

Translation and Technology: a Study of UK Freelance Translators

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ABSTRACT

There is a wide range of information and communications technologies (ICT) available to translators today, including both general-purpose software applications and special-purpose software, such as terminology management and translation memory systems. In this paper, the findings are reported of the first phase of a research project set up to investigate the adoption of information and communication technologies by UK freelance translators to support their various activities, including document production, terminology management, communication and client liaison, small business management, and marketing and work procurement. The findings reveal widespread adoption of general-purpose software applications, but only limited uptake of more special-purpose software, such as financial and accounting packages, terminology management tools and translation memory. Levels of awareness of translation-specific software were low, and many translators seemed sceptical about the value of such technologies. The implications of these findings are discussed for a number of stakeholders in the translation sector, including existing freelancers, newly-qualified translators, translator trainers, professional bodies for translators, and the developers and distributors of translation technologies.

KEYWORDS

freelance translator, translator's workstation, terminology management, translation memory, machine translation, information and communication technologies, ICT, translation technologies.

1. Introduction

Demand for translation services has increased considerably over the past decade or so, exacerbated by a number of factors, including the growing emphasis in business on globalisation, the advent of the World Wide Web as an international marketing tool, the rise of the software localisation industry (Sprung, 2000: ix) , and the increasing opportunities for international trade (Andres Lange and Bennett, 2000: 203) . In Europe, the forging of closer trading relationships between countries, and more recently, the enlargement of the European Union, have highlighted awareness of the need for translators, and again fuelled demand for their services. In view of this growing requirement for translation services, translators today are under pressure to produce high-quality translations in ever shorter time periods (Andres Lange and Bennett, 2000: 203) .

Running in parallel with the increasing demand for translation services, various organisational and technological developments have had, and are indeed continuing to have, a considerable impact on the UK translation services sector. For example, many in-house translation departments have closed as large commercial organisations have found it necessary to downsize and focus on core competencies in order to reduce costs (Fraser and Gold, 2000: 3; Locke, 2005: 19) . As a result of this divestment, organisations have begun to outsource translation assignments to freelance translators. Public sector organisations have adopted a similar approach and now tend to rely on the services of freelancers, in conjunction

with a core body of in-house translators. As a result of these developments, a substantial proportion of translators, in the UK and elsewhere, now work on a freelance basis (Holland et al., 2004: 254; Locke, 2005: 19) .

With regard to technological developments, the proliferation of personal computers (PCs) has resulted in a widespread shift among translators from the use of dictating equipment and typists to the use of word processing software. Furthermore, the Internet has transformed the way in which translators receive and deliver translation assignments, with much of this now being undertaken via electronic mail, rather than by fax or via the conventional postal system. In addition to the increasing availability to translators of general-purpose software applications, such as word processing packages and e-mail, a number of translation-specific software systems have migrated from mainframe to PC platforms, rendering them accessible to freelance translators, rather than being restricted to use by translators employed in translation departments and language service organisations.

Whilst recent technological developments in the freelance translation sector have provoked much discussion among translators at professional conferences and seminars, as well as via electronic discussion groups, they have not been investigated systematically to date. The purpose of the project discussed in this paper is to help address that gap in the research by presenting a study of the issues surrounding the adoption of information and communication technologies by freelance translators in the UK. This project is a three-year research project funded by the Engineering and Physical Sciences Research Council (EPSRC). Specifically in this paper, the findings of the first phase of the research project are reported. This phase comprised an exploratory survey of the uptake of ICT by freelance translators in the UK. It is envisaged that the findings of this survey will make a timely and relevant contribution to the translation sector in the UK. In particular, it is anticipated that the survey findings, and ultimately those of the project as a whole, will be of interest and benefit to various key stakeholders in the translation sector, notably to existing freelancers, to newly-qualified translators, translator trainers, professional bodies for translators, and the developers and distributors of translation technologies.

Before presenting and discussing the survey findings, a review is provided of pertinent literature on translation and ICT (section 2), and then the method employed to conduct the survey of freelance translators is explained (section 3).

2. Background

Literature about ICT for translators contains a number of discussions about a 'translator's workstation' (see for example Melby, 1982; Hutchins and Somers, 1992; Hutchins, 1998; Somers, 2003). The emphasis of these discussions tends to be restricted to ICT to support what might be thought of as 'core' translation activities, such as document production, managing terminology, storing and retrieving segments of previously-translated text, and automated translation. The software to support these core activities is typically categorised according to levels of automation, ranging from basic word processing facilities to support human translation, through to machine translation to support fully automated translation.

As Locke (2005: 20) has pointed out, the freelance translator's workflow involves a broader range of activities than the conventional core translation activities. Locke cites budgeting, pricing, and hardware and software acquisition as examples of activities the freelancer must undertake. In the present study, Locke's list of activities making up the freelance translator's

workflow is extended to include marketing, work procurement, communication / client liaison, bookkeeping / financial management, and billing / invoicing.

This 'activity view' of the freelance translator's workflow provided the basis for the survey of ICT adoption presented in this paper: the emphasis is on investigating, not so much the degree of automation that translators are willing to permit into their core translation activities, but rather on the range and types of software application they are adopting to support them in each of the individual activities that form a constituent part of their overall workflow. This broader view of activities draws on Austermuhl's 'process-orientated' view of the translator's workstation. He suggests that in this process-orientated view, the ICT that translators use must encompass both the notion of 'translation as a business' as well as translation 'as a linguistic and cultural process' (Austermuhl, 2001: 11) . Austermuhl's process-orientated approach is, however, not specific to the freelance working environment, and so does not include important components of the freelancer's role, such as marketing and financial management. The activity view adopted here extends Austermuhl's approach to incorporate these components, thereby providing a more comprehensive view of the activities making up a freelancer's workflow.

A summary of the freelancer activities forming the basis of the present study is provided in Table I below, together with some examples of software applications that might be used by freelance translators to support these activities.

Table I: Freelance Translators: Activities and ICT Support

Activity	ICT Support
<p>Document production <i>e.g. creating and formatting target texts; overtyping sources texts with target texts</i></p>	<p>Word processing software (e.g. MS Word, Wordperfect); Graphical / presentation software (e.g. MS PowerPoint); Web publishing software (e.g. MS FrontPage, Dreamweaver); Desktop publishing software (e.g. QuarkXpress, PageMaker)</p>
<p>Information search & retrieval <i>e.g. locating background and reference materials; locating client company information; identifying terminology; locating definitions of terms; finding examples of terminology usage; managing personal terminology collections</i></p>	<p>Internet search engine (e.g. Google, Altavista); Electronic encyclopaedia / reference work (e.g. Encyclopaedia Britannica, Encarta); Terminology databank (e.g. EuroDicAutom, CILF); Text corpus / document archive (e.g. British National Corpus, New Scientist Archive); Electronic library (e.g. The British Library, Biblioteca Nacional de España); Electronic dictionary and / or glossary (e.g. yourDictionary.com, Lexicool); Database software (e.g. MS Access, FileMaker); Terminology management software (e.g. MultiTerm, Lingo)</p>
<p>Translation creation <i>formulating translation</i></p>	<p>Translation memory (e.g. Trados, Déjà Vu, SDLX, Transit); Machine translation (e.g. Reverso Pro, Systran)</p>
<p>Communication <i>e.g. liaising with clients; networking with colleagues</i></p>	<p>Electronic mail (e.g. Webmail, MS Outlook, Thunderbird); Electronic mailing lists (e.g. LANTRA-L, The LINGUIST List); Online discussion groups (e.g. Proz.com, TranslatorsCafe.com)</p>
<p>Marketing & work procurement <i>e.g. promoting translation services; searching for clients; bidding for translation contracts</i></p>	<p>Having own web site; Online marketplaces (e.g. Foreignword.biz, Proz.com)</p>
<p>Business management <i>e.g. client & contact data management; contract quotations; billing / invoicing; financial management</i></p>	<p>Database software (e.g. MS Access, FileMaker) Spreadsheet software (e.g. MS Excel, Lotus 1-2-3); Accounting / bookkeeping package (e.g. Sage, QuickBooks)</p>

Rather like the discussions in the literature about translators' workstations, existing empirical investigations of the adoption of ICT by translators have not tended to cover the range of activities undertaken by freelancers. Some, for example, have concentrated on the core

translation activities and on a narrow subset of translation tools, such as investigations into the uptake of machine translation systems, or the adoption of computer-aided translation (CAT) tools (see for example Brace, Vasconcellos and Miller, 1995) . Others have been devoted to the use being made of ICT within an individual organisational setting. Examples include the reviews of translation technology usage at the European Commission reported in Blatt (1998) and Brace (2000) ; as well as a study of terminology management tools at Ericsson (Jaekel, 2000) , and a study of machine translation usage at Caterpillar (Lockwood, 2000) . More recently, in a related sector - the localisation industry - the uptake of translation memory tools has been studied (Lommel, 2002, 2004) .

Whilst some studies have been more comprehensive in their coverage of translators' working practices and the technology used, their findings are inevitably now somewhat dated as the studies were undertaken prior to, or in the very early days of, both the 'Internet boom' in the business world and the widespread commercial availability of CAT tools. Moreover, these studies tended to be focussed on the working environments of in-house translators. Such studies include Smith and Tyldesley (1986) and Fulford, Hoge and Ahmad (1990) . A European study, carried out as part of the LETRAC Project, investigating the 'language engineering' and 'language technology' requirements of both in-house and freelance translators, was undertaken more recently, and reported in Reuther (1999) . However, its findings do not really provide any detailed insights into the technology actually being used in the freelance translator community.

The freelance translator survey discussed in this paper should make a useful addition to existing empirical studies undertaken in the translation sector, providing indications of both the general-purpose and translation-specific information and communication technologies used by freelancers to support the various activities that make up their role.

3. Research Method

When conducting an empirical investigation of a phenomenon, the researcher has at his / her disposal a variety of possible research approaches, including questionnaire surveys, case studies, laboratory experiments, and action research. In the present research project, a questionnaire survey was deemed to be appropriate for conducting the exploratory study in the first phase of the project. One of the strengths of conducting a questionnaire survey is that it permits the collection of data from a large number of subjects, in this case from freelance translators in the UK. Such data can then be subjected to quantitative analysis in the testing of inferences, leading to the presentation of an overview of a broad section of the UK freelance translator community. There is then the potential to generalise the findings to a broader community.

There is an established body of research literature in which questionnaires have been used to study ICT adoption in a variety of small business contexts (see for example Raymond, 1987; DeLone, 1988; Yap, Soh and Raman, 1992) . Such studies provided a valuable source of ideas and insights to inform the design and development of the questionnaire formulated for use in this study. The questionnaire was organised into the following sections:

Translator profile:

covering demographic data; details of translator training and qualifications; ICT knowledge and skills.

ICT familiarity and usage:

covering general-purpose software, translation-specific software, other specialised software (financial management packages), web-based language resources, online tools, and communications technologies.

ICT strategy:

covering translators' opinions and thoughts about ICT use in their translation workflow, their perceptions of translation technologies, and their approaches to business planning and strategy issues.

The draft questionnaire was initially validated through a series of pre-tests, first with some experienced researchers, and then, after some modifications, it was re-tested with some translators. The pre-testers were asked to review the questionnaires, focussing primarily on issues of instrument content, and question wording and validity, before providing detailed feedback. The pre-tests were very useful, as they resulted in a number of enhancements being made to the structure of the questionnaire and the wording of specific questions. Having refined the questionnaire, a pilot study exercise was also undertaken, which provided valuable insights into the likely response rate and analytical implications for the full survey.

In the UK, there is no single list or register of all freelance translators. However, a relevant professional body was approached, and permission kindly granted to use a list of the names and addresses of 1400 translator members based in the UK. It was recognised from the outset that the survey would need to be designed to accommodate a certain amount of pre-screening of the list to identify those translators working in a freelance capacity. The questionnaire was mailed to the translators on the list at the end of 2003. Responses were received in early 2004. In line with established approaches to survey administration (see for example Dillman, 1978), a covering letter was enclosed explaining the purpose of the research project, and highlighting a small incentive scheme (a book token prize draw) to encourage a good response rate. Pre-paid reply envelopes were provided for responses.

4. Overview of Survey Findings

A total of 591 usable responses were received from the 1400 questionnaires mailed out. In the pre-screening exercise, 152 of those responses were eliminated on the grounds that the respondents reported that translation was not their principal job, but rather an activity that they combine with other undertakings, such as teaching, training, or interpreting. The remaining 439 valid responses, received from people for whom translation was their principal job, represented a response rate of 35%. Of those 439 valid responses, 48 (11%) were received from in-house translators, and 391 (89%) from freelancers. It is the 391 responses from freelancers that form the focus of discussion in this paper.

In comparison with other studies of translators, both the response rate to this survey, and the sample size generated for analysis, were encouraging. The LETRAC Project survey, for example, generated a sample of just over 110 'individual translators' from an indeterminable sampling frame (Reuther, 1999). Earlier studies, such as the Translator's Workbench Project survey, also had a sample size of 110 translators, of which only a small proportion were freelancers (Fulford, Hoge and Ahmad, 1990). In the Translation Practices survey (reported in Smith and Tyldesley, 1986), 280 responses were received from a mailing of 1800 (16% response rate), of which 141 were from freelancers. The 2002 and 2004 surveys conducted by the Localisation Industry Standards Association (LISA) generated 134 and 274 responses respectively (both surveys were administered by making them available via a web site, and so the survey response rate could not be quantified).

4.1 Profile of Survey Respondents

The survey respondents were generally quite experienced translators: 24% had between 6 and 10 years' translation experience; 36% had between 11 and 20 years' experience; and 20% had worked as translators for over 20 years. The remaining 20% were relative newcomers to the profession, having up to five years' experience.

The majority (63%) of the respondents were female. The age distribution was as follows: 20-29 years (4%), 30-39 years (23%), 40-49 years (30%), 50-59 years (26%), and 60+ years (17%). With regard to educational background and qualifications, the overriding majority (92%) of the survey respondents possessed a qualification from a Higher Education establishment (or a qualification of equivalent level from a similar awarding body). Nearly three quarters (71%) of the translators had obtained one or more qualifications in translation, such as a bachelor-level or masters-level degree in Translation Studies, or a postgraduate-level diploma in translation.

The principal languages covered by the respondents were as follows: German to English (37%), French to English (37%), and Spanish to English (16%). The remainder (10%) included a number of language combinations, notably English to German, Russian to English, and Italian into English. The most common subject specialisms among the respondents were, in descending rank order: business / commerce, technical translation (science and technology), and legal translation.

Data gathered about computing knowledge and skills indicated that, whilst some translators had attended computing courses / workshops, or taken IT modules as part of their university degree programmes, the overwhelming majority (85%) had acquired their computing skills on a 'teach-yourself basis'. Only a small minority had obtained any form of formal qualification in some aspect of ICT.

4.2 Adoption of Information and Communication Technologies

Respondents were asked to indicate the software applications they use in their translation work. Some of the major findings for this part of the questionnaire survey are presented in this section, categorised according to the various activities (discussed earlier) that are likely to make up a freelance translator's workflow.

Document production activities:

perhaps inevitably, word processing software was in widespread use (99% of respondents were using it). Smaller numbers of respondents (25%) used graphical or presentation software (e.g. Microsoft PowerPoint), and 17% used desktop publishing packages. Web publishing software, such as Dreamweaver or FrontPage, was used by only 13% of the freelancers. Few respondents made use of voice recognition software. Similarly, OCR (Optical Character Recognition) applications were being little used.

Information search and retrieval activities:

Internet search engines were in widespread use (85% of respondents used them). A high proportion of respondents (79%) consulted online dictionaries and /or glossaries, and 59% made use of multilingual terminology databanks. A number of other online reference resources were also being consulted, including text / document archives (51%), online encyclopaedias (38%), and academic journals available online (30%).

Only a small number of translators (24%) were using dedicated terminology management systems, such as MultiTerm, Lingo and TermWatch, for managing their personal terminology collections. Half of the translators were not familiar with these tools at all. Closer examination of those translators who had adopted terminology management systems revealed that they tended to specialise in the translation of technical and scientific subject fields. Among the users of these systems, there were translators covering a mix of language pairs. Among this group of adopters also, there was a slightly younger age profile than in the overall sample. Similarly, there was a higher proportion of translators holding a postgraduate qualification in translation from a Higher Education establishment than there was in the overall sample. Productivity levels were also generally higher among adopters of terminology management systems.

Translation creation activities:

Computer-aided translation (CAT) tools, such as translation memory (e.g. Trados, Deja Vu, SDLX and Transit), were being used by 28% of the translators. Just under half of the respondents were not familiar with these tools at all. The profile of CAT tool adopters differed from the overall sample in a similar way to that outlined above for adopters of terminology management systems.

Machine translation systems were used by only 5% of the sample, with 75% of the respondents not familiar with them at all. A very small number of translators (2%) were using localisation tools, such as Alchemy Catalyst and Passolo.

Communication activities:

Electronic mail was in widespread use (93% of the translators used it). Approximately one third of the respondents participated in electronic mailing lists or online discussion groups for translators. With regard to Internet connections, the majority of respondents (68%) relied on dial up connections, and only 26% used broadband. The remainder (6%) tended to use a combination of dial up and broadband.

Marketing and work procurement activities:

Respondents were asked whether they had their own web site to promote their translation services; 21% responded in the affirmative. Productivity levels (measured in terms of volume of work undertaken) were generally higher in this group of web site adopters than in the sample overall. One third (33%) of the translators in the sample used online translation marketplaces for marketing and / or work procurement (e.g. ProZ.com, TranslatorsCafe.com, Aquarius). Again, just under half of the translators were not familiar with these online facilities. There did not appear to be any major differences between users and non-users of this type of technology.

Business management activities:

Among the conventional software used to support business management activities, the findings revealed that many respondents (79%) used spreadsheet packages. Database packages were used by 25% of the sample. Special-purpose business management software was used by only a few translators; for example, only 13% used dedicated accounting / financial management packages. Project management software was used by a very small minority of translators (2%).

4.3 Attitudes towards ICT

In addition to asking respondents about their adoption of individual software applications, the survey also included questions about translators' attitudes towards the role of ICT in their work. Measures for this purpose were adapted from those developed and validated by Raymond and Pare (1992). Attitudes towards ICT were largely positive. The overwhelming majority of translators believed ICT to be important to support each of the various groups of activity discussed earlier, particularly for communication activities and for information retrieval activities, such as terminology identification and locating relevant background reference material. There was widespread agreement among the respondents about the benefits they derived from their ICT usage. In descending rank order, the translators reported that their adoption of ICT had: brought time saving benefits; helped them provide higher quality services to their clients; improved their effectiveness as translators; and improved their communication with clients. Moreover, a high proportion claimed they had gained more benefits than they had expected from their use of ICT; and believed that their use of them had increased their revenue.

Although respondents expressed largely positive attitudes to ICT in general, when asked more specifically about their opinions on CAT tools, translators in the sample seemed less convinced of the value of such facilities and the benefits to be derived from their use. Those who had already adopted CAT tools were generally more positive than those who had not. The next phase of the research project includes a comparative examination of adopters and non-adopters of CAT tools, providing opportunities to consider in greater depth these attitudes towards translation technologies.

4.4 ICT Adoption Strategies

A further set of questions in the questionnaire was designed to ascertain the strategies freelance translators use to guide their adoption of ICT and to manage their ICT resources. It became clear that the freelance translators in the sample, in common with many other small business managers (see for example Acs and Preston, 1997: 5; Curran and Blackburn, 2001: 5), did not tend to formulate and follow a formal ICT strategy. Instead, respondents were generally concerned to ensure that each of their ICT investments matched the needs of their business. In this respect, the freelancers demonstrated a cautious and, in ICT strategy terms, a quite mature approach to ICT adoption (Galliers and Sutherland 2003). There was little evidence of technology being adopted 'just for the sake of it' or 'just because it was there', an approach conventionally thought of by ICT strategists as immature. For many in the sample, it seemed that their guiding principle was to ensure that ICT adoption improved their efficiency and productivity.

5. Discussion and Implications

In this section, the key findings of the questionnaire survey are discussed. The implications of those findings for various stakeholders in the translation sector are reviewed, and the potential limitations of the survey are highlighted.

With regard to the uptake of ICT by freelance translators in the UK, the findings of the survey indicate that there has been widespread adoption of general-purpose software applications to support a number of the activities involved in the freelance translator's workflow. There was, however, only limited uptake of more specialised translation-oriented software applications, such as terminology management systems and translation memory tools. Likewise, there was only limited adoption of specialised software to support such

business functions as financial management and accounting. From the findings obtained in the survey, it seemed likely that non-adoption of translation tools was more a function of translators' lack of awareness of, and familiarity with, these tools than an active rejection decision based on thorough knowledge of the tools and their functionality. Those who had adopted translation tools were generally positive about the benefits they were deriving from their use.

With regard to ICT adoption decisions, the findings indicated that the freelance translators in the sample were typically concerned to invest in technology that would help improve their efficiency and productivity as translators. Although generally not guided by a formal ICT investment strategy, the translators were concerned to adopt software applications that aligned with the needs of their translation business.

From the findings of this survey, a number of important implications can be identified for the various stakeholders in the translation sector, including for newly-qualified translators embarking on a freelance career, for those responsible for training translators, for professional bodies for translators, for those developing and / or distributing software applications for translators, as well as for the existing freelance translation community itself. Some specific implications for each of these stakeholders are discussed below.

For newly-qualified translators, the findings of the study should provide a reasonable indication of the ICT they will need to get themselves started in a career in freelance translation. From the evidence of this study, setting up an Internet-enabled workstation comprising general-purpose software applications would seem to represent a sensible starting point. A sound knowledge of general-purpose software, including spreadsheets, and Internet search strategies is needed. As these newly-qualified translators become more established translators, they may do well to note the ICT investment strategies employed by those in this study's sample, and consider adopting only those applications that meet the needs of their business. Having set up a workstation comprising general-purpose software, these translators may then usefully take heed of the levels of adoption of translation technologies identified in the survey, and consider the various findings relating to the scepticism of non-adopters and the more positive reports of adopters about productivity and efficiency gains. Their assessment of these findings, together with their own aspirations for their freelance translation business, should help guide and inform their future plans for adoption, or non-adoption, of translation technologies.

For those responsible for training translators, the study's findings highlight the value of encouraging students to develop proficiency skills in the use of general-purpose software applications, not just word processing software, but also graphical / presentation packages (e.g. MS PowerPoint), spreadsheets and databases. Exposure to a range of translation technologies and a thorough grounding in the concepts on which these technologies rely would also help raise awareness of the capabilities of such tools, increase familiarity with their functionality and key features, and enable trainees to make informed choices about the suitability of each tool for a particular translation task.

Beyond initial training and on into continuing professional development, the professional bodies for translators have an ongoing role to play in raising awareness among their members about technological developments within the translation sector, and in providing a forum for translators to learn about and discuss the issues surrounding the adoption of new technologies. Established translators arguably have a professional responsibility to take advantage of the continuing development opportunities offered by their professional bodies in

order to help them keep abreast of technological advances in the translation sector, and in order to help them continue to achieve their goals of quality and productivity. Such opportunities might include attendance at relevant seminars and workshops, as well as participation in online discussion groups or networks, where ideas and user experiences can be informally exchanged. Participation in these sorts of activities should help to improve levels of awareness of technological developments in the sector.

Terminology management systems and CAT tools have been on the market for some years now, and yet, according to the findings of this study, levels of uptake among freelancers are not very high. There is evidence of scepticism among freelancers about their value, and a lack of confidence in the benefits that might be gained from using them. Whilst the reasons for this are no doubt many and varied (and will be explored further in the next phase of this research project), one possible way to increase uptake might be for translation technology developers and / or distributors to heed the advice given by Martin Kay in this report on computers and translation (Kay, 1980; reproduced 1997) . In his report, Kay advocated a gradual, step-by-step approach to adding tools into the translator's workstation, thereby slowly increasing the software support introduced into the translator's workflow. He stressed the importance of accepting an individual tool only once there is a reasonable degree of confidence about its capabilities, and its reliability in performing the tasks it is designed to support. By contrast, the tendency with much software development today - and translation technology development is no exception - is to produce integrated packages or 'bundles' of several tools. Typically, the entire package must be purchased in one go, giving little opportunity for the sort of incremental adoption that Kay advocated. A greater emphasis on decomposing packages of translation technologies into their constituent tools, and the promotion of such tools on a more modular basis, might usefully be explored for the freelance translation market. This would need to be accompanied by clear guidance to freelancers about the tool adoption sequences they might follow, such as from terminology management, to translation memory, to alignment tools, to filters for translating specific file formats, through to project management functions. This would enable translators to take the 'little steps' of software adoption that Kay discusses, and to gain confidence in the available software support as they progress through their chosen adoption sequence. An incremental approach such as this might also fit better with the ICT adoption strategy findings identified in the present survey, which indicated that freelancers in the sample tend to consider each ICT investment in turn and try to match it to the needs of their business.

In addition to informing the above stakeholder groups, the findings of the present study should be of interest to the translation research community, as a new data collection instrument (the questionnaire survey), based on ICT adoption studies undertaken in other business sectors, has been developed and rigorously tested. This instrument can be adapted for use in follow-up and replication studies. Moreover, the findings present a broad picture of the current levels of uptake of ICT among freelance translators in the UK, and can therefore be used to contextualise and support other research studies in this domain.

Using a survey-based approach for investigating the adoption of ICT among freelance translators, whilst providing a broad overview of the freelance community, is inevitably limited in the depth of exploration that can be undertaken, particularly with regard to the relationships holding between constructs. Consequently, the next phase of the project has been designed to follow a more qualitative data gathering approach, allowing the confirmation of the findings obtained so far, as well as a deeper examination of the various factors influencing the adoption of ICT by translators. Whilst the survey has been focussed on UK-based translators, it is envisaged that the survey instrument now designed, developed

and validated, could be employed for replication studies among translator communities in other countries. Indeed, undertaking comparative studies among translators in other countries would represent an interesting avenue for further research.

6. Conclusions

The use of ICT by UK freelance translators is a timely and relevant subject of inquiry, given the high proportion of the translator community now working on a freelance basis, and given the growing array of software applications, both general-purpose and translation-specific, available for their use. However, specific details regarding the uptake of ICT by freelance translators are fairly limited, and so an exploratory empirical study of this domain was initiated. The results of a statistical analysis suggest that general-purpose software applications are widely used, but there is less evidence of translation-specific tools being adopted. Whilst this research presents a number of important insights into the uptake of ICT by freelancers, there is still a need for more follow-up studies. In particular, it is important to establish clearer indications of the reasons for adoption and non-adoption of translation technologies by freelancers. The aim of the next phase of the present research project is to explore such issues in greater depth.

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