7). P6 and P7 mentioned that they use glossaries, but in the form of terminology bases in SDL Trados.

As far as question C12 is concerned, which deals with the way technology is incorporated in the subtitling classroom, all the participants from all the samples displayed a similar approach when they were asked to describe how they incorporate technology in their teaching, with the exception of one participant who comes from the ES sample. P3 was

the only one who argued that she incorporates the historical evolution of subtitles in order for students to understand the reasons behind the current restrictions when subtitling. To be precise, all of the participants replied that they incorporate technology in their teaching by preparing manuals for the subtitling software they will include during the practical sessions of the course.

3.2.2.4. Data analysis for section D of the interview of interview group B: Skills and Training

Question D13 deals with post-editing in the subtitling classroom. Regarding the ES sample, it seems that post-editing carved the way towards the subtitling classroom. P3, P4 and P5 replied that post-editing is either already a part of subtitling courses (P4) or that they are planning to add it in the near future (P3). P5 mentioned that they have a dedicated course on postediting subtitles which lasts 8 hours in total. The remaining half replied that post-editing is not part of the subtitling curriculum. According to the EL-GR sample and the EL-CY sample (n=4), 75% of the participants do not include post-editing teaching or practice during the duration of the subtitling course. Only P6 argued that they teach post-editing in the subtitling course. The main arguments of the participants who do not teach post-editing are that there is lack of time during the course to teach post-editing (P7, P8) or that they do not feel comfortable teaching it yet (P9).

Moreover, question D14, which deals with academics who do not teach post-editing themselves, it did not apply to any of the participants of both samples, with one exception (P5), since those who use post-editing in the subtitling classroom, teach it as well. P5, who comes from the ES sample, mentioned that 'the academic staff that teaches post-editing is either expert academics in machine translation and post-editing or academics that are professional translators/subtitlers'.

Regarding question D15, which deals with the skills for post-editing and the skills for subtitling from scratch, the interviewees from the ES sample seem to display an uncertainty when it comes to pinpointing the skills for post-editing and the skills for subtitling from scratch. P2 believes that the skills are completely different, P3, P4, P5 believe that the difference between the skills is similar to the difference between translation and proofreading and P1 thinks that theswe skills are the same. When it comes to the EL-GR and EL-CY samples (n=4), the same level of uncertainty seems to be displayed. P6 believes that the skills are different, P8 and P9 think that the difference is the same if you compare translation to proofreading and P7 seems to think that the skills are more or less the same.

Question D16 deals with a relatively new concept, that is, industry certificates. Although, the idea of industry certificates is not new (as one of the interviewees of the company subtitling sample mentioned, project ERMES was also set up as an industry certificate a few years ago), it seemed to cause some confusion to the participants when they were asked how they view the implementation of such certificate. As it can be seen it table 20, the interviewees raised a couple of concerns, the most common being the acceptability of such certificate by the industry. In addition, another recurring concern was the language combinations such a certificate could accommodate, as there are endless combinations between the languages. In addition, the cost and the possibility of potential retesting by the companies was also a concern raised by the interviewees. Participants also provided a few arguments regarding the potential benefits such a certificate could offer to subtitlers. The most common answers were that subtitlers will be provided with an opportunity to practice more through the certificate as well as become more employable for future jobs.

Table 20. Participants' answers regarding their opinion about industry certificates (D16)

Participant ID	Sample	Potential benefits	Potential issues	Skills
P1	ES	'It could be useful for companies'	N/A	• Technical skills • Linguistic skills
P2	ES	'It's useful for the companies as they don't have to test and re-test'	• 'The academic courses already cover the necessary skills so there is no reason' • 'Which guidelines are there going to be used?'	• Technical skills • Linguistic skills
P3	ES	'Opportunity for subtitlers to adapt to the job market'	N/A	• Technical skills • Linguistic skills
P4	ES	'The subtitlers will be more employable since they will have access to more software through the system'	• 'Will everyone have access to it?' • 'What will the financial cost be for the subtitlers?' • 'Which languages will the system support?'	• Technological skills (e.g., shot changes/fonts) • Linguistic skills
P5	ES	N/A	'I do not know much about them, but I think they may not necessary, until now they have not been necessary'	• Technical skills • Linguistic skills
P6	EL-GR	• 'There are countries where subtitling courses do not form part of any BA program' • 'The tutors who deliver these courses are aware of the industry and the challenges which exist and they can help	N/A	• Hands on practice on software • Template creation • SDH skills • Theoretical background on translation theories (usually inexistent in

		potential subtitlers deal with any difficulty that may appear when subtitling'		current industry certificates) • Post-editing skills • Translation project management skills
P7	EL-GR	'It could be helpful for recruitment and the job opportunities of subtitlers'	• 'It's hard to unify all the requirements of a company so they don't test subtitlers'	• Language command • Time/space – condensation skills • Technological skills
P8	EL-GR	• 'It could create a uniformity of guidelines for the companies as well' • 'Subtitlers can get more practice in case this is not feasible in the academic degrees'	• 'How recognisable will such a certificate will be'	• Timing • Shot changes • Condensation/splitting
P9	EL-CY	'It could be a way to minimise theory and maximise practice'	• 'The companies will still need to test based on their own requirements' • 'Not everyone can access it as there too many language combinations' • 'Will the companies, trust this certificate?'	• Translation skills • Technical skills (much easier to quantify/test)

Question D17 displays a unanimous response by all interviewees, as they all agreed with the question that subtitlers should stay in touch with the developments of technology. In fact, as P4 argued: 'One example is the last 6 years. The landscape has changed so much that a subtitler with no technical skills cannot survive in this industry'. Based on the responses of all the participants, subtitlers should remain in constant contact with new technologies, as this is a professional sector which depends highly on these developments.

Lastly, question D18, focuses on the training of subtitlers regarding the creation of subtitling templates. Regarding the ES sample, all the participants mentioned that they are training their students to create and translate templates, as they want to present realistic scenarios to students.

Regarding the EL-GR sample, two thirds of the participants (P6, P7) emphasised the need for training subtitlers to create and translate templates. As P6 mentioned:

> Yes, we train subtitlers. We live in a globalised world and production of subtitles in different languages is needed so they should be able to do this work as well. Unfortunately, this trend has contributed to lower salaries for subtitlers but since it is something needed by the industry students should possess the necessary knowledge

The remaining one third of the participants (P7) argued that she would like to include the creation of templates in the subtitling course, but there is not enough time during the semester. Similarly, P9, who comes from the EL-CY sample, also emphasised the issue of limited time, as it seems that it is not feasible at the moment to include it in the curriculum.

CHAPTER 4: SOCIOLOGICAL ANALYSIS

CHAPTER 4: SOCIOLOGICAL ANALYSIS

Chapter 4 deals with the sociological component of the study. Section 4.1. provides a brief analysis on the reasons for conducting a sociology of translation and subtitling technology. Section 4.2. presents the sociological model that this dissertation utilises for conducting the sociological analysis. In addition, Section 4.3. will provide the sociological analysis according to Bourdieu and section 4.4. will provide the sociological analysis from a Latourian perspective. The final sociological model that this dissertation aims to suggest is presented in section 4.5.

4.1. The importance of sociology in translation and subtitling technology

The importance of creating a sociology of translation and subtitling technology has been observed by very little academics. This is identified as a gap in academic research since, as it is mentioned by various scholars, technology is key in both the translation and the subtitling practice. As it has been argued so far in this dissertation, technology is an inseparable part of the subtitling practice. However, technology is also part of the social realm and it should be seen under this context. Hence, the study of subtitling technology in the context of a sociological framework is not only important but essential if we really aim to understand the subtitling practice as a whole.

Maeve Olohan is one of the first scholars who published an argumentative chapter regarding the need for a 'sociology of translation technology' (Olohan, 2020, p.624). According to Olohan (2020, p. 624), 'the interest in what could eventually be referred to as 'the sociology of translation technology' is still in its infancy', despite the fact that there have been approaches that studied various roles in translation from a sociological point

of view (e.g., language providers, translators, publishers) and a number of translation tools by using sociological approaches. Although this dissertation focuses on subtitling technology, it should be reminded that subtitling technology falls under the larger research area of translation technology. Hence, the following arguments regarding the need to create a sociology of translation technology are directly applicable to the area of subtitling technology, which is the scope of this dissertation.

Olohan (2020) demonstrates in her chapter that there are a few scholars that dealt with sociological aspects of translation technology. As she mentions (ibid., p.625):

A small number of scholars have conducted sociologically informed studies of translation with tools and materials explicitly in focus (Risku and Windhager 2013, O'Hagan 2017, Ehrensberger-Dow and Massey 2017) or have explored the potential for specific conceptualizations of technology (Kenny 2017, Olohan 2011, 2017b) or materiality and mediality (Littau 2016a, 2016b) to direct our research on translation, past and present.

However, the aforementioned works are not only limited, in terms of numbers, but also, their arguments are not clearly positioned regarding a need for what we can call *sociology of translation technology*. According to Olohan (2020, p. 639), the need to create a sociology of translation technology comes from the fact that 'translation scholarship has seldom addressed questions about the construction of meanings in relation to translation technologies, and the ways in which certain relevant social groups and their values and interests dominate in decisions relating to design and implementation'. As Olohan (2020) indicates, if we focus on a critical approach towards technology, which can also be empirically valid, we 'can dispel the myths that technologies are neutral or innocent (Hornborg, 2014) and that we must resort to technological solutions for social problems (Morozov, 2013)' (ibid., pp. 639-640). In addition, as she adds, such critical approach towards translation technology 'is likely to lead to revisions of many of the traditional conceptualizations of translation' (ibid., p. 60).

Taking the above into consideration, this dissertation attempts to provide such critical approach to technology from a subtitling technology standpoint, based on the data that have been collected (as mentioned in Chapter 2 and 3). Based on extensive research that Olohan (2020) presents in the chapter *Sociological approaches to translation technology,* the most common research instruments for collecting data in translation technologies are interviews and surveys that deal with the tools translators use, whether translators believe that they will have less work opportunities due to technology and whether using various technologies will help them professionally, which coincide with the data that have been collected for the purposes of the sociological analysis.

4.2. Sociological model

The sociological model that will be adopted for the sociological analysis will be a combination of Bourdieu's and Latour's models. To be precise, the following concepts will be used from each theory:

a) capital (Bourdieu)
b) agent (Bourdieu)
c) field (Bourdieu)
d) habitus (Bourdieu)
e) Actor-Network Theory (ANT) (Latour)

The aforementioned theoretical concepts were defined in chapter 1, but they are also presented while analysing the data in section 4.3. As it was mentioned above, Buzelin (2005) argued that Bourdieusian sociology can be complemented by Latour's ANT theory, as Latourian sociology allows for creativity and unpredictability. Therefore, a combination of these two major sociological schools of thought was deemed necessary for the following reasons.

First of all, there are some limitations if we only consider Bourdieu's social theory, as Bourdieu's sociology does not include non-human actors like technology. In Bourdieusian sociology, technology can only be seen as a structure (that is, a rigid system that only influences those who are within its field) or perhaps as part of symbolic capital. In Latourian sociology, technology can be seen as another actor (in fact, this would be called *actant*, as technology is part of non-human entities), which can influence and be influenced by other actors, which is the case of the sample of this dissertation.

In addition, by using only the Latourian sociology for this analysis, it would automatically imply that the actors (participants of the network) are flat entities without any prior experiences that can influence their actions. All the actions are considered *ad hoc* since Latour does not take into consideration the social background of actors or their motivations. However, in Bourdieusian sociology, subtitlers, for instance, would come to the professional space of subtitling technologies (in Bourdieu's term, *field*) with predispositions that were acquired throughout their professional experience (in Bourdieu's terms, *habitus)* and hence they will act according to those predispositions. Bourdieu's habitus allows for a better overview of participants' motivations and possible actions.

Lastly, according to the ANT model, an endless number of connections between the actors and the actants can be made, whereas in Bourdieu's theory it is taken as granted that agents will keep struggling to obtain more capital. There is a power struggle in Bourdieu's theory, which is not a given in the ANT model. For this reason, a combination of key concepts from both theories is suggested in section 4.5.

Section 4.3. will provide the sociological analysis according to Bourdieu and section 4.4. will provide the sociological analysis from a Latourian perspective. The final sociological model that this dissertation aims to suggest is presented in section 4.5. It should be noted

that the data that were collected from the interviews and the questionnaire for this analysis include the Greek-speaking and Spanish contexts.

4.3. Bourdieusian interpretation of the collected dataset

In order to interpret the data of the study from a Bourdieusian sociological point of view, it is suggested to adopt a top to bottom approach (as seen in Chapter 1). Firstly, it is important to define the theoretical space (field) in which all the constructs exist. Thus, the field is the subtitling technologies field. Subtitling technologies is part of a larger field, translation technologies. Another example of a field would be the interpreting technology field, which is given as an example below in the form of a figure (figure 92).
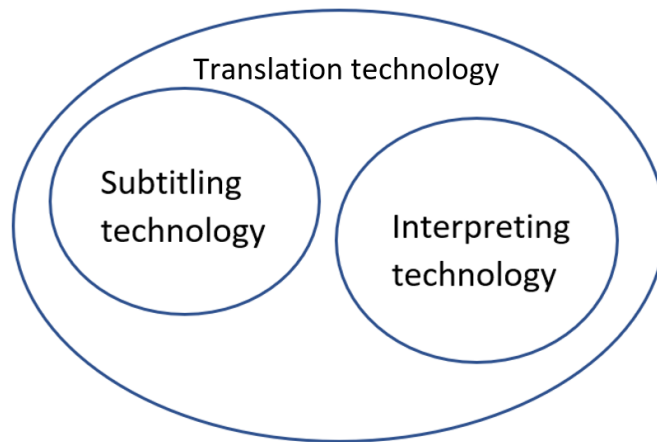
Figure 92. Visual representation of the Bourdieusian *field: Subtitling technology*

Regarding the stakeholders of the field, in Bourdieusian terms, these are called *agents*. Based on the data of the dissertation, the agents of the subtitling technology field are subtitlers, subtitling companies and universities (as represented by academics). An important differentiation needs to be made here. Universities can be considered as part of a structure (rigid system that agents do not have any direct influence on it), as it has the power to shape agents' actions. However, universities will be seen as agents, as the

focus will be on the level of the individuals (lecturers) who were interviewed and because the sample is too small to generalise for all universities.

Thus, by placing the agents in the field, according to Bourdieu, we expect that there will be a power struggle between them. It should be noted here that there are two types of capital that are applicable here: economic capital (monetary resources that are available to an individual or a group (Orrego-Carmona, 2011)) and symbolic capital (prestige, elevated status). In addition, it should be noted that technology (i.e., the knowledge of technology) under the Bourdieusian model would be seen in the form of symbolic capital. In other words, it is considered a resource, the accumulation of which provides the agent with an elevated status, which results in more economic capital.

This is confirmed by the collected data of the questionnaire. In question B10, which deals with whether subtitlers received post-editing training, the majority of the respondents replied that they have not received training in post-editing but they have learnt through their interaction with the subject. Most participants in question D25 of the questionnaire, which focuses on whether subtitlers are pleased with the financial compensation they receive, replied negatively. Hence, it seems that subtitlers seek to gather economic capital through the symbolic capital (technology), because there is a conscious effort in learning to post-edit, as 4 out of 10 participants chose the option 'No, I have not received training in post-editing but I have learnt during my interaction with the subject'. Moreover, this is confirmed by the subtitling company interviews in question D9, which deals with the skills that they companies look for, in which they indicated that they prefer working with subtitlers who have technical skills in general (e.g., post-editing, template creation and use).

In addition, technology as symbolic capital can be seen from a different agent, that is, the subtitling companies. As it has been seen in the interviews from interview group B (academics), subtitling companies have ties with academia, especially when they are

invited to present to the university (as seen in question B8 of the interview group B) or in the form of internships. In Bourdieu's terms, this could be explained as follows. Subtitling companies hold an amount of the symbolic capital (technological knowledge) that they exchange with the academics/university. This exchange bears benefit for three parties:

a) it benefits the subtitlers, who will gain more symbolic capital, which later on they will exchange for economic capital (as mentioned above);

b) it benefits the subtitling companies, which come into contact with prospective employees;

c). it benefits the academics and universities, since they gain symbolic capital that they did not necessarily have.

Taking the above into account, the dataset of the study does not seem to work well with the Bourdieusian approach, as technology is seen as part of symbolic capital, but there are a number of limitations regarding this approach, as the actual influence of subtitling cannot be established. The Bourdieusian sociology is mainly focused on humans or institutions, which are also human-centric because they are seen as enforcers. However, technology is more than a part of symbolic capital which various agents attempt to capitalise on. Thus, the Bourdieusian model could be implemented with further sociological concepts.

4.4. Latourian interpretation of the collected dataset

According to Latourian sociology, society is depicted as a network in which all nodes can interact with each other. Thus, according to the dataset of this study, the network should deal with subtitling technologies. In an ANT-oriented model, technology can 'act' as an independent entity and does not need to be assigned to an actor as a resource, as it has been seen in the Bourdieusian sociology.

If we apply an ANT-oriented model to the data collected in this study about subtitling and technology, it can be seen that there are three actors and one actant. The actors are the following: subtitlers, subtitling companies and academia. The actant is technology, because it is not human. It should also be noted that academia is considered an actor because the sample is not representative of the universities in the Greek-speaking and Spanish context. However, future studies can use universities as actants if they wish to study them under this light, if required.

According to the dataset, it seems that technology influences all three actors. To be precise, regarding subtitlers, and based on the dataset that was collected, it seems that technology influences their work opportunities in terms of eligibility. This is confirmed by question D24 of the questionnaire, in which 2 out of 5 times they receive requests for post-editing, but only 3 out 10 participants (question B11 of the questionnaire) actually post-edit for job requirements. Also, the option 'Yes, it happened quite a few times' in question D23 of the questionnaire, which deals with specific client requests regarding subtitling technology, received the highest response, indicating that the role of technology is influencing the subtitling practice. In addition, according to interview group A, subtitling companies look for subtitlers who are well-versed in the technological aspect of subtitling, hence, reinforcing the eligibility parameter that was mentioned above. Since the sample is characterised mainly by freelancers, this is vital for their financial prosperity. This describes one way that technology influences subtitlers.

Another way that technology influences the professional lives of subtitlers is that they seem to feel that they need an upskill in their technical knowledge. According to the correlations of the study, this need was identified to be happening after 6 years since the participants received their highest qualification. In addition, this need for upskill that the subtitlers seem to feel, according to the data from question C16, which deals with whether subtitlers took action on their need for upskill, prompted them to take action

and re-train or train for the first time. It should be noted that participants who come from the educational background of High school have never been involved in any training.

Regarding the subtitling companies, technology seems to play a vital role for them as well, as it limits the options of available subtitlers who work with technology. In addition, according to both interview groups, interview group A and interview group B, there seems to be a discrepancy in terms of training, because subtitling companies (interview group A) seem to expect academia to train subtitlers regarding new technologies. Although academics teach technology, not all of them teach some of the latest developments in the subtitling industry, which is post editing (this refers to question D13 in interview group B, which asks whether post-editing is taught in the subtitling classroom and question D11 in interview group A, which questions whether there is any post-editing training from the company). Thus, it seems that technology influences indirectly both interview groups.

As far as academia is concerned, the development of technology is also causing changes in academic curricula and the need to adapt in order to match the requirements of the industry. This has also been observed by Bolaños et *al.* (2022), who dealt with the use of professional web-based systems in subtitling practice and training. In fact, the participants who did not have a degree that dealt with subtitling had to consult other academic sources in order to get familiar with the development of technology in subtitling and with the way the subtitling practice works (question A4 in interview group B).

Although it seems that the ANT model by Latour seems to work better based on the dataset of the study, it still does not account for the previous experiences, tendencies and training of subtitlers. The ANT model can provide an image of whether various actors and actants are connected, but it cannot attest to the reasons that these are connected. Hence, a combined sociological model is required.

4.5. Suggestion of a combined sociological model

The suggestion of a sociological model remains at a descriptive level, as the scope of this research is descriptive to the overall field of subtitling technology. The relationship between technology, the subtitling practice and subtitlers can only be characterised as dynamic. Although the ANT model seems to illustrate this relationship, there is one factor that is missing from the model, which is the human factor. The ANT model provides the links between the involved stakeholders, but it is not clear how these links came to existence. In contrast, the Bourdieusian sociology allows for the personal motivations of the agents, as it is human-centric, but it does not allow for subtitling to be a driving force in this relationship.

Thus, based on the dataset of this doctoral dissertation, the following combinations between the two theories are suggested. The view of the research area in question should still be a network, as it is in Latourian sociology. In addition, technology should still be seen as an active participant in the network and not as resource on which the participants can capitalise on. However, the theory should allow for personal motivations, predispositions (Bourdieu's habitus) and experiences, which also guide the participants of the network. In this way, we can have a truly comprehensive sociological analysis. As the sample size is limited and the scope of research is mainly descriptive in terms of the relationship that seems to be formed between the involved stakeholders, there are not enough data to conduct a truly comprehensive sociological analysis. However, if this topic features in future studies, it would be interesting to see how the subtitlers' motivations, experiences and predispositions (Bourdieu's habitus) are affected in terms of the role of technology.

CONCLUSIONS

Conclusions

This section concludes the dissertation by presenting the main findings of the research, the contribution it made to its respective field, the limitations of the study and the future research pathways it opens.

Regarding the primary research question of the thesis, which revolves around the unveiling and characterisation of the relationship between technology, subtitling and subtitlers, this was fulfilled by analysing the existing literature of various mediums of audiovisual distribution and by conducting a descriptive sociological approach on the collected dataset. In fact, this relationship can be characterised as dynamic, as further research is required to pinpoint exactly how and when technology influences the above relationship. However, a few observations were drawn.

Regarding the subtitling practice as a process, technology has the power to make the mediums of audiovisual distribution obsolete (e.g., VHS) or nearly obsolete (e.g., DVD), as it was seen in the literature review in Chapter 1 through the technological development of various subtitling processes. In addition, this was confirmed by the questionnaire (question B6, which was asking subtitles to choose the AV medium they subtitle for) and by the interviews (both interview groups), as the majority of participants indicated that they no longer use VHS and that they use and teach about DVD very little.

Regarding the relationship of technology with subtitlers, as it has been shown by this body of research, it influences subtitlers in terms of skills (as they feel they need an upskill), in

terms of training (as they go through re-training or training for the first time) and in terms of work prospects (as the subtitlers may not be able to obtain certain jobs due the lack of technical training, as it was shown in the sociological analysis of the dissertation).

As far as the first secondary research question is concerned, which deals with the training of subtitlers regarding their technical skills, this was answered adequately from the replies of the questionnaire participants. In fact, as the questionnaire indicated, the majority of the sample trains, in terms of technical skills, in a postgraduate degree. However, the second answer that received the highest percentage, indicated that they train in the industry while being employed at a company.

Moreover, regarding the second part of the first secondary research question, which concerns possible re-training due to the development of technology, this question was also answered by the questionnaire data, which indicated that it is indeed the development of technology that made the subtitlers feel that they needed an upskill in their technical knowledge (C15) and the majority of these participants acted on this need, as it was shown in C16.

Regarding the second secondary research question, which revolves around whether the role of technology changes according to the context, since the data are not representative of the contexts, not many observations could be made, and further research is required to investigate this topic in detail. Nonetheless, a comprehensive analysis between the two contexts is provided in chapter 3 in order to highlight the similar and different tendencies that were recorded based on the samples that were collected.

As far as the sociological analysis is concerned, the study concluded that strict sociological approaches do not seem to apply to subtitling technology, based on the collected dataset of the dissertation. Although further research is required in this area, the relationship between technology, subtitling and subtitlers can be characterised as dynamic as it

requires a combination if sociological approaches to study it. Even if the scope of the research was to map the field of subtitling from a descriptive aspect, it should be noted that this research showed the need for further approaches that include a sociology of translation and subtitling technology.

Regarding the comparative analysis between the Greek-speaking and Spanish context, it seems that the ES sample is slightly more academically inclined when it comes to technical training, whereas the EL sample seems to be more industry oriented. Also, it seems that the age group of the sample population of the Greek-speaking context is older when compared to the ES sample, indicating perhaps a different generation of subtitlers. Moreover, the participants of the ES sample indicated greater confidence in their technical skills when compared to the participants of the EL sample, denoting probably that since they graduated later than the EL sample, the skills they obtained have already covered the key aspects of technical training.

With regards to the similar tendencies, in both samples, the subtitlers seem to be reluctant towards post-editing, whereas the academic and industry world seem more accepting. Moreover, it seems that in both samples there is some sort of re-training happening after 7 years of receiving the highest qualification. In addition, another common trait between the two samples is the way technology is taught in academic institutions and in a lesser degree in the industry.

Moreover, this study made the following contributions to the field of AVT:

a) the field of subtitling technology was mapped and presented in a systematic approach;
b) the relationship between technology, the subtitling practice and subtitlers was characterised as dynamic;

c) this doctoral dissertation laid the foundations for a future *sociology of translation and subtitling technology* and suggests the implementation of such approach to subtitling technology, if we wish to truly understand the underlying forces that inform the subtitling practice

d) it provides data regarding the training of subtitlers as well as their need to re-train due to the development of technology;

e) it explains, indirectly, that phenomena like fansubbing, fandubbing, romhacking and crowdsourcing subtitling would not be possible without the help of technology.

Limitations

The present study presents a few limitations. These limitations concern mainly the literature review, the sample sizes, the data analysis tools.

First of all, the questionnaire sample for the Spanish context is not considered representative of the Spanish AVT industry, as it is characterised by low participation. As a result, the comparisons between the Greek-speaking and Spanish context will need to be confirmed or rejected in future studies with larger samples. In addition, due to the fact that there was only participant in the interviews with the subtitling companies for the Greek-speaking context (i.e., Greece and Cyprus), the EL sample for the subtitling companies is not considered representative of the Greek AVT market. As a result of the low participation in the Greek-speaking context, the number of participants in the Spanish context had to be reduced as well, as an attempt to minimise the gap between the two samples. Hence, the ES sample for the interview for subtitling companies is also not considered representative of the entire Spanish AVT industry. Moreover, Cyprus is featured very little in the study due to the lack of participants in the questionnaire and the interviews with the subtitling companies. Although this demonstrates that the AVT industry in Cyprus is basically non-existent, future research needs to be carried out in the context of Cyprus only.

In addition, another limitation of the dissertation is the mixed format of the interview data (i.e., oral, written) that was caused by the busy schedules of the participants. Unfortunately, this could not be surpassed at the time of the dissertation.

Last but not least, because technology is a subject that continues to develop, and as a result feature in a number of academic publications worldwide, due to its constant expansion, it is difficult to maintain the pace in which it grows. Thus, the literature review that is provided is mainly Eurocentric. This could be considered a limitation of the dissertation.

Future research

This research made the first attempt at defining subtitling technology in a systematic way. However, since the research dealt for subtitling for certain media, and did not include others, that are also affected by technology, such as live subtitling, surtitling and subtitling in game localisation, further studies that include these areas would be necessary.

In addition, it would be intriguing for future studies to replicate the methodology of this dissertation and study the Greek-speaking and Spanish context with bigger samples that are representative of the respective AVT markets. Moreover, it would be interesting to study non-European contexts and compare those to this or other studies in order to highlight the possible differences between different continents. In addition, another possible future research avenue could be the study of the context of Cyprus, which featured very little in this research as there was low participation.

Moreover, since this study focused on specific media, it would be of interest to study other media such as respeaking and video game localisation which are characterised by

idiosyncratic technological features. Such study would benefit from an in-depth sociological approach.

Further research needs to be carried out for non-professional practices, which would be very interesting to analyse sociologically in order to observe how technology influences these practices. In addition, a comparative analysis with the professional practices would benefit such future studies.

Lastly, further macro-level sociological analyses would benefit the investigation of the relationship between technology, subtitling and subtitlers, since this study focused only on the micro-level, that is of individuals and not institutions.

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Annexes

Annex A - Optical film subtitles for television by Ivarsson (2004)

In countries where the optical process was used for subtitling films, attempts were made to use the existing subtitle film strip and run it in parallel with the original untitled film in a second film scanner. The title images were mixed electronically into the film images so that it looked to the viewers as if the titles were on the film, except that it was now possible to control the whiteness of the letters. If a roll with subtitles was not available, one could be ordered from a company that made subtitles for films. This method is still used occasionally today.

At about the same time work started on the development of a rather crude, but cheap and reliable, optical subtitling process for television: The titles were typed on paper and then one-frame stills of each title were made with a film camera. The resulting film negative was put in a scanner and then either the translator fed in the titles manually, one at a time, synchronizing them with the programme, or an automatic system was used to feed in the titles, more or (usually) less reliably, with the help of punched-out marks on the edge of the film. The title images (usually with white letters against a black back-ground, a 'letter box', the whiteness and blackness being controlled to ensure optimum readability) were mixed into the programme images and transmitted or taped. Where no subtitles were to appear, exposed frames—blank frames—were placed between the subtitle frames.

Quite soon, some improvements were made on this method. For example, the titles were printed with more attractive proportional typefaces on offset composers, i.e. simple

typographical setting machines which also allowed the use of italics and kerning, squeezing the letters together. The titles could be written on punch cards, inserted in a feed mechanism and either photographed onto a roll of film or displayed live using a TV camera with image inversion (black shown as white and vice versa). This 'rapid subtitling' method was used mainly for news items. Thus, photographing the subtitles and developing the film were no longer necessary, but the feeding system was unreliable: sometimes the machine supplied several cards at a time or none at all.

Both these techniques allowed manual feeding of the subtitles during recording or transmission or, as with film subtitling, automatic feeding by means of a frame counter.

Annex B – Information regarding the study and informed consent: Questionnaire

This questionnaire is addressed to subtitlers who work from any language combination into Greek, regardless of their geographic location, as well as subtitlers who work from any language combination into European Spanish and reside anywhere in the world.

INFORMATION REGARDING THE STUDY AND INFORMED CONSENT

I would like to thank you for your participation in this study. This questionnaire is part of the doctoral study of the researcher Rafaella Athanasiadi, who studies at the Universitat Autònoma de Barcelona, under the supervision of Dr. Carme Mangiron, of the same institution. Your participation would be valuable for this research as the aim of this PhD is to unveil the role of technology in various subtitling environments; since subtitling is inevitably intertwined with
technology. Your help is the key to answering the below principal question of this study:

Considering that technology is inseparable from the subtitling process and the lives of subtitlers, how can we capture the way it operates as a driving force and in what way, if at all, does it affect the power balance between the involved agents?

This online questionnaire will guide you according to your choices. No personal nor confidential information will be requested from you and you will not receive any compensation. No risks are associated with this study and you can withdraw your answers at any point. The duration of the questionnaire is of approximately 5-10 minutes.

You can withdraw your answers at any point within the time that the questionnaire is online; without providing any explanations nor bearing any consequences. By clicking the below box you agree that you have read and understood the above and you can proceed to the following step.

Annex C – Information regarding the study and informed consent: Interviews

INFORMATION REGARDING THE STUDY AND INFORMED CONSENT

I would like to thank you for your participation in this study: Mapping the area of subtitling technologies from a sociological standpoint: An investigation of the complex relationship between technology, subtitling and subtitlers, part of the doctoral study of the researcher Rafaella Athanasiadi, who studies at the Universitat Autònoma de Barcelona, under the supervision of Dr. Carme Mangiron, of the same institution.

Please read this consent document carefully before deciding to participate in this study. The purpose of this research is to unveil the role of technology in various subtitling environments; since subtitling is inevitably intertwined with technology. Your help is the key to answering the below principal question of this study:

Considering that technology is inseparable from the subtitling process and the lives of subtitlers, how can we capture the way it operates as a driving force and in what way, if at all, does it affect the power balance between the involved agents?

The interview will last around 15-20 minutes approximately.

No risks are associated with this study and you can withdraw your answers at any point. Participants will not receive any compensation.

If you decide to give us your contact information, your identity will remain confidential and only the researcher will have access to the project data. If it were the case that cases of study were to be presented, pseudonyms would always be used, unless participants explicitly prefer to be cited and express their consent by signing the appropriate consent

below. Please tick the appropriate box if you agree to citing your name/name of the company.

The informed consent will be kept in a safe place by the PhD supervisor.

Your participation in this study is completely voluntary. There is no penalty for not participating. You have the right to withdraw from the study at any time without consequences, you only have to notify me.

Recordings and use of testimonials:

Please, tick the appropriate below:

☐ I agree that this conversation / interview (audio / video) is recorded.

☐ I authorize that literal quotes of my interventions can be used without mentioning my name only for purposes of scientific dissemination.

☐ I authorize that literal quotes of my interventions can be used with mentioning my name only for purposes of scientific dissemination.

☐ I authorize the use of literal quotes which mention my name, only after I assess and approve them.

☐ I authorize the use of literal quotes, even if these are anonymized, only after I assess and approve them.

☐ I authorize the use of my interventions (audio / video) only for purposes of scientific dissemination.

All the recordings and testimonials will be eliminated once the study is completed.

If you would like to receive further information about this project or have any questions, you can contact the researcher or her supervisor at the following email addresses: rafaella.athanasiadi@autonoma.com and carme.mangiron@uab.cat. If you would also like an electronic copy of the submitted thesis, you can request it and it will be send to you as soon as the project has been finished. Once we have sent you a copy of the thesis, your name and contact details will be deleted.

AGREEMENT

• I have read the information about the research project and I have had the opportunity to ask questions.

• I agree to participate voluntarily and I have received a copy of this consent form.

Name and surname of the participant:

Signature_____ Date: _____

Researcher:

Signature _____ Date: _____

Annex D - Permission form by the ethical committee of Universitat Autònoma de Barcelona for the dissertation

Vicerectorat d'Investigació

Comisión de Ética en la Experimentación Animal y Humana (CEEAH)

Universitat Autònoma de Barcelona
08193 Bellaterra (Cerdanyola del Vallès)

La Comisión de Ética en la Experimentación Animal y Humana (CEEAH) de la Universitat Autònoma de Barcelona, reunida el día **13-12-2019**, acuerda informar favorablemente el proyecto con número de referéncia **CEEAH 4609** y que tiene por título **"Mapping the area of subtitling technologies from a sociological standpoint: An investigation of the complex relationship between technology, subtitling and subtitlers"** presentado por **Carme Mangiron Hevia**

Elaborado:	Aprovado:
Nombre: Nuria Perez Pastor Cargo: Secretària de la CEEA de la UAB Fecha:	Nombre: José Luis Molina González Cargo: President de la CEEAH de la UAB Fecha:
NURIA PEREZ PASTOR Firmado digitalmente por NURIA PEREZ PASTOR Nombre de reconocimiento (DN): c=ES, ou=Vegeu https://www.aoc.cat/CATCert/Regulacio, sn=PEREZ PASTOR, givenName=NURIA, serialNumber=35109638T, cn=NURIA PEREZ PASTOR Fecha: 2019.12.18 13:22:55 +01'00'	JOSE LUIS MOLINA GONZALEZ - DNI 36561625C Firmado digitalmente por JOSE LUIS MOLINA GONZALEZ - DNI 36561625C Fecha: 2019.12.18 16:05:45 +01'00'

Annex E – Questionanaire questions

Section A: Demographics

1. **Please select your gender:**
- Female
- Male
- Prefer not to say

2. **Please select your age group:**
- 18 – 25
- 26 – 35
- 36 – 40
- 41 – 50
- 50+

3. **a) Please select your country of residence:**

• Greece

• Cyprus

• Spain

• Other: _____

3. **b) What is your native language?**
- Spanish
- Greek

4. **Please select your educational background**
- High school
- University/College degree (e.g. BA)

- Postgraduate degree (e.g. MA/MSc)
- Doctorate (Ph.D)

5. **How many years have passed since the completion of your highest academic qualification?**
- Less than a year
- 1-3
- 4-6
- 7-9
- 10-12
- 13-15
- 16+

SECTION B: Subtitling, Training And Technology

6. **Select the main audiovisual (AV) medium that you subtitle for (you can select more than one):**
- Cinema
- TV
- Video-on-demand platforms
- DVD
- Other: _____

7. **Where did you receive your training, in order to acquire the necessary technical skills?**
Please note that technical skills refer to all the skills that revolve around the use of technology (e.g. using a specific subtitling software)

- I have not received any training
- The training was part of my bachelor degree
- The training was part of my postgraduate degree
- Training by a public or private company (e.g. while being employed)
- Training course in a public or private institution (e.g. specialised course in an academic school)

8. **If you received formal training (e.g. in a university/college), do you believe it has adequately equipped you for the rest of your career?**
- Yes
- No

- Maybe

9. Would you prefer to receive your training in subtitling technology by academic institutions or industry stakeholders?
- I would prefer to be trained at academic institutions
- I would prefer to be trained by industry stakeholders

10. Have you received training regarding post-editing subtitles?
- Yes, it was part of my academic degree
- Yes, it was part of my training at a public/private company
- No, I have not received training in post-editing but I have learnt during my interaction with the subject
- No, I have not received any training and I do not post-edit

11. Do you post-edit subtitles as part of a job requirement?
- Yes
- No

12. If you chose 'yes', how long have you been post-editing subtitles?
- Less than a year
- 1-3
- 4-6
- 7+

Section C: Skills & Technology

13. Rate your technical skills from 1 to 5 (note that 1 is the lowest and 5 is the highest):

1   2   3   4   5

14. Select the level of technical competence that is required in your chosen AV mediums (note that 1 is the lowest and 5 is the highest)

1   2   3   4   5

15. Has the development of technology made you feel you need an upskill in your technical knowledge? Please note that technical knowledge refers specifically to knowledge around the subject of technology (e.g. converting files)

- Yes
- No

16. In case you answered 'yes' to the above question, have you done something to address this?
- Yes
- No
- I am thinking about it.

17. If you have not done something to address the need for upskill, what would you like to do?

18. Do you believe that the skills for post-editing and the skills for subtitling from scratch, are the same? Why? Why not?

19. Rate the below skills according to their importance in the process of subtitling (1 is the most important and 3 is the least important)
- Technical skills (e.g. knowledge of software)
- Translation skills (e.g. interlingual translation)
- Communication skills (e.g. client relationship)

SECTION D: Work Opportunities & Technology

20. What is the type of your professional activity?
- I work freelance
- I work in-house
- I work in house and freelance

21. Do you believe that the development of technology affected your work opportunities? (You can select more than one answer)

- Yes, nowadays there are many available opportunities because of technology.
- No, technology has not changed anything.
- Yes, but negatively. The companies expect more work with less cost.
- I am not sure

22. If you answered 'yes' to the above question, please specify how has technology affected your work opportunities?

23. Have you ever come across a client/employer for whom a specific set of technical skills/software was a prerequisite?
- Yes, it happened quite a few times
- Yes, rarely
- No, never

24. How often are you asked to post-edit subtitles instead of translating from scratch?
- Always (e.g. 5 times out of 5)
- Usually(e.g. 3 times out of 5)
- Rarely (e.g. 2 times out of 5)
- Never (e.g. 0 times out of 5)

25. If you have been asked to post-edit subtitles, do you believe that the financial compensation that is given reflects the amount of work that is required?
- Yes, the rates reflect the amount of the work that is demanded by the task.
- No, the rates do not reflect the amount of work that is demanded by the task.

Section E: Subtitling Technologies

26. Do you use any computer-assisted tools (CAT) before, during or after subtitling?
- Yes, I use them before subtitling.
- Yes, I use them during subtitling.
- Yes, I use them after subtitling.
- No, I do not use any.

27. Do you use any machine translation (MT) tools before, during or after subtitling?
- Yes, I use them before subtitling.
- Yes, I use them during subtitling.

- Yes, I use them after subtitling.
- No, I do not use any.

28. Do you use freeware or professional subtitling software?
- I use freeware subtitling software
- I use professional subtitling software
- I use a combination of the two.

29. Do you think that technology affects the quality of the translation in a positive or negative way? Why?

30. Do you think that in the future, subtitling will involve only post edition or review of subtitles created by machine translation tools?
- Yes, this is correct.
- I think the future of subtitling will involve a combination of human subtitling and postediting.
- No, I do not think this will ever happen.

Thank you for your participation. If you want to know about the results of the study, please contact us through email at: rafaella.athanasiadi@autonoma.cat

Annex F – Interview questions with interview group A (Subtitling companies)

Section A: Profile

1. How much work do you receive from any language combination into European Spanish (Castilan Spanish)?
   How much work do you receive from any language combination into Greek? (accordingly)

2. On which of the following audiovisual (AV) mediums does your company concentrate? Feel free to write below any combinations of the below:

   - TV
   - VoD
   - DVD
   - Cinema
   - Other: ____

Section B: Technological tools

3. What type of subtitling technology software do you use (e.g. offline commercial subtitling software, cloud-based subtitling software)?

4. What type of translation technology do you use? CAT tools, MT (machine translation) tools, cloud systems, terminology bases?

5. What is your subtitling workflow in terms of technology? e.g. how is technology incorporated in your workflow.

Section C: Post-editing

6. Do you use post-edited subtitles on your workflows?

7. Is there a dedicated PM/trainer for handling subtitlers who post-edit? What kind of support does this person provide to the subtitlers?

8. Has a member of your company attended any courses regarding post-editing?

Section D: Skills & Training

9. What type of skills do you look for in future subtitlers? Do you have any entrance tests and what do these involve?

10. Do you think that the skills for post-editing are different from the skills that are needed for subtitling?

11. Have you conducted training for subtitlers in relation to post-editing? Why? Why not? Would you like to?

12. What do you think about industry certificates for subtitlers? Do you think they are necessary? What skills would you expect such certificate to include?

13. Do you think that subtitlers should keep up with technology and continue their training? Why?

14. Do you look for subtitlers who are able to create templates?

15. Do you train subtitlers on how to create templates? If yes, what are the qualifications of the appointed person who trains subtitlers?

Annex G – Interview questions with interview group A (Academics)

Section A: Teacher profile

1. Please select your educational background
   - High school
   - University/College degree (e.g. BA)
   - Postgraduate degree (e.g. MA/MSc)
   - Doctorate (Ph.D)

2. How many years have passed since the completion of your highest academic qualification?

   - Less than a year
   - 1-3
   - 4-6
   - 7-9
   - 10-12
   - 13-15
   - 16+

3. What was the focus of your highest qualification (e.g. linguistics/translation/literature?

4. If your degree is not related directly to subtitling, how did you acquire your knowledge about subtitling (e.g. industry experience, professional course)?

Section B: General Profile

5. What type of subtitling courses does your university offer?

   a. Subtitling courses at a BA level
   b. Subtitling courses at a MA level
   c. Diplomas in Subtitling
   d.Other: _____

6. Are the subtitling courses part of a language degree and if that's the case, which one(s)? If not, are these courses part of a translation degree?

7. Under which school or faculty (e.g. School/Faculty of humanities) is the aforementioned degree categorised?

8. Do you (or the university) have (has) any collaborations with professional associations which offer training in subtitling as part of the degree? Do you offer any internships?

9. What are the main mediums you use for teaching subtitling (e.g. cinema, VoD, TV etc)?

Section C: Technological tools

10. What type of subtitling technology do you use (e.g. offline commercial subtitling software, cloud-based subtitling software) in the classroom?

11. What type of translation technology do you use in the subtitling classroom, if any? CAT tools, MT (machine translation) tools, cloud systems, terminology bases?

12. Describe how you teach technology in your subtitling courses.

Section D: Skills & Training

13. Do you teach post-editing in any of the subtitling courses?

14. If you don't teach post-editing, what is the specialisation of the teacher/lecturer who teaches post-editing (e.g. years of experience in post-editing, relevant degree)? [if the lecturer is also a director of programme or knows who teaches post-editing]

15. Do you think that the skills for post-editing are different from the skills that are needed for subtitling? Why?

16. What do you think about industry certificates for subtitlers? Do you think they are necessary? What skills would you expect such certificate to include?

17. Do you think that subtitlers should keep up with technology and continue their training? Why?

18. Do you teach students how to create subtitling templates? Why/Why not?