"IT'S THE ECONOMY, STUPID" DISCUSSING THE TRANSLATOR'S BUSINESS AGAINST THE BACKGROUND OF A CHANGING TECHNO-ECONOMIC LANDSCAPE

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ABSTRACT: This paper starts by discussing the economic impacts of technology and automation on translators' activities. It then proposes a model to account for the depreciation of skills and respective economic consequences caused by technological changes, described as the translators' 'obsolescence cycle'. This highlights the need for translators to adapt and reconfigure their expertise in order to accompany these changing circumstances, something that can be done by shifting the focus of their activities away from production towards more managerial responsibilities, including advisory, supervisory and planning functions. On a broader scale, management and the organisation of translation converge in the concept of translation policy, a still under-researched topic, which could prove to be a potentially rewarding field of action for translators.
KEYWORDS: Translation Business, Organization, Management, Productivity, Efficiency, Translator's Expertise, Translation Policy

1. Introduction

The following discussion focuses on the job profile of the professional translator who has to earn his/her livelihood from translation and is embedded in a commercial and economic environment, often as a freelancer. In most cases s/he has to work under the constraints of time and money. In this context, automation, in the form of machine translation and advanced AI technology, appears to be a strong competitor. Bringing issues to bear from the domains of business studies and economics, the paper attempts to find answers to questions such as what the modern job profile of the translator might look like, and what rewarding opportunities might exist for translators given the rapid transformations taking place in the global translation market. Not only is the demand for translation services steadily growing but so too is the amount of pages translated daily, although the lion's share is dispatched by the online machine translation platforms now readily available. This has contributed to the development of translation into a "fully fledged industrial sector" (Dunne, 2012), frequently referred to as the "translation industry" (Massardo and van der Meer, 2017).

In a special edition of the journal *Perspectives* (25, p.3, 2017), the editors, Biel and Sosoni, claim that changes in society and technology have led to an increased interest in the economic implications of translation:

> The economics of translation (…) appears to be moving to the centre of TS as it is becoming more relevant due to four predominant factors: (a) unprecedented globalisation, (b) increased migration, (c) the global economic crisis of 2007–2008, which led to pressure on costs and increased productivity and (d) the advances of information communication technologies (ICTs). (Biel and Sosoni, 2017, p. 354)

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Today we may add two more factors that have had an impact on communication and the language services: the health crisis caused by the covid pandemic, which boosted the use of communication technologies, and the war in eastern Europe with its impact on language policy and use. The editorial also invokes the "increasing technicalisation of the profession" and even an "acute technologisation of translation" (Biel and Sosoni, 2017, p. 351) as a consequence of the growing demand and scarce supply. In line with such a drive towards efficiency, digitalization and automation have had a big impact on production but may also contribute to reducing the number of qualified translators available. The big challenge for translators, as well as for academia, is, therefore, to keep up with the innovations introduced by technological and economic changes.[1]

To succeed in such a fast-changing scenario, translators have to adapt. As Baumgarten and Cornellà-Detrell (2018, p. 11) put it, "The new buzzword for us is the reality of the economy as the foundation of our existence". Consequently, the economy of translation has to be analysed and studied with the appropriate instruments and research tools. Its focus can be manifold, touching on the efficiency of services, the overall and individual organisation of translation, or even the cost factor of translation. Gambier (2014, p. 9), for instance, has called for micro-studies to highlight the economic effects of translation, and urges scholars to "compare translation and interpreting costs with the other means used for taking care of international multilingual communication". The kinds of costs that have to be factored in for translation have also been studied under the heading of "transaction costs" (Pym, 1995, 2017; Robichaud and De Schutter, 2012) – another term taken from business studies – which implies the need for translators to keep an eye on the overall economic impact of their job.

2. The translators' obsolescence cycle

In larger translation or localisation projects, digital workflows are broken down into specific tasks assigned to different groups of people: project managers, terminologists, proofreaders, editors, QA managers and translators. This concept, called 'digital Taylorism', in which "jobs are standardised, methods documented" (Moorkens, 2020, p. 4), means that workers no longer choose their own work and pace but "are monitored and have their tasks arranged so as to increase overall productivity" (Moorkens, 2020, p. 1). That is to say, human activity is divided into small chunks of labour activities which are becoming ever more specialised and supervised, and wherever possible, tasks are automated to save costs, with the overall goal of efficiency. In such a context, translators are increasingly entrusted solely with the language transfer itself while higher-level tasks are delegated to other professional roles. This makes their work subordinate and reduces their autonomy; the translator becomes a tiny cog in the whole process, with the result that they may well lose sight of the whole picture. As organization, training, development, and the overseeing of work move from worker to management, workers have less and less

[1] See, for example, the concepts of "competition for talent" in the ELIS report (2022, p. 35) or "HR training as a driver of change" in Massardo and van der Meer (2017).

say in the choice of the single best method for carrying out their work (Moorkens, 2020, p. 3).

This potential skill-disenfranchisement of translators can be illustrated as a downward spiral, representing the shrinking area of competence triggered by such developments and the encroachment of technology, which we may call the translators' obsolescence cycle (Figure 1). While, on the one hand, the ongoing advance of translation technology, with its ever-increasing range of tools and functions, provides help and support for human translators, on the other, more and more human activities are increasingly being replaced by automated tasks done by machines.

Thus, translators are increasingly losing skills to technology. Historically, the spiral began in the 1980s, with the introduction of electronic dictionaries and terminology management systems ("Translation Technology 1" in Figure 1 below), which reduced the need for terminological research and the creation of glossaries. Another technological breakthrough came with the onset of CAT tools in the mid-1990s ("Translation Technology 2"), when machines became able to save translations of text chunks and re-purpose them in new environments whenever similar segments recurred; now, the ability to organize and refer to past translations was no longer necessary for human translators. As for "Translation Technology 3", this of course represents Machine Translation, which has taken over the very act of producing a target text, relegating translators to pre- or post-editing roles. Thus, as long as technology is advancing, the spiral continues to wind down with the cluster of translator competences becoming ever thinner without disappearing completely.

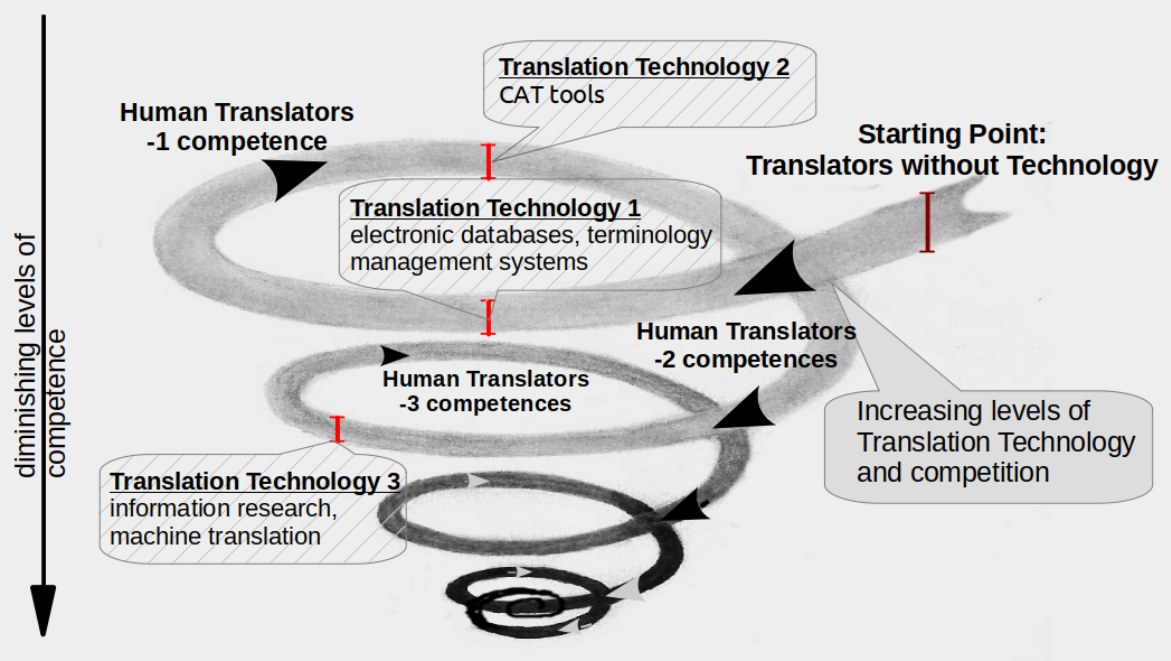

Figure 1. The translators' obsolescence cycle.[2]

[2] *Obsolescence* from the Latin *obsolescere*, wear out, grow old, go out of fashion, lose value. Available at: https://www.etymonline.com/word/obsolesce (Accessed: 28 December 2022)

This view of technology correlates to some extent with the concept of the digital assistant proposed by Martin Kay (1980, p. 13), when he described how translation technology first takes over peripheral aspects before going on to assume ever more important tasks of the translation process. However, while Kay's digital assistant (which dates from 1980) is essentially human-friendly, I would like to argue that modern translation technology goes much further, taking over the very production of the target text itself, automating the process perceived as linguistic commutation. If translators refuse to adapt to this situation and adjust their job descriptions accordingly,[3] they will be thrust further down the spiral of the obsolescence cycle, progressively losing skills and self-esteem.

In order to sustain their business and preserve their status, translators must relinquish "pure" translation (understood as the faithful transfer of information between languages) and move into "tailoring products to meet the needs of clients" (Kujamäki, 2021, p. 6). For individual translation projects this has already been theorized by Reiss and Vermeer (2014), whose skopos theory describes a switch from equivalence to adequacy, where the purpose or function of the target text is considered the decisive factor for a successful translation. However, in order to succeed in a modern service-oriented economy, translators have to offer a range of services that goes far beyond individual translation projects by offering comprehensive solutions in the field of multilingual communication: multilingual terminology work, language data analysis and management, multicultural marketing, translation technology consulting, etc. This comes at the cost of redefining professional activities in the field of translation in order to distinguish them from mere language transfer, be it automatic or human. Indeed, as Koskinen (2020, p. 141) puts it, "It may well be that, in the future, some tailor-made multilingual services will not be labelled translation, as the term 'translation' may eventually begin to denote machine translation only".

3. The translator's profile

Although potential activities for translators will always exist in one reduced form or another as shown in the obsolescence cycle, there is a common perception that translation is slowly being taken over by machines, which threaten to replace humans altogether. This fear comes from the pervasive influence of digitalization and automation in businesses. Developments in AI and machine translation cannot be halted or simply ignored by translators but must be faced and addressed at the risk of a further slide down the spiral

[3] It should be pointed out that modern definitions of translator's competencies, such as those provided by the European Master in Translation, acknowledge this change by broadening the central "Strategic, Methodological and Thematic Competence". This disrupts the obsolescence cycle since it integrates "all the strategic, methodological and thematic competences that come into play before, during and following the transfer phase per se – from document analysis to final quality control procedures" as well as "the ability to interact with machine translation in the translation process (...) as an integral part of professional translation competence" (EMT, 2017, p. 7).

into insignificance: "Will people work in the future?" ask George and Paul (2020, p. 3) to which the answer is "No, especially if we continue to define work the way we do it now". Relevance can be preserved through change. And change means adapting and seizing opportunities beyond traditional tasks, by avoiding competing with machine translation and looking for solutions that can give translators a competitive advantage over their automated rivals. Moorkens suggests that, in order to maximise their agency, translators must continually acquire new competences and diversify their portfolio of services, focusing more on areas that are least likely to be replaced by machines or non-professionals. (Biel and Sosoni 2017, p. 357)

Translators' tasks must be redefined along the lines of optimizing communication through the organization and planning of translation, or in other words, by choosing the best method and tools for the translation tasks that are necessary in a specific context, commercial or institutional. For individual translation or localisation projects, this task is traditionally done by project managers who nevertheless need specific translation expertise, and many translators have moved up to take over this role. Planning and organizing multilingual communication and translation globally for an institution, organisation or company needs specific translation expertise, providing thus an opportunity for a more pronounced professional profile. Control over the overall process of multilingual communication can be regained in this way.

The profession of translator has always been undervalued, and translation is frequently seen as something that can be done by anyone who speaks two languages. In a commercial context it is often perceived as an annoying, if necessary, aspect of communication. As Venuti (2008, p. ii) puts it:

> Translation continues to be a largely misunderstood and relatively neglected practice, and the working conditions of translators, whether they translate into English or into other languages, have not undergone any significant transformation.

The advent of machine translation has added another component to the lowering of the social status and overall recognition of translators, affecting their identity,[4] motivation and commitment.[5] Thus, the more translators are able to detach themselves from the narrow role of pure language transfer and regain control over entire communication processes, the more fulfilment they will gain. This would imply a shift of emphasis from the functional area of production to more fulfilling business areas.

4. From production to management

Business studies distinguish five traditional functional areas: "management, marketing, information systems, finance, and operations management" (Eveleth et al., 2011, p. 754).

[4] Identity, in this context, is defined as "the extent to which core producers recognise each other as professionals and are recognised as such by clients and competitors" (Kujamäki, 2021, p. 5). Recognition and esteem are thus closely tied to the role translators take up in business processes.

[5] Motivation and commitment come primarily from "achievement, recognition for achievement, the work itself, responsibility, and growth or advancement" (Moorkens, 2020, p. 4).

Though other analyses reduce this number to four (Horngren, 1970; Swenson, 2001; Heng et al., 1989), one thing they have in common is that production – sometimes also called operations or manufacturing – constitutes a basic function. In translation, the activity of producing a target text has also always been a key defining feature and accordingly at the heart of training and research. However, if we look at it from an economic or business perspective, mere production would be seen as the least rewarding business area for translators in terms of income and social status. It is precisely this area of production that is threatened by competition from unskilled labour as well as digitalization and automation, particularly in the light of the impressive progress machine translation has made in recent times.

As a consequence, any gain in status and income is likely to require a shift away from the production of a target text based solely on the input of a source text towards a much more refined business process in which production plays a subordinate role. Indeed, it is precisely this aspect which may very well be substituted by machines without compromising the translator's business process as a whole. Machine translation output in this sense resembles the simple transfer process, with the raw material to be refined and customized by human translators: "by taking over what is mechanical and routine, it frees human beings for what is essentially human" (Kay, 1980, p. 3). Machine translation is therefore a standardized service or utility. Essentially human, though, are all activities that are not mechanical and routine.

A service can, of course, also be delivered in the form of offering a standardized utility for the masses (e.g., electricity or machine translation as a utility), but in the categorization of different kinds of services, translation is typically defined as a knowledge-intensive professional service. (Koskinen, 2020, p. 141)

Humans excel in knowledge-intensive tasks while machines struggle with connecting information on a wider scale. Translators have a broader picture of the overall communicative situation and may take into account the needs of all participants. Koskinen (2020) speaks of user-centred translation as "an array of methods to enhance and ensure translations match the needs and expectations of their future users" (Koskinen, 2020, p. 139), while Kujamäki sees the concept of customisation as the key feature of a service (Kujamäki, 2021, p. 6). In this sense, added value does not come from language transfer but rather from managing client requests by controlling the functions of the target text, as exemplified by functionalist approaches to translation (Reiss and Vermeer, 2014). The needs of businesses and companies, though, go well beyond single translation projects and circle around the question of how to tackle international multilingual communication in general. Let us look at what areas of activity these would be from a business perspective.

First, let us identify some possible business activities for translators which, till now, may have been neglected, or marginalized as mere sideline tasks. Pegels (1991, p. 29) suggests thirteen functional areas: (1) Product planning, (2) Market research, (3) Product styling, (4) Product design, (5) Product engineering, (6) Prototype engineering, (7) Manufacturing engineering, (8) Manufacturing, (9) Sourcing and suppliers, (10) Marketing

and promotion, (11) Sales and distribution, (12) Service engineering, (13) Budgeting and finance. In such a business approach, the product is moved from one functional area to the next as each one completes its work on it.

There is no doubt that translators working as service providers in a competitive market have to deal with most of these aspects in their professional life. They plan their product or service (i.e. language combinations and specializations) and as freelancers, also do market research to see whether such services might be needed, refining their product offer to specific text types and choosing their preferred tools to work with, etc. But even if we look at specific translation jobs, the manufacturing step is strongly affected by what is called customization or user-centred translation. The appearance of the target text depends heavily on product design, marketing, sales and service engineering, all activities which are negotiated in dialogue with clients and prospective target text users ("one of the definitive characteristics of a service is customer and user involvement" [Kujamäki, 2021, p. 3]). In such a context, the production of a target text cannot be fully automated without impacting negatively upon customer relations. Instead, the initial translation proposal, produced by the machine, will need to be reworked and redesigned by human translators in order to bring it into line with customer requirements. Machine translation, in this case, is then reconfigured as a kind of supplier and categorised under the label of "manufacturing/sourcing and suppliers" in the integrated management of functional business areas, shown in Figure 2 below:

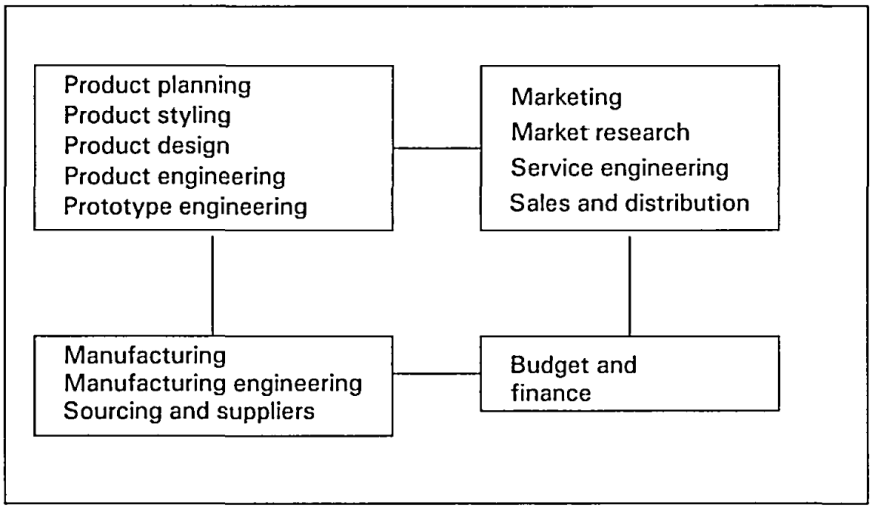

Figure 2. Integrated management of functional business areas (Pegels, 1991, p. 31).

Such an integrated or overlapping approach for the development of a product or service from the product conception to its use by the ultimate customer allows translators to 1) devise their own services and activities, 2) take advantage of all kinds of suppliers for the manufacturing part, including machine translation, and 3) regain autonomy in their work or self-esteem. Whatever we may call such an overall approach to translation services, be it customization, user-centred translation or integrated management of

business activities, it is conceptually opposed to mass production, and shifts the focus away from pure language transfer. Nonetheless, as with any other business, translation service providers are subject to efficiency and competitive pressures. Automation of the most tedious and time-consuming tasks, using all the opportunities modern technology can offer, is the way to remain competitive in the national and international marketplace. For translation, this means delegating mass production to the machine and reserving fine-tuning, adapting and customizing for humans.

Many linguists experience reservations about the widespread implementation of machine translation due to a narrow focus on language or a misguided perception of the very nature of their service in the age of AI. Many still see themselves as rivals of the machine, and consequently fail to take proper advantage of automated machine translation. In addition, many training institutions put an emphasis on linguistic skills and cultural competence, neglecting technology. As a result, graduates frequently lack specific skills and expertise in the adoption of machine translation. Moreover, qualified IT personnel are in short supply. Therefore, priority should be given to encouraging the personal motivation of translators to engage with machine translation technology and to focus on innovation.

Initiatives to adopt machine translation within a business, an institution, or an organization should be implemented with a high degree of transparency, making clear how it will foster the goals of the company or institution. Involving translators and team members from the start reduces fears about competition and allows bottlenecks to be identified in the process. Automation furthermore needs a considerable investment not just in time and know-how but also in money. While there are open-source machine translation tool kits (ModernMT, OpenMT and others) at virtually no cost, the collection of sufficiently large-scale and qualitatively adequate training data may be complex and arduous. Thus, it can be a challenge to provide positive performance data and show value in the short term. In the longer term however, the time saved enables human translators to concentrate on higher-value work and problem-solving in order to provide a more streamlined and custom-fit service. This allows for reduced efforts in the area of manufacturing, strengthening the other three business areas as outlined above in the integrated approach.

Translation has always been driven by specific interests, including economic ones. However, business studies and economic theories have only had a minor impact on translation studies, producing an "inadequate or lack of interaction between [the] two disciplines" (Türkmen, 2021. p. 91). Among the turns seen and described in the last sixty years within translation studies, no business trend or economic turn has been identified. Instead, these trends have focused on different aspects of translation: from linguistics and pragmatics in the early years to culture, sociology, and technology in more recent times. Overall, language and culture remain strongly positioned in translation studies, often preventing a more open approach to economic issues in translation and its role in business:

> It is time to balance this over-reliance on cultural epistemology by an approach on translation that is more firmly grounded in the material and technologically mediated dynamics of everyday (…). In other words, it is time to take a much closer look at the ways in which the products, processes and functions of translation are embedded in the markets of commodity exchange. (Baumgarten and Detrell, 2019, p. 11)

Thus, research in translation needs to take account of business models in order to justify its value for society, in particular when it is used for commercial purposes or as a public service. Hitherto, business and economic studies have mainly focused on the multilingual challenges of international communication and the role translation plays in it. Recent political and economic developments have only accentuated the awareness of the importance of economic models for translation.

How translation was treated in business research was discussed primarily in the studies regarding international business research since it is a relatively narrow area of research that refers to the trade of goods, services, or capital across national borders on a global scale focusing on cross-border transactions (Türkmen, 2021, p. 80). This has been picked up positively in translation didactics as courses in website localization, multilingual marketing or cultural adaptation of texts to foreign markets show. However, the role business studies could play in organizing translation as a service, as well as providing a viable business model for translators in the era of ubiquitous machine translation, and an ever-increasing output quality at almost no cost, has largely been neglected.

The management of language services; the organization of translation within multilingual companies or organizations; the application of return on investment (ROI) models in translation (see DePalma, 2002, p. 230): all these could be fruitful for translation studies. As well as looking at the potential input of translation studies to international marketing and international business relations, we might also ask how business studies could contribute to boosting translators' income, their social and economic status, or the efficiency of translation in general. This would open up new strands of research and lead to a fruitful two-way cross-fertilization between the two disciplines as shown in the illustration below.

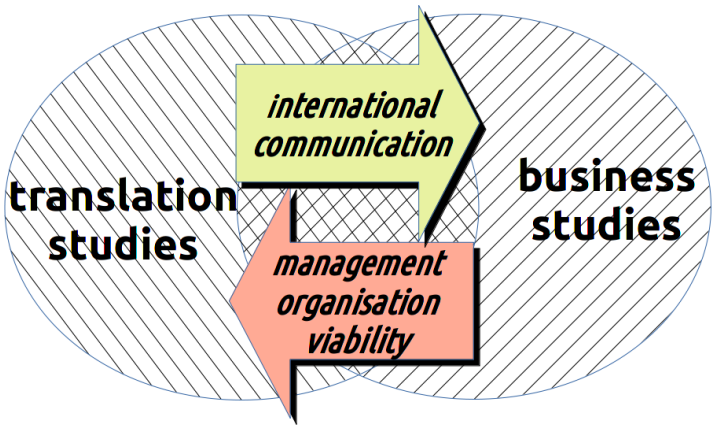

Figure 3. Cross-fertilization between business studies and translation studies.

Indeed, economic approaches to the organization and management of translation, to the market viability of translation services, and the sustainability of (human) translation are still under-researched in translation studies. Research in this area can lead to a more profitable role and a better position for highly trained translators, provided that translation is seen from the perspective of a business sector needing a well-thought-out and sophisticated policy.

5. Translation policy and infrastructure

This is where translation policy comes into play: the planning and organization of needs prior to consultation, ensuring that necessary decisions are taken in advance, i.e. well before the actual translation projects start. Thus, inefficient ad-hoc approaches to translation can be avoided. We refer to the concept of translation policy as the sum of all decisions regarding translation taken within a company, organisation or institution independently of actual translation projects or individual translators. This reflects Toury's (2012, p. 82) distinction between preliminary norms, among which he includes translation policy (though only in terms of source text choice), and operational norms (regarding the act of translating itself). The concept of policy in its meaning of "a high-level overall plan embracing the general goals and acceptable procedures especially of a governmental body" (Merriam-Webster online), which we might apply here, thus transcends the rather restricted definition as a "set of legal rules that regulate translation in the public domain: in education, in legal affairs, in political institutions, in administration, in the media," quoted by Meylaerts (2011b, p. 165). If we go beyond legal rules and see policy in a more general sense, we could define translation policy more broadly as "investigating the how and why aspects, in addition to the aspects of what kinds of materials are translated, by whom (with what qualifications), where, and when" (Kadenge and Nkomo, 2011, p. 281). Such decisions do not necessarily have to be formally expressed; disregarding the essential requirements and challenges of translation still represents a kind of policy: "Some policies are characterised by avoidance or declaration without implementation" (Kadenge and Nkomo, 2011, p. 259). Nonetheless, a sensible policy with regard to translation presupposes specific preparation work as stated, for example, for the context of minority languages: "A proposal for efficient translation management in minorised communities necessarily implies the explicitness of such norms" (Diaz Fouces, 2005, p. 103). The goal of efficiency obviously holds true all the more for commercial enterprises where translation is just a means to an end, with the ultimate purpose being profit and money.

In order to streamline translation processes and make them economically efficient and productive, a specific translation policy has to be defined, i.e. organizational decisions have to be taken in different areas with a long-term perspective. The empirically based Translations Policy Metrics (TPM) model (Sandrini, 2019) groups relevant decisions into five major areas: 1) ideology, touching on the aspect as to how translations should be done and based on what principles; 2) organization, dealing with issues of organisation, coordination and project management; 3) technology, today a very important factor to

achieve efficiency by deploying machine translation, adopting cooperative translation environment tools such as translation memory systems, term bases, corpus tools, etc.; 4) quality, introducing quality management processes and procedures as outlined by international quality standards; 5) human resources, dealing with the aspect of who translates and with what competences concerning staff management, recruiting, on-the-job training, etc. Each of these is further divided into several sub-areas so that the quality of respective decisions taken for each area can be measured and evaluated. Thus, the TPM study[6] lends itself very well for an analysis of the strengths and weaknesses of translation processes within an organisation or company which according to empirical data lie predominantly in the area of organization, processes, and technology (Sandrini, 2019, p. 388).

Today the use of technology is a sine-qua-non of efficiency. Following Meylaerts (2011, p. 744), who stated that there can be no language policy without a translation policy, we may say: "There is no translation policy without a translation technology policy" (Sandrini, 2016, p. 57). Using technology in all its manifestations also implies a clear vision of how terminology, translation corpora, translation memory and training data for machine translation will be provided, configured and managed. All this presupposes specific know-how as well as training to tap the full potential of technology, especially, as the one big differentiating factor has shifted from availability and cost (where the main accent lay in the first years of adoption) towards customization and quality. Here we see another plea for a substantial shift in translation from mere production to management.

A translation policy bears responsibility not just for the organization and planning of translation but also for setting up an adequate translation infrastructure. This affects all aforementioned areas of translation, in particular organization, human resources and technology. It entails implementing customized machine translation, company-specific term bases, translation memories and parallel corpora, allocation of manpower to translation jobs, etc. In this way the efficiency of translation and its contribution to profit margins and operating results can be ensured.

Coming back to the role of professional translators, it is essential that their specific knowledge of all five areas in translation (ideology, organization, technology, human resources and quality) are integrated into the decisional structure of a company. It presupposes that 1) translators possess the relevant competences in these areas and are

[6] The Translation Policy Metrics Model (TPM) (Sandrini, 2019) describes a comprehensive evaluation procedure that can be applied to translation policy in the framework of regional or minority languages. It is based on the maturity model (Vom Brocke and Roseman, 2015, p. 41) and its five steps of development specified by organizational management. The various areas of translation policy may be assessed by taking into account the general goal of protecting a regional or minority language and, on the other hand, the findings of translation studies as well as best practices of the translation industry. The study proposes an exemplary implementation of this model for the minority region of South Tyrol in Italy on the basis of two surveys, several personal interviews, as well as by examining the existing sources of legislation.

willing to go beyond mere target text production, and 2) that the company management acknowledges the benefit of involving professional translators in decision-making.

6. Conclusion

The economy has to be understood as the material demands of society in general and, in this context, as the requirements of the translation market, which in turn define the social value, status, and prestige of translators. Changes in the economy force translators to adapt, something they have to do if they want to preserve their relevance, as shown in the translators' obsolescence cycle. Change means adapting to new challenges by finding a new role at a time when automation due to machine translation and AI are advancing quickly. However, economics and business studies have been researching the impact of automation in depth for different areas. By comparing the historical development of other business sectors and the ways in which the role of humans has changed in them (i.e. which roles have survived or become superfluous), we may draw comparisons with translation services.

Alongside the repercussions of automation in the translation industry, it is necessary to investigate the consequences for professional translators, their business roles and translator training as well. Continued concentration on the production aspect of translation will downgrade human translators to operators doomed to be replaced by machines. By investing in innovation and embracing new developments, however, translators are able to survive as economic actors. A stronger emphasis on the management, planning and organisation of multilingual communication processes can help to preserve or even enhance the position of translators in the value chain.

Translator training programmes will be challenged to shift their emphasis from production-focused models towards the formation of translation policy experts who are capable of setting up a translation infrastructure within a company or an organisation. Thus, translators will be able to integrate into business processes, allowing the management of multilingual communication to take advantage of all forms of technological support.

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