Translation of User Manuals from Croatian into English

Končar, Jelena

University of Zagreb
Faculty of Humanities and Social Sciences
Department of English
Graduate Programme
Translation Track

Translation of User Manuals from Croatian into English

Master's Thesis

Student: Jelena Končar
Supervisor: Kristijan Nikolić, PhD

Zagreb, 2020

Sveučilište u Zagrebu

Filozofski fakultet

Odsjek za anglistiku

Diplomski studij

Prevoditeljski smjer

Prevođenje korisničkih uputa s hrvatskoga na engleski jezik

Diplomski rad

Studentica: Jelena Končar

Mentor: dr. sc. Kristijan Nikolić

Zagreb, 2020.

Abstract

The quality of user manual translation is one of the factors that can spell out success or failure for producers expanding their business internationally, yet this area of translation has not been researched to a great extent. By discovering the most common types of errors in user manual translation and how severely they affect the meaning of the target text, the thesis aspires to shed some light on this neglected area of technical translation and make a step towards raising awareness among producers about the importance of hiring professional translators. To achieve this, a corpus of ten Croatian user manuals for small household appliances translated into English is compiled. The errors are annotated using the Multidimensional Quality Metrics (MQM) framework and a quantitative and qualitative results analysis is presented. Saturated with errors and demonstrating a clear lack of revision, the analyzed translations are sub-par. Errors related to grammar, spelling and typography account for well over a half of all identified errors, but it is the less occurring errors related to accurate and consistent use of terminology that have a major effect on the meaning of the translated user manuals and result in confusing or even misleading the user. Errors related to accuracy, such as mistranslations, omissions and additions, have proven to affect the text in a critical way, reducing the usability of the product and compromising consumer safety. Judging from the researched corpus, the importance of good user manual translation seems to be overlooked in Croatia, but before any definitive conclusions can be drawn, further research into the topic is required.

Keywords: technical translation, user manual, translation quality assessment, error typology, MQM

Table of contents

List of figures and tables

1. Introduction

The topic of this thesis is the translation of user manuals from Croatian into English. User manual translation is a type of technical translation whose purpose is to instruct target users on how to use products effectively. Well-written and accurately translated user manuals provide relevant information about products and help producers set good public image and credit standing, while poorly translated user manuals defeat the purpose of the source text, discourage consumers' confidence, negatively affect sales and may even have serious legal repercussions seeing as some may endanger consumers' lives and well-being (Byrne 2007, Bolchover 2012). However, the topic of user manual translation is under-researched. This is where the present thesis comes in: through a qualitative and quantitative corpus analysis, this research aspires to offer some insight into an area of the translation profession that has not been examined to a great extent and provide footing for future research.

The thesis is organized into seven chapters. Following the introductory Chapter 1, Chapter 2 provides a theoretical overview centered around three key concepts: technical translation, user manuals and translation quality assessment. It deals with the definition of technical translation, its aims and common misconceptions about it, with particular emphasis placed on the status of technical translation in the context of Translation Studies. Next, important features unique to user manuals are discussed. Main types of translation quality assessment methods and several prominent assessment models are mentioned, while the model used for the purposes of the thesis is described in greater detail. Chapter 3 outlines the aims and research questions, whereas Chapter 4 specifies the methodology adopted to achieve these aims and answer the research questions. Chapter 5 presents the obtained results, while Chapter 6 sets out to discuss the prominent aspects of the research findings and illustrate certain phenomena by providing corpus-drawn examples. Finally, Chapter 7 attempts to draw conclusions from the preceding chapters and propose suggestions for future research.

2. Theoretical overview

2.1. Technical translation and its status

For the purposes of this thesis, it is first necessary to offer a theoretical overview of certain key concepts. In 1977 Isadore Pinchuck remarked that the exchange of information cannot take place without technical translation activity; it is an indispensable part of modern technology, which goes beyond national borders (1977: 9). Moreover, according to Pinchuck, the guiding motive of the technical text is the dissemination of information, which is why he claims that the technical text is "always a means and never an end in itself" (1977:18). Three decades later, following on from Pinchuck's idea, Byrne states that the aim of technical translation is, indeed, to convey technical information, but also that this is only half of the story (2006: 10). In his view, the technical translator must ensure that technical information is conveyed "in such a way that the readers can use the information easily, properly and effectively" (2006: 10). What this implies is that the translator will often need to intervene in order to present information in the best way possible for the readers, thus avoiding confusion and unnecessary effort on their part (2006: 18).

Herman (1993) addresses the translator's intervention when it comes to technical texts in a paper in which he discusses what he considers the three stylistic pillars of technical translation – clarity, concision and correctness. He agrees that "technical translation requires more than writing down the dictionary equivalents of words" (1993: 19). Sometimes the intervention consists in breaking up and rearranging the original sentence, especially when translating from highly inflected languages to weakly inflected languages (1993: 13), which is the case when translating from Croatian into English. Other times it consists in, as Herman puts it, "producing an accurate technical document in the target language despite mistakes in the original" (1993: 18). In a similar vein, Park (1993) describes different terminological and stylistic problems he encountered when translating technical texts (i.e. user manuals) from the toy and model industries in an insightful paper on his early experience in freelance translating from German to English. Like many, Park, too, emphasizes the need to be precise and accurate. In fact, "one error in terminology can discredit the whole text," he remarks (1993: 103). However, aware that the job of the technical translator involves far more than finding the correct terminological equivalents in the TL, Park discusses several other procedures inherent to technical translation, which is where the above-mentioned intervention comes into play. For example, where necessary, technical translator will add explanatory text or change the order of

procedure. In Park's professional experience, the underlying logic behind the latter is "the English speaker's tendency to follow instructions one sentence at a time, rather than read and understand the whole text before beginning to build, which the German speaker supposedly does" (1993: 103).

On the other hand, Byrne (2006) challenges some common misconceptions about technical translation and debunks several stubbornly persistent myths about its nature, in a way defining this type of translation in terms of what it is not. First and foremost, technical translation, as has been hinted above, is not all about terminology. Admittedly, "terminology is, perhaps, the most immediately noticeable aspect of a technical text and indeed it gives the text the 'fuel' it needs to convey the information" (Byrne 2006: 3). However, Byrne claims that technical terminology is largely uniform, partly thanks to a predominance of English in the coinage of new terms and partly owing to the increasing number of glossaries of terms from software companies available in every language into which their products have been localized (2006: 4). Secondly, contrary to popular belief, style does matter in technical translation. According to Byrne, "style is equally, if not more, important in technical translation than in other areas because it is there for a reason, not simply for artistic or entertainment reasons" (2006: 5). Technical translators are required to express information, he continues, "in a way which is sufficiently clear, simple and concise so as to allow readers to understand the information completely and quickly but which nevertheless conveys all of the necessary facts" (2006: 5). Saying as much as possible with as little as possible, it may be concluded, is an artistic endeavor of its own. Finally, in Byrne's opinion, a technical translator does not need to be an expert in a highly specialized field. What they do need is to "have enough subject knowledge either to know how to deal with the text or be able to acquire whatever additional information is needed" (2006: 5). In other words, even though some basic understanding of technological principles will not hurt, technical translators must have excellent research skills and understand how to make full use of parallel corpora and other resources at their disposal.

Byrne (2006) also reflects on the status of technical translators and technical translation as such. Regardless of the overwhelming demand for technical translation (according to Kingscott 2002, it comprises over 90% of total translation output each year), he rightfully notices that the importance, nature and role of technical translation have been trivialized to the point of banality and makes a valid claim when he states that technical translation has traditionally been regarded as the poor cousin or the ugly duckling of "real" translation, particularly in academic circles: "Not particularly exciting and definitely lacking in the glamour

and cachet of other types [of] translation, technical translation is often relegated to the bottom division of translation activity and regarded as little more than an exercise in specialised terminology and subject knowledge" (2006: 1). Byrne's observation is in line with Franco Aixelá's findings, who in a 2004 study confirmed his suspicion that, despite being widespread, technical translation is under-discussed and under-researched. Using BITRA (Bibliography of Interpreting and Translation), a freely accessible online bibliographical database comprising, at the time of the study, a little over 20,000 books, journal articles and theses on translation and interpreting, he took a look at the numbers and reported how technical translation fared when compared to what had been written on other types of translation. As it turned out, back in 2003 there were 1,905 entries (9.3%) on technical translation as compared with 4,314 publications (21%) on literary translation. To put it differently, scholars invested 2.3 times as much effort into addressing literary translation than its technical counterpart. In an attempt to somehow account for this disproportionate interest in certain types of translation, Franco Aixelá talks about the positions which these two types of translation occupy in the collective imagination (2004: 29):

> The underlying rationale when approaching [technical] translation has usually been that literature involves a creative elaboration of language, requiring the translator to re-elaborate language in a similarly creative way, whereas translators of technical and scientific texts only have to deal with a type of discourse where the vocabulary (terminology) is or at least tends to be univocal, having ready-made equivalents, and the use of language (style) is simple and straightforward. In other words, anyone with a reasonable command of a language and a high level of technical or scientific knowledge can write a good technical (or scientific) text, whereas very few can write a good poem or novel, even in their mother tongue - and the same would apply to translation. Thus, literary (including Bible) translation has always been in need of serious reflection, whereas technical translating only needed good technical practitioners who knew their terminology.

It is evident, therefore, that literary translation, with its almost dogmatized dexterity, virtuosity and craftsmanship, has traditionally occupied the central position in Translation Studies. On the other hand, technical translation, at least from what Franco Aixelá's numbers convey, is simply not regarded as worthy of scholarly reflection. This is largely due to what he calls the *mechanical activity thesis*; that is, it can be ascribed to "lowering the status of technical translators to that of mere technical support, a linguistic mirror with no special influence on the contents, outlook and effect of the published text, as long, of course, as they know their terminology" (2004: 30).

More recently, however, there has been a growing consensus that technical translation merits more attention than it has traditionally received. Since the publication of Franco Aixelá's study, for example, a new online journal, The Journal of Specialised Translation, has been launched. Covering a multitude of non-literary translation fields, JoSTrans provides scholars with a platform to exchange ideas and publish peer-reviewed articles, thus inevitably leading to an increase in the quantity (and, hopefully, quality) of publications on technical translation. When it comes to Croatia, an effort that should not go under radar comes from the professional environment: the Croatian Association of Scientific and Technical Translators (Hrvatsko društvo znanstvenih i tehničkih prevoditelja – HDZTP) provides translating services by over 300 translators and publishes its own journal (*Prevoditelj*), which covers areas ranging from practical aspects of technical translation to theoretical issues. The present thesis, too, aspires to offer a contribution to this field of Translation Studies.

2.2. User manuals

Depending on the subject field, technical texts come in a variety of forms. Byrne identifies typical documents produced by technical writers and translated by technical translators, and divides them into the following categories (2006: 50):

1. Procedural documents (assembly instructions, instructions for operation, etc.)
2. Descriptive and explanatory documents (progress reports, descriptions of products and services, explanations of concepts, etc.)
3. Persuasive or evaluative documents (proposals, engineering projects, product or service evaluations, etc.)
4. Investigative documents (reports presenting new knowledge, etc.)

User manuals (or user guides) fall into the first category. As explained by Byrne, such documents are aimed at people who need to learn how to use a product and normally proceed from more general to more specific information, thus making sure that all new concepts are adequately explained in order to avoid confusing the user, prevent accidental damage to the product and ensure the safety of the end user (2006: 52).

Olohan notes that user manuals more often than not contain sections other than the main set of instructions (2016: 66). For example, most user manuals depict a product and identify its main component parts (which then, for obvious reasons, must be used consistently throughout

the text) (2016: 72). Moreover, technical translators working with user manuals must also be familiar with conventional forms of wording for business, warranty and liability statements in their working languages, seeing as they may deal with the often-formulaic legal terminology, too (2016: 67). Another aspect of user manual translation addressed by Olohan is the use of signal words for hazardous situations, such as *CAUTION* and *PLEASE NOTE*. Therefore, translators should be aware of which lexical items conventionally denote which levels of seriousness in their working languages and use them accordingly (2016: 72). As one of the risks of translating longer and more complex user manuals Olohan mentions overlooking parts of the text and omitting these parts from the translation process (2016: 73). To counteract this problem, however, translators and checkers have quality assurance tools at their disposal. Pavlović (2015) briefly addresses these when discussing computer-assisted translation tools (CAT tools), saying that QA tools are used by translation professionals to spot potential format deviations, terminology inconsistencies, omissions, etc. (2015: 294). Essentially, such tools check for machine-detectable errors. Some examples include Xbench, Verifika and QA Distiller.

Another important aspect to consider is the cost of inadequate user manuals, which seems to be a widely recognized problem in the industry. After all, aside from certain legal implications, as Byrne notes, "the quality of user guides can spell success or failure for a product or even for a company" (2016: 57). To support his thesis, Byrne goes on to report that half of all product returns and complaints in Germany arise precisely as a result of inadequate user manuals, with the resulting damage amounting to a staggering €500 million each year in Germany alone (2016: 61). In this regard, it may be interesting to briefly consider a global survey of 572 executives conducted by *The Economist* in 2012, where effective cross-border communication proved critical to the financial success of companies with international aspirations. When asked which part of their business activity would benefit the most from an improvement in their company's cross-border communication, as many as 50% of respondents felt that it would be their relationship with clients or customers in overseas markets, whereas 43% said it would be sales in overseas markets (Bolchover 2012: 27). At the same time, some 23% cited poor quality of translations as the most likely cause of misunderstanding (2012: 14), a percentage that cannot be dismissed as irrelevant. Around a half of the executives surveyed admitted that inadequate communication had obstructed major international transactions, thus leading to financial losses (2012: 7). Despite recognizing the direct monetary benefits of improving communication with customers from different countries, many companies, by their

own admission, are not taking the necessary steps to counteract the problem of poor international communication, with 47% admitting that they do not offer enough training to hone their employees' language and communication skills and 40% doubting that there is enough emphasis put on recruiting people suited to work in international environments (2012: 7).

2.3. Translation Quality Assessment (TQA)

The adequacy of translation of user manuals and other texts (technical and otherwise) can be set in the broader context of the Translation Quality Assessment (TQA), which is a complex and fast-growing sub-field within the major field of Translation Studies. It focuses its attention on the relationship between the original text (source text or ST) and its translation (target text or TT). One of the first scholars to specialize in TQA was the German scholar Juliane House (1970s). Ever since then, TQA has generated a strong interest among different groups, both in the academic environment and professional circles. When talking about who benefits from the accurate and objective evaluation of translation quality, Lommel, Uszkoreit and Burchardt give several examples (2014: 456):

> Requesters (sometimes known as clients) are generally interested in knowing if the translations they receive meet their quality expectations for a variety of reasons such as mitigation of legal liability due to factually incorrect translations, reduction in support costs, and preservation of brand reputation. Providers are interested in ensuring that they themselves meet quality expectations in order to satisfy their customers and also to mitigate any risks that come from providing problematic translations to their customers. [...] Developers of translation technology such as machine translation (MT) may need to understand how changes to their systems impact the quality of their output. Educators may evaluate translations produced by students in educational environments to identify problems and suggest improvements.

Different parties, therefore, benefit from TQA, which, as Tsai points out, may be performed by various individuals or groups of people: the client, the reviser, the quality control or quality assurance of a company, professional translation critics, translation teachers or readers (2014: 52).

The main issue when talking about TQA seems to be how to measure and express the quality of a translated work. There have been numerous attempts to tackle this problem. In her 2012 paper O'Brien reports on findings from a benchmarking exercise carried out on eleven different translation quality evaluation models. Starting from the most controlled to the least

controlled, she makes a list (though admittedly not an exhaustive one) of main types of quality evaluation methods (2012: 65-67):

1. Adherence to regulatory instruments

   This method is most likely to be carried out in the context of health and safety by a certified body. It consists of checking whether the translated content meets the relevant regulatory standard requirements.
2. Usability evaluation

   Usability evaluation can be achieved through comprehension tests, questionnaires, participant observation and think-aloud protocols, to name a few. However, it must be stressed that this method is rather expensive and time-consuming.
3. Error typology

   In this method a qualified linguist flags errors, applies penalties and establishes whether the content meets a pre-established pass threshold. This kind of evaluation is currently common in the translation sector and will be applied in the present thesis as well.
4. Adequacy/fluency

   The adequacy/fluency model is used in machine translation. Whereas adequacy basically means how much of the meaning in the ST is also expressed in the TT, fluency has to do with how fluent the TT is. Both are usually rated using a five-point scale.
5. Community-based evaluation

   This model presupposes a community whose members collaborate in a relatively uncontrolled way and discuss the level of quality of the TT.
6. Readability evaluation

   When evaluating readability, end users are invited to participate in comprehension tests or asked to rate the reading ease of content on a five- or seven-point scale.
7. Content sentiment rating

   In content sentiment rating TL users are asked to rate the TT along a parameter such as Like/Dislike.
8. Customer feedback

   As a measure of translation quality, the least controlled quality evaluation mode takes into account parameters such as the number of technical support calls or complaints.

The type of evaluation method used in this research will be error typology. With regard to this kind of method, the results of O'Brien's research seem to suggest that the majority of error typologies contain three error severity levels. Although terminology for each of these levels may vary, they can be summarized as follows (O'Brien 2012: 62):

1. Minor errors
   Though noticeable, minor errors will not have a negative impact on the meaning of the TT and will not confuse or mislead the user.
2. Major errors
   Unlike minor errors, major errors will have a negative impact on meaning.
3. Critical errors
   Errors that are considered critical have considerable effect not only meaning, but also on product usability, company liability and consumer safety.

2.4. Assessment models

As might be apparent by this point, there is no universally accepted assessment model applicable to every single translation. Dewi and Lommel, Uszkoreit and Burchardt (2015) all recognize the unlikeliness of conceptualizing "the" translation assessment method. According to Dewi, this might be the case because different translation language pairs often result in different types of errors; consequently, there is no universal translation error typology. Moreover, what classifies as a translation error varies according to different translation theories. This, in turn, leads to different categorization of errors. In Lommel, Uszkoreit and Burchardt's view, even though appealing, the formulation of a single metric for translation quality represents an improbability because, as they put it, "such a metric would require that translation have universal features and objectives, a notion that is highly questionable" (2014: 457). Simply put, different kinds of translation tasks (e.g. legal text vs literary text) require different kinds of evaluation methods. Williams (2009) too, claims that there are many reasons why it is so difficult to establish and apply a TQA model. He considers the following ones the most important: the evaluator, level of target language rigor, seriousness of errors of transfer, sampling versus full-text analysis, quantification of quality, levels of seriousness of error, multiples levels of assessment and TQA purpose/function (2009: 5-7).

It is important, however, to note that what all assessment models have in common is the logic behind the reasons they were developed in the first place. In a sense, each model is a more or less successful attempt to correct the impression of complete assessment arbitrariness and, at least to a certain degree, provide a systematic approach with specific points of reference. The development of translation evaluation has led to a series of different approaches to operationalizing quality assessment. For example, the American Translators Association (ATA) Flowchart for Error Point Decisions and Framework for Standardized Error Marking has been adapted to assess ATA's certification examinations. This model provides an in-depth explanation of error typology and an equally elaborate error-marking system. Other prominent assessment models include Translation Quality Index (TQI) methodology, Canadian Language Quality Measurement System (Sical) and SAE J2450 Translation Quality Metric. TQI, for instance, measures the number and type of errors and calculates a score (or TQI), which is used as an indicator of translation quality. Sical, on the other hand, is a model developed by the Canadian government's Translation Bureau which has influenced a number of other models, whereas, developed by the Society of Automotive Engineers (SAE), SAE J2450 is used in judging the quality of translation in the automobile industry. All of these, including the abovementioned ATA model, belong to the so-called analytic methods category. Mariana, Cox and Melby (2015: 155) explain that, as opposed to holistic methods, where the quality of a translation is assessed on the basis of the overall impression of the text as a whole, analytic methods look at segments of the text (individual words, sentences or paragraphs) and award or deduct points to the overall score based on whether each segment meets certain criteria. Another such example is the Multidimensional Quality Metrics (MQM) framework, which will be used for the purposes of this research.

2.5. Multidimensional Quality Metrics (MQM)

MQM is an assessment framework developed as a part of the European Union-funded QTLaunchPad project. It is used to evaluate the quality of translated texts and identify specific issues in those texts. What separates it from similar analytic models is the possibility to customize the metric for the purposes of each individual translation task. Rather than adopting a one-solution-fits-all approach, MQM offers the flexibility to modify the metric depending on factors such as assessment goals and time available. As a result, it represents an industry-wide acceptable framework for translation evaluation. Moreover, the findings of a research

conducted in 2015 by Mariana, Cox and Melby prove the viability of the MQM framework and demonstrate its reliability even with novice raters. Since it is intended to be language neutral, Lommel, Uszkoreit and Burchardt (2014) indicate MQM's applicability to virtually any language pair as another of its advantages.

The central component of MQM is a hierarchical list of over 100 issue types grouped into seven major branches, which themselves may serve as issue types in case a higher level of detail is not necessary. Table 1 gives an overview of the seven major branches, with definitions taken from the official QTLaunchPad website[1].

BRANCH	**DEFINITION**	**EXAMPLES OF SUBCATEGORIES**
Accuracy	Accuracy issues address the relationship of the target text to the source text and can be assessed only by considering this relationship. A target segment is inaccurate when it does not accurately reflect the source segment.	• Addition • Mistranslation (date/time, unit conversion, etc.) • Omission • Untranslated
Design	Design includes issues related to the physical presentation of text, typically in a "rich text" or "markup" environment.	• Graphics and tables (missing graphic/table, position, etc.) • Local formatting (font, paragraph indentation, text alignment, etc.) • Overall design (global font choice, margins, page break, etc.)
Fluency	Fluency includes those issues about the linguistic "well-formedness" of the text that can be assessed without regard to	• Grammar • Spelling

[1] Available at: <http://www.qt21.eu/mqm-definition/definition-2015-12-30.html>.

	whether the text is a translation or not. Most Fluency issues apply equally to source and target texts.	• Typography (punctuation, whitespace, etc.)
Locale Convention	Issues in Locale Convention relate to the formal compliance of content with locale-specific conventions, such as use of proper number formats. If content is otherwise correctly translated and fluent but violates specific locale expectations (as defined in the translation specifications), it is addressed in this dimension. This dimension does not cover issues related to whether the content itself is appropriate for the locale (these issues are covered under Verity).	• Address format • Calendar type • Currency format • Date format • Measurement format
Style	Style issues relate to what is commonly known as "Style", defined both formally (in style guides) and informally (e.g. a "light style" or an "engaging style").	• Inconsistent style • Register (variants/slang) • Unidiomatic
Terminology	Terminology issues relate to the use of domain- or organization-specific terminology (i.e. the use of words to relate to specific concepts not considered part of general language). Adherence to specified terminology is widely considered an issue of central concern in both translation and content authoring.	• Inconsistent with termbase (company termbase or third-party termbase) • Inconsistent with domain (no termbase) • Inconsistent use of terminology (multiple terms for concept in source or multiple translations of same term)

Verity	Verity issues relate to the suitability of content for the target locale and audience. They do not relate to fluency or accuracy since content may be fluently written and accurately translated and still be inappropriate for the target locale or audience. For example, if a text translated for Germans in Germany refers to options available only in the UK, these portions will likely be problematic.	• Completeness (incomplete lists, incomplete procedures) • Culture-specific reference • End-user suitability • Legal requirements

Table 1: Seven major MQM branches

Building on from these seven major branches, MQM proposes a so-called Core in order to simplify the use of the framework. The Core contains 20 most common issue types and can be graphically represented as shown in Figure 1.

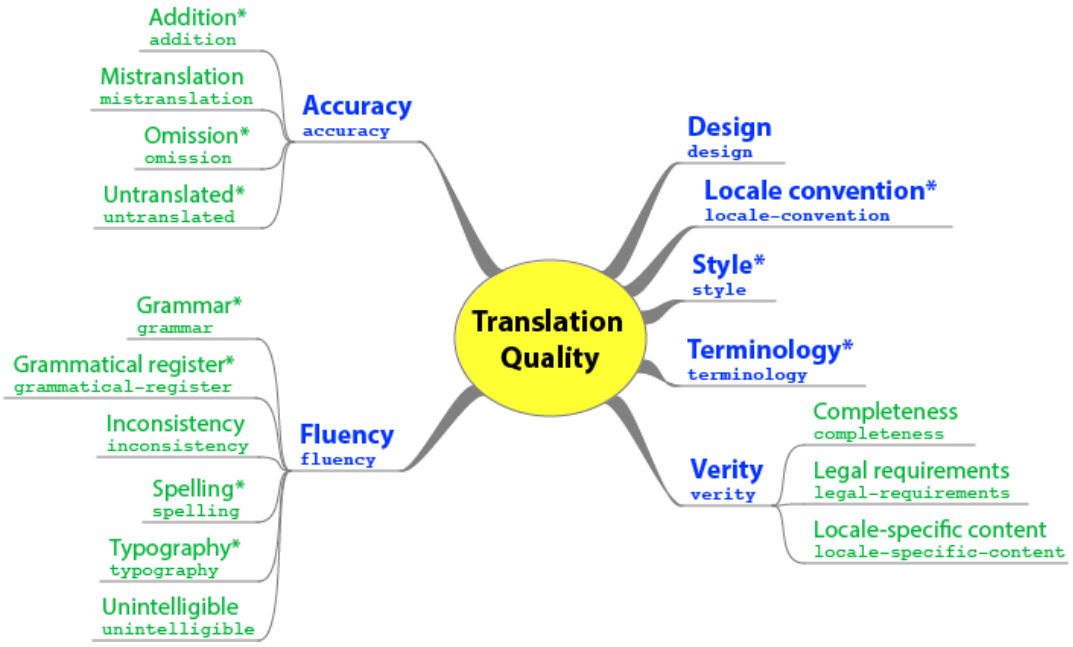


Figure 1: MQM Core

Nevertheless, as has already been said, MQM was made to be tailored to meet all sorts of quality assessment needs and can, therefore, be realized at any level of granularity. Depending on their needs, the assessor can, for example, check only one major issue, Accuracy. In that case, the hierarchy would look as shown in Figure 2. A full hierarchy of issues and sub-issues for all major issue types can be consulted in Appendix.

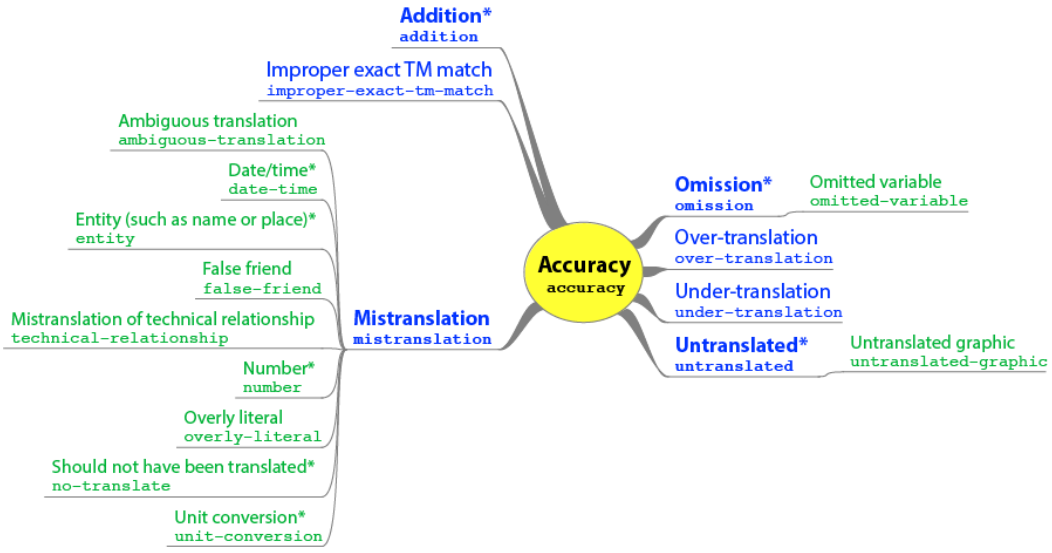


Figure 2: Hierarchy of Accuracy issues

Technically, however, the assessor can choose to check all issues and sub-issues defined in MQM (although in a vast majority of cases the number of issues checked will be somewhere between these two extremes). What facilitates their decision is a detailed list of all issue types provided with the following information:

1. Name of the issue type
2. ID or XML identifier of the issue type
3. Definition of the issue type
4. Information whether the issue is in the MQM Core or not
5. Information whether the issue can be automatically detected
6. Parent of the issue type in the hierarchy
7. Children of the issue type (if there are any)
8. Information whether the issue type applies to TT, ST or both
9. Illustrative examples
10. Any notes on usage

Finally, for the purposes of calculating quality scores, the default MQM severity model has three levels: minor (with a default weigh of 1 point), major (10 points) and critical (100 points). These levels correspond to the already-mentioned severity levels discussed by O'Brien. If required by the assessment task, MQM even proposes an equation to determine the TT quality.

To sum it up, the MQM workflow consists of deciding on the exact metrics for the TQA task at hand, finding the errors, identifying the type of each error, and, optionally, determining

the error severity and calculating the TT quality. The precise workflow used in this research will be described in Chapter 4.

3. Aims and research questions

The quality of user manual translation is one of the factors that can determine the success of companies expanding internationally, yet the number of studies tackling this issue is limited and research on this topic in Croatia is scarce, if not non-existent. With the aim of empirically evaluating the quality of user manual translation from Croatian into English, this thesis aspires to contribute to this largely neglected field of Translations Studies and attempt to raise awareness among producers about the importance of hiring professional translators. With this in mind, the research will try to work towards answering the following questions:

1. What are the most common types of translation errors that occur in the translation of user manuals from Croatian into English?
2. How severely do these translation errors affect the meaning of the TT?

4. Methodology

For the purposes of this research a corpus of ten Croatian user manuals translated into English was compiled and analyzed. The user manuals were downloaded from the official website of the *Vivax* brand[2], a Croatian product offering full home equipment. *Vivax* was chosen because it claims to be an innovative, quality-driven brand and mentions the UK among foreign markets where it sells certain types of its products. The translations analyzed are the English translations of user manuals for ten different small household appliances: juicer (model AJ-800), bread maker (BM-900), coffee machine (CM-700), electric grill (EG-4030), fryer (DF-1800B), hairdryer (HD-2200CD), hand blender (SB-250SS), icemaker (IM-122T), steam iron (IR-2004SS) and vacuum sealer (VS-1102). The translations were not analyzed in their entirety. Instead, only selected sections were considered for a total of 39,103 characters, 5,834 tokens

[2] Available at: <https://www.vivax.com/hr/brend-vivax.aspx>.

and 639 segments[3] (or an average of 3,910 characters, 583 tokens and 64 segments per user manual). That way, though limited, the corpus hoped to be representative with regard to its size and variety.

The preparation of the corpus for the analysis consisted of several steps. The selected user manuals available online in PDF[4] were first downloaded and converted to DOC files. The obtained Word documents were then edited. Each document was split into two separate documents, one containing the selected portions of the Croatian ST, the other their English TT counterparts. Translations into languages other than English were deleted. Following this, Croatian STs were imported into Memsource, where they were automatically split into segments, while the translated texts were added manually.[5] Using the Export to Bilingual DOCX option, the texts were then exported back to the DOC format in the form of bilingual tables containing Segment number, Source, Target and Comment columns.

The English translations of Croatian user manuals were assessed using the Multidimensional Quality Metrics (MQM) framework described in greater detail in Chapter 2.5. The MQM framework was tailored to meet the needs of the present study, which means that certain error categories were intentionally left out. For example, while measurement format was taken into consideration, address format was not since no addresses appear in the corpus. The analysis was carried out with the following four major error categories in mind: Accuracy, Fluency, Locale Convention and Terminology. What follows is a list of all error categories and subcategories chosen for this assessment task, along with their IDs[6] (these were used during the annotation process to provide unambiguous reference to a particular error type):

- ACCURACY (`accuracy`)
    - Addition (`addition`)
    - Mistranslation (`mistranslation`)

[3] Here a segment is understood as a smaller fragment of text, usually a sentence or a unit such as a title, a heading or an element in a list.

[4] Though helpful as a format in other contexts, PDF is not always the most convenient option during a translation project since the ST may not be extracted correctly (e.g. Croatian diacritics, line breaks, etc.). This requires a considerable amount of extra work to finalize the layout before proceeding to translate the text with a CAT tool. In this case, converting the PDF files using Adobe Acrobat Pro yielded satisfying results.

[5] The manual method was chosen after the automatic method of alignment used in Memsource had yielded unsatisfying results, i.e. a segmentation that would have required a significant amount of post-editing.

[6] The error categories and subcategories selected for the purposes of this research, as well as their respective IDs, were taken from the official QTLaunchPad website at: <http://www.qt21.eu/mqm-definition/definition-2015-12-30.html>.

    - Omission (omission)
    - Over-translation (over-translation)
    - Under-translation (under-translation)
    - Untranslated (untranslated)
- FLUENCY (fluency)
    - Grammar (grammar)
        - Function words (function-words)
        - Word form (word-form)
        - Word order (word-order)
    - Spelling (spelling)
        - Misspelled word (misspelled-word)
    - Typography (typography)
        - Punctuation (punctuation)
        - Whitespace (whitespace)
- LOCALE CONVENTION (locale-convention)
    - Quote mark type (quote-mark-type)
    - Measurement format (measurement-format)
    - National language standard (national-language-standard)
    - Number format (number-format)
- TERMINOLOGY (terminology)
    - Inaccurate term (inaccurate-term)
    - Inconsistent use of terminology (term-inconsistency)

Errors were also ranked for severity, i.e. when an error was found, its type was identified and its severity determined on the basis of three main categories (minor, major and critical) described in Chapter 2.3. For example, a misspelling error, although noticeable and by no means negligible, was expected to have a lesser effect on meaning and product usability than an omission of a critical part of a safety instruction. Moreover, although awarding and deducting points is a common TQA practice, there was no scoring system adopted for the purposes of this research seeing as the thesis does not aim to compare the quality of TTs nor track their authors' performance over time.

All annotation was performed segment by segment in Microsoft Word.[7] Once spotted, the error was underlined in the Target column of the table. Its type and severity were then specified in the Comment column. While error type was identified using the IDs listed above,

[7] It should be noted that there are alternative ways to approach the annotation task. One such approach involves open source web-based translation systems such as translate5 or the brat rapid annotation tool. Moreover, the popular commercial tools memoQ and SDL Trados Studio also include the TQA functionality (the users of the former can find it under the name of LQA - Linguistic Quality Assurance).

severity was indicated according to the following key: if an error was minor, its ID was written in italics, whereas major errors were written in normal characters and critical errors were bolded. The annotation was based on the "less is more" principle, i.e. only relevant text was tagged (underlined). For example, if a single word was wrong in a phrase, the single word rather than the entire phrase was underlined. Similarly, if correcting one error took care of other errors that had resulted from it, only that one error was underlined. Finally, when a single segment contained more than one error, errors were listed in the Comment column in the order in which they appeared. Once completed, the annotated documents served as a basis for the qualitative and quantitative analysis of errors, which is presented in the next chapter.

5. Results

This chapter presents the results obtained from research conducted on the English translations of ten Croatian user manuals. The total number of identified errors is a staggering 897, which translates to an average of 89.7 errors per user manual or 1.4 errors per segment.

The lowest number of errors found in a user manual is 28. The said user manual contains 64 analyzed segments, yielding a segment/error ratio of 2.29. This roughly means that every other segment contains an error. The highest number of errors found in a user manual is 134. The said user manual contains 49 analyzed segments, yielding an error/segment ratio of 2.73, which translates to almost three errors per segment. This user manual also happens to be the user manual with the highest number of critical errors (9).

5.1. Errors by type

The most prevalent type of error is the Fluency type (545 occurrences or 61%), followed by Accuracy (186 occurrences or 21%), Terminology (136 occurrences or 15%) and Locale Convention (30 occurrences or 3%). See Figure 3.

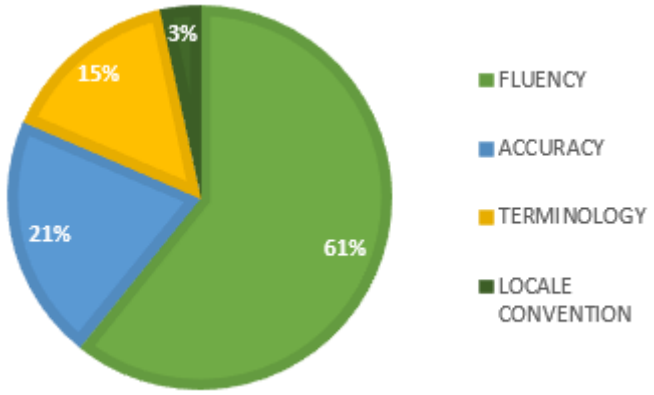


Figure 3: Errors by type

To put it differently, the Fluency type accounts for well over a half of all identified translation errors, with the other three main error types combined accounting for 352 errors (39%). Moreover, each user manual contains as many as 54.5 Fluency errors on average. This overwhelming prevalence of the Fluency type of errors is represented in the figure below.

The Function Words error subtype accounts for 54% of all Fluency errors (292 occurrences), followed by the Word Form (91 occurrences or 17%) and Punctuation (74 occurrences or 13%) subtypes. There are 32 occurrences of the Misspelled Word error subtype (6%), whereas the two least occurring Fluency error types, the Word Order and Whitespace subtypes, account for 5% (28 occurrences) each. See Figure 4.

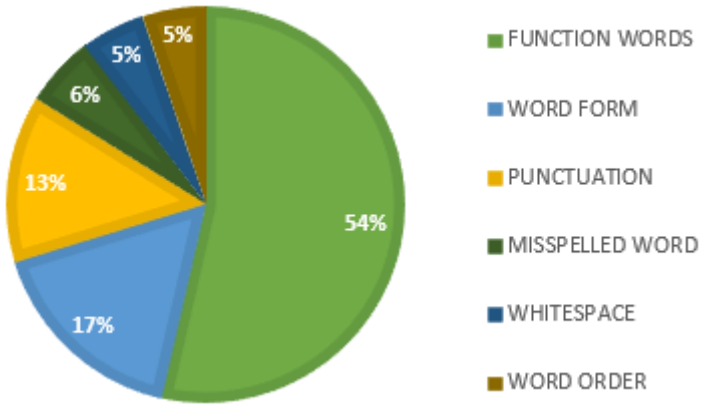


Figure 4: Errors by type - Fluency

Out of the identified 186 Accuracy errors, 78 are Mistranslations (42%). The Omission subtype accounts for 50 errors (27%) and is closely followed by the Addition subtype (47 errors or 25%). There are 7 Over-Translation and 4 Under-Translation errors (4% and 2%, respectively), while there are 0 Untranslated errors in the analyzed corpus. See Figure 5.

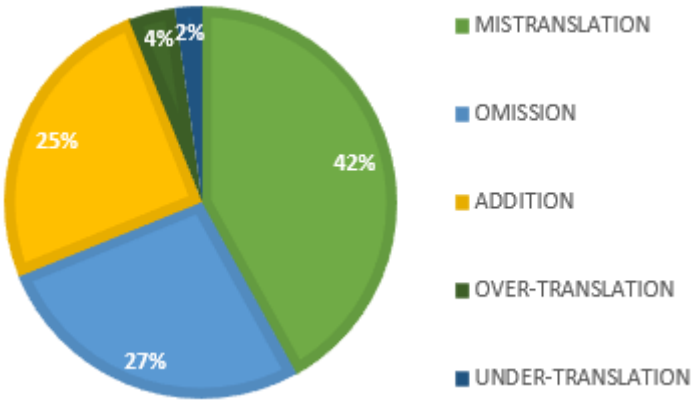


Figure 5: Errors by type - Accuracy

The errors related to Terminology account for 15% of the total number of identified errors. Out of this number, 54% (73 occurrences) are the Term Inconsistency errors, while the remaining 46% (63 occurrences) are the Inaccurate Term errors. See Figure 6.

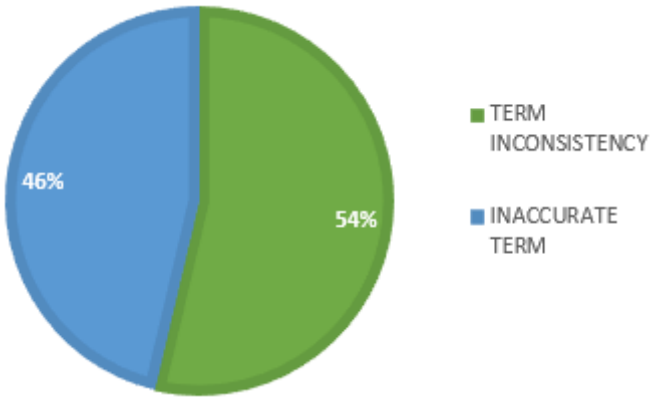


Figure 6: Errors by type - Terminology

Finally, the Locale Convention type accounts for 3% of all errors, with 17 National Language Standard errors (56%), 8 Measurement Format errors (27%), 5 Quote Mark Type errors (17%) and 0 Number Format errors. See Figure 7.

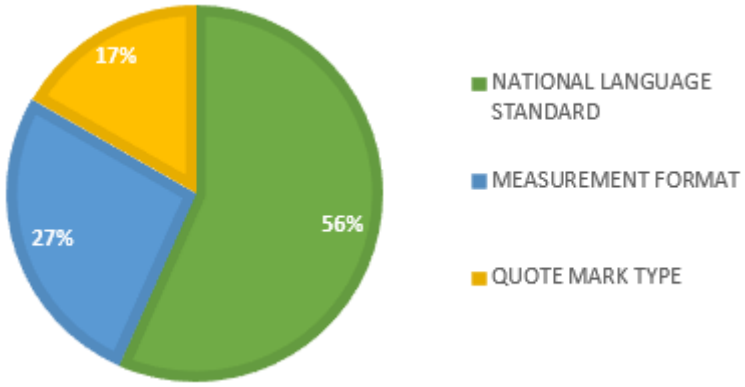


Figure 7: Errors by type - Locale Convention

5.2. Errors by severity

As far as error severity is concerned, there are 640 minor errors (71%), 214 major errors (24%) and 43 critical errors (5%). See Figure 8. The highest number of critical errors found in a single user manual is 9 (there is also one user manual containing 8 critical errors and two manuals containing 7). Only two user manuals have no critical errors. For more details regarding error severity categorization, see Chapter 2.3.

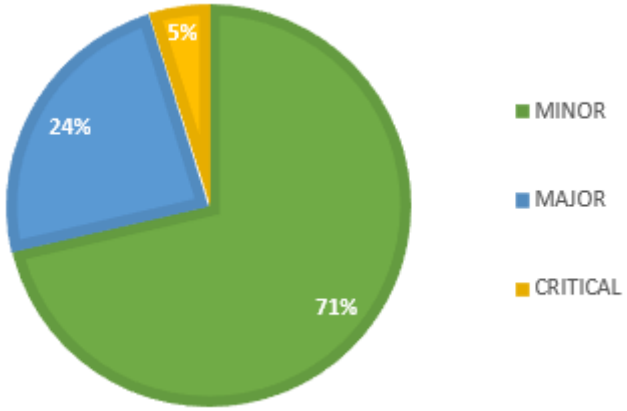


Figure 8: Errors by severity

A vast majority of minor errors fall into the category of Fluency errors (517 occurrences or 81%), followed by Accuracy (63 occurrences or 10%). Terminology and Locale Convention errors account for 6% (38 occurrences) and 3% (22 occurrences), respectively. See Figure 9. When it comes to major errors, there are two close contenders – Terminology with 91 occurrences (42%) and Accuracy with 87 occurrences (41%). In the analyzed corpus, there are

28 major Fluency errors (13%) and 8 major Locale Convention errors (4%). See Figure 10. As for critical errors, there are no occurrences of Fluency or Locale Convention errors. Most critical errors have to do with Accuracy (36 occurrences or 84%), while Terminology errors account for 16% of the total number of critical errors (7 occurrences).[8] See Figure 11.

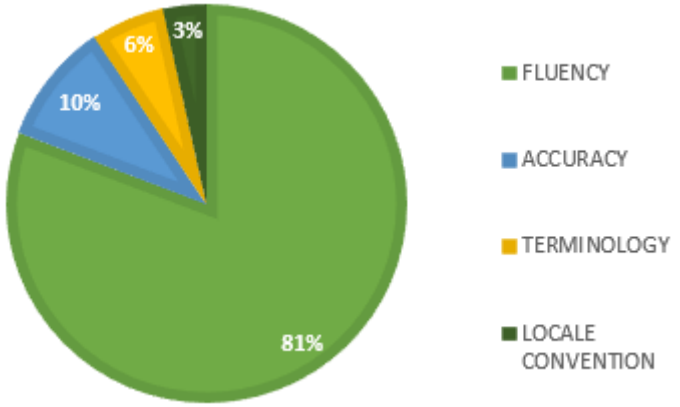


Figure 9: Minor errors by type

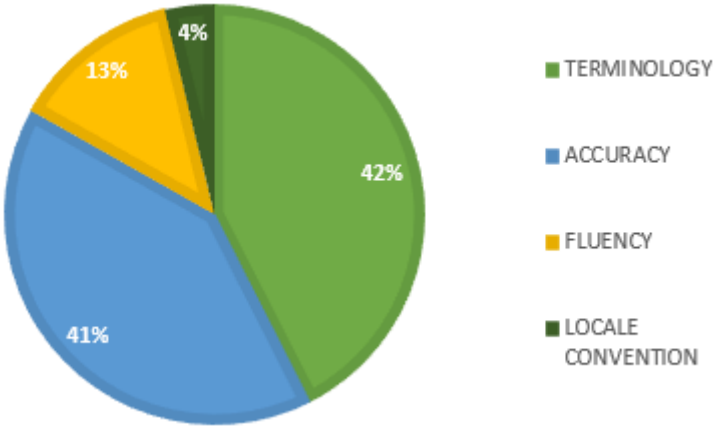


Figure 10: Major errors by type

[8] The category of Terminology errors partially overlaps with the category of Accuracy errors: an Inaccurate Term error is in reality a Mistranslation error. However, for the purposes of this research, innacurate terms were only counted towards Terminology errors.

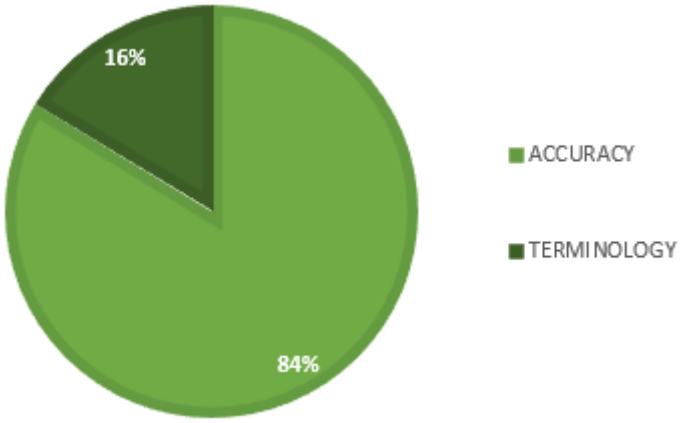


Figure 11: Critical errors by type

To put these results in a different perspective, Fluency errors, although heavily outnumbering other error types, account for 0% of critical errors. A substantial majority of all identified Fluency errors are, in fact, minor (517 occurrences or 95%) and 28 are major (5%). Another error type with 0 occurrences of critical errors is the Locale Convention type: 73% (22 occurrences) are minor and the remaining 27% (8 occurrences) are major.

With 136 total occurrences, Terminology errors are predominantly major (91 occurrences or 67%). There are 7 occurrences of critical Terminology errors (5%), while 28% (38 occurrences) are minor. The type of errors affecting the meaning and usability of user manuals most severely is Accuracy, with a total of 36 critical errors (19% of all Accuracy errors) and 87 major errors (47%). Minor Accuracy errors account for 34% of all Accuracy errors (63 occurrences).

6. Discussion

This chapter provides a discussion on what seem to be the salient aspects of the research findings. Where deemed advantageous, relevant corpus-drawn examples are presented as a means of illustrating particularly interesting phenomena or important points.

6.1. Translations teeming with errors

Early in the error annotation process it became clear that the user manuals dealt with were saturated with errors. A considerable portion of segments contain so many errors that, at times, annotation seemed almost impossible. These segments made it challenging to categorize the errors, rendering the annotation process highly labor-intensive and time-consuming. One such example appears in the Juice Extractor user manual:

ST		TT	ERRORS
Time ćete ukloniti svaku prljavštinu i ostatke hrane, te omogučiti[9] lakše čišćenje i spriječiti mogućnost nastanka bakterija.	[This will remove all dirt and food residue, enabling easier cleaning and eliminating the possibility of bacterial growth.]	This will remove any bath drying out of the residue food. Making cleaning easier and the possibility of bacterial growth.	`mistranslation`, *`word-order`*, `punctuation`, `mistranslation`

With a non-sensical solution at the beginning and later a punctuation error disrupting the logical flow of the translation, it was difficult to resist the temptation to mark the entire segment as Unintelligible.[10] However, seeing as it was still possible to establish some sort of a relationship between the ST and the TT, the errors were marked and counted towards the total number of errors, thus helping to formulate the answers to the research questions.

6.2. Predominance of Fluency errors

The overwhelming prevalence of Fluency errors has already been addressed in Chapter 5.1, with this error type constituting three-fifths of all identified errors and appearing, on average, over 50 times in a given user manual.

Some have to do with spelling and typography, but the bulk of Fluency errors are grammatical in nature. Every other Fluency error is a Function Word error, which means that the analyzed user manuals use function words (such as articles and prepositions) incorrectly

[9] This is an example (and not an isolated one) of a typographical error found in the ST, where the diacritic *č* was mistakenly used instead of *ć*.

[10] Unintelligible is an MQM error type which can be used when the exact type of the error cannot be determined, but it is only advised as a last resort. No errors in this research were marked as Unintelligible.

and that they do so alarmingly often. Word Form is another grammatical error common to all analyzed user manuals. Instances of this error subtype include issues related to parts of speech, agreement with respect to person or number, as well as verbal forms displaying wrong tense or aspect. The Word Order subtype has proven problematic in numerous instances, too. In the Ice Maker user manual, for example, the TT reads "Select the small size ice cube" instead of "Select the small ice cube size".

At the same time, the predominance of Fluency errors should be taken with a grain of salt for two reasons. Firstly, this error type contains the most error subtypes out of the other three main error types that have been taken into consideration in this research, which is why the resulting ratios could have been anticipated to a certain degree. Secondly and perhaps more importantly, there is not a single instance of a Fluency error in the analyzed corpus that could be said to affect the meaning and usability of the TT critically. This, too, could have been anticipated because these errors are not semantic in nature. Therefore, it does not come as a surprise that the portion of the identified Fluency errors affecting the TT majorly is a modest 5%. Besides, major Fluency errors generally do not occur in isolation. Instead, their severity seems to stem from the situations in which they appear alongside other types of errors, additionally obscuring the meaning of an already confusing text, as in the following example taken from the Steam Iron user manual:

ST		TT	ERRORS
Objesite ili ostavite odjeću da se ohladi.	[Hang the clothes or leave them to cool.]	Hanging the clothes to clothes rack till it is cold.	*word-form*, *function-words*, *function-words*, function-words, mistranslation

Had the last part of the sentence not been mistranslated ("is cold" instead of, for example, "cools off" or "has cooled"), the personal pronoun "it" used inaccurately to refer to the plural noun "clothes" would arguably not confuse the reader as much and could then be rated as minor and not major. Having said that, however, the significant number of minor Fluency errors should not be neglected or underestimated because they add up to the general sense of sloppiness and non-idiomaticity of the texts analyzed.

6.3. Seeming underrepresentation of Locale Convention and Terminology errors

The seeming underrepresentation of Locale Convention and Terminology errors goes hand in hand with the mentioned predominance of Fluency errors. These two error types represent the two least frequently occurring error types out of the four types considered for the analysis, with Locale Convention accounting for a disproportionately low 5% and Terminology constituting 15% of the total number of all identified errors. These figures, however, should not be taken at face value. This is because error types such as Inaccurate Term, Term Inconsistency, Quote Mark Type, Measurement Format and Number Format by their very definition appear only in special contexts. To put it differently, terms appear less frequently than other words in any given user manual and, as a result, Terminology errors appear less frequently, too. For example, in the analyzed corpus there is a total of 0 occurrences of the Number Format error, which is a subtype of the main Locale Convention type. However, that is not to say that any definitive conclusions about the use of appropriate number format for the target locale can be drawn – on the contrary, in the ten user manuals there is not a single occurrence of a decimal number, which, seeing as the source locale and the target locale use different decimal separators, may pose a potential translation problem. Similarly, whereas virtually any given sentence represents a possibility for committing not one, but multiple Fluency errors, not all sentences contain elements that can be checked for, say, Term Consistency.

Though less represented in the absolute number of identified errors, the severity of the effect of Locale Convention and, in particular, Terminology errors on the meaning of the target text should not be overlooked. From what can be made out based on this research, well over a half of all Terminology errors (67%) have a major effect on the meaning of the text. Admittedly, small household appliances terminology is far from unified. This, however, does not justify the observed inaccuracies and inconsistencies in the use of specialized language on the level of a single manual. Terminology errors appear in all analyzed texts. Within the Ice Maker user manual, for example, the terms ““Ice Full” indicator”, “ice-full indicator” and “ice full sensor” are all used interchangeably, as well as the terms “water shortage indicator” and ““Add Water” indicator”. Such inconsistency in the use of terminology in the texts that are already poorly translated as it is makes it even harder to comprehend the text and invariably leads to confusing the user or, at the very least, distracting them. Another phenomenon worth observing is the persistence in consistent use of inaccurate terms in some user manuals. For example, throughout the Bread Maker user manual, the adjective “pšenični” [wheat] is consistently translated as “whole wheat”, which ultimately reduces the usability of the product.

In addition, some of the observed Terminology errors are so misleading that they can easily be classified as critical. In the Steam Iron user manual, two important functionalities were mistaken one for another in the translated text, namely, “dugme za prskanje pare” [spraying button] was translated as “strong steam button”, whereas “dugme za snažnu paru” [strong steam button] was translated as “spraying button”, when it should have been vice-versa. Finally, an inconsistency common to several of the examined user manuals has to do with in-text references to various sections titles. The following example is taken from the Coffee Maker user manual:

ST		TT	ERRORS
Redovito održavajte i čistite uređaj kako je navedeno u odjeljku "Čišćenje i održavanje".	[Maintain and clean the appliance regularly, as specified in the “Cleaning and Maintenance” section.]	Clean regularly as specified in the "Care and Maintenance" section.	*quote-mark-type*, term-inconsistency

In reality, the said “Čišćenje i održavanje” [Cleaning and Maintenance] section was translated as “Cleaning”, so it is reasonable to presume that the user may end up wasting their time flipping through the user manual looking for a section titled “Care and Maintenance”, when they should be looking for “Cleaning”. Similarly, the section “Sigurnosne mjere opreza” [Safety Precautions] from the Juice Extractor user manual is translated as “Safety precautions”, but then later on referred to, nonsensically, as “Attentions”.

6.4. Critical severity of Accuracy errors

Accuracy is the error type that affects the meaning of the examined user manuals most severely, with 19% of all Accuracy errors identified as critical (36 occurrences) and 47% identified as major (87 occurrences). In particular, the error subtypes that seem to have the highest impact on both meaning and usability are Addition and Omission.

Some Additions are oddly specific, adding new pieces of information that are irrelevant to operating the product. The following two examples are taken from the Hair Dryer user manual:

ST		TT	ERRORS
Osigurajte da se sušilo za kosu potpuno ohladi.	[Ensure that the hair dryer cools down completely.]	Ensure the hair dryer is completely cool and hair dry.	addition

ST		TT	ERRORS
Operite i obrišite suhim ručnikom kosu.	[Wash your hair and dry it with a dry towel.]	Wash and condition hair as you would normally	omission, addition, *function-words*, *addition*, *punctuation*

The question that arises from the first example is why the user would need to wait for their hair to be fully dry before they get to safely store an already unplugged hair dryer, while the second example for some reason seems to assume that all users normally use a hair conditioner. At the same time, the part suggesting to use a dry towel is omitted. A possible interpretation of this phenomenon is that it is a consequence of a poor use of a translation memory system, where the author did not edit the specific translation units which required post-editing.

Other Addition errors make so little sense that they might be a result of a poor machine translation system. The following example of an Addition error is taken from the Vacuum Sealer user manual:

ST		TT	ERRORS
Oksidacija može prouzrokovati da hrana izgubi svoj okus i svoju kvalitetu te da se razviju bakterije, gljivice i plijesan.	[Exposure to air may cause food to lose its taste and quality, as well as facilitate the development of bacteria, fungi and mold.]	Exposure to air causes food to lose nutrition and flavor, and also causes freezer bum and enables many bacteria, mold and yeast to grow,	*national-language-standard*, addition, *national-language-standard*, *punctuation*

An equally distressing number of Accuracy errors can lead to serious product damage and/or personal injury. Most such errors belong to the Omission subtype. One such example appears in the Electric Indoor Grill user manual:

ST		TT	ERRORS
Uvijek koristite hvatačice/rukavice otporne na vrućinu prilikom pečenja jer roštilj, drške i poklopac za vrijeme rada mogu postati vrući.	[When grilling, always use heat-resistant oven mitts as the grill, handles and lid may become hot during use.]	Always use hot pads when handling grill as handles and grill become hot during use.	`inaccurate-term`, *`function-words`*, **`omission`**

Another example where a critical part of a safety instruction is omitted from the translation is taken from the Juice Extractor user manual:

ST		TT	ERRORS
Nakon korištenja i prije čišćenja, odspojite utikač napajanja i pričekajte da se uređaj ohladi.	[After use and before cleaning, remove the plug from the power socket and wait for the appliance to cool down.]	After use and before cleaning, remove plug from power socket.	*`function-words`*, *`function-words`*, **`omission`**

There are also instances of Omission errors seriously affecting the efficiency of the troubleshooting instructions. The following example is taken from the Troubleshooting section of the Vacuum Sealer user manual, more specifically from the part offering a range of potential solutions to the problem listed as “Nothing happens when I turn on the device”:

ST		TT	ERRORS
Provjerite priključni kabel napajanja i utikač i uvjerite se da nisu oštećeni.	[Examine the power cord and the power socket for any damage.]	Examine_power cord for any damage.	*`function-words`*, **`omission`**

Here the part that has been left out (power plug) is crucial for finding a solution to the problem, so the identified Omission error can be regarded as critical.

6.5. Repetition of source text errors

Another feature common to the examined user manuals is the repetition of errors found in the source text. As it turns out, with frequent Term Inconsistency, Misspelled Word, Whitespace and Punctuation errors, the source text itself leaves much to be desired. Throughout

the Bread Maker user manual, for example, the terms “postavka” [setting], “program” [program] and “izbornik” [menu] are all used to refer to one and the same concept. Instead of making the effort to intervene and be consistent in their translation, the author of the target text remained equally inconsistent in the use of terminology, opting for “setting”, “program” and “menu” and using these terms interchangeably throughout the manual.

An attempt to intervene can be found in the Electric Indoor Grill manual. When listing the safety precautions in the context of handling the hot cover and handles of the grill, the source text advises the user to use “hvataljke/rukavice” [tongs/oven mitts]. “Hvataljke” [tongs], however, should hardly be the tool of choice when gripping the handles of the grill or lifting its cover. In the translation process, this term was dropped (although it is difficult to say whether it was a conscious decision or not). However, the term “rukavice” [oven mitts] was then translated as “hot pads”, a term much closer in meaning to “pot holder” than the actual “oven mitts”, so all this attempt remains is exactly that: just an attempt.

6.6. Conspicuous lack of revision and proofreading

Lastly, a feature common to both STs and TTs are errors related to the mechanical representation of the text, which could have been avoided had a form of revision taken place in the translation process. What frustrates the most is that a vast majority of Punctuation and Whitespace errors do not even require that much human effort, seeing as they are easily detectable by the proofing tools available in word processing and document creation software. There are 74 Punctuation and 28 Whitespace errors in the ten user manuals, which means that around a hundred of all detected errors could have been prevented automatically. In the analyzed corpus, these errors appear at random. A list of parts included, for example, may contain a bulleted list of ten items and three of these items are followed by a full stop. In some other, equally recurring cases, the end of a sentence is not indicated by a full stop or, sometimes, if it is, the next sentence is not separated by a space, which then makes for a Whitespace error. Along with the Misspelled Word errors, these errors, though largely classified as minor, are so numerous that they undoubtedly add to the sense of general sloppiness, carelessness and lack of attention and precision. Finally, had any form of revision taken place, not only would the trivial typographical and spelling errors have been corrected, but also some of the inadvertent, yet dangerous omissions could have been avoided.

7. Conclusion

Drawing on the results and the analysis of the quantitative and qualitative research conducted on ten translations of user manuals for small household appliances, certain tentative conclusions have been reached and are presented in this chapter.

With only ten user manuals from a single manufacturer, the analyzed corpus is undeniably limited in scope. However, it may point to some tendencies in user manual translation from Croatian into English, provide the basis for certain tentative conclusions and lay groundwork for future research. Going back to the research questions formulated in Chapter 3, the following general remarks can be made:

1. Errors related to grammar, spelling and typography are the most common types of errors in the translation of user manuals from Croatian into English. These fall into the category of Fluency errors and account for well over a half of all identified errors.

2. The majority of errors have a minor effect on the meaning and usability of the target text. Although heavily outnumbering other error types, Fluency errors are usually minor. It is the less occurring error types that affect the meaning more severely (either majorly or critically). The type of errors affecting the meaning and usability of user manuals most severely is Accuracy (mainly the Addition and Omission subtypes), followed by Terminology.

To elaborate on this, most Terminology errors have a major effect on the meaning of the translated user manual. In other words, inaccurate or inconsistent use of terms results in confusing or even misleading the user. On the other hand, many Accuracy errors have a critical effect on the target text, which means that they affect not only the meaning of the text, but also the usability of the product and, ultimately, consumer safety and company liability. What is particularly worrisome is that only two user manuals out of the ten user manuals analyzed contain no critical errors. Other prominent features of the researched translations include the repetition of errors found in the source text and a conspicuous lack of revision and proofreading.

In conclusion, clear, accurate and effective user manual translation is not only legally binding for manufacturers, but also a sign of professionalism and one of the key factors when expanding business internationally and becoming competitive on a foreign market, yet the importance of good translation for the end use experience, tentatively speaking, seems to be

overlooked in the translation of user manuals from Croatian into English. Furthermore, on the basis of the number of errors and their type, it may be concluded that the analyzed user manuals are not a result of a professional translation workflow. This, however, requires further investigation on a more robust corpus and with user manuals for products from more than one producer. Another potentially interesting topic related to user manual translation that the field of technical translation may benefit from is the process (as opposed to the product) of translation itself, in particular the participants and tools involved in the process of writing and translating Croatian user manuals intended for English-speaking markets. Such research would hopefully provide a clear idea of how and why such errors occur in the first place, as well as further raise awareness among producers about the importance of hiring trained professionals to take on the translation of user manuals.

8. References

Bolchover, David. 2012. *Competing across borders: How cultural and communication barriers affect business*. Report from the Economist Intelligence Unit. Available at: <https://www.observatoireplurilinguisme.eu/images/Economique_et_social/Economie_des_langues/competing-across-borders_en_reduit.pdf>.

Byrne, Jody. 2006. *Technical Translation: Usability Strategies for Translating Technical Documentation*. Dordrecht: Springer.

Byrne, Jody. 2007. Caveat translator: Understanding the legal consequences of errors in professional translation. *The Journal of Specialised Translation*, 7, 2-24.

Dewi, Haru D. 2015. *Comparing Two Translation Assessment Models: Correlating Student Revisions and Perspectives*. Kent: Kent State University.

Franco Aixelá, Javier. 2001-2020. *BITRA (Bibliography of Interpreting and Translation)*. Open-access database. Available at: < http://dti.ua.es/en/bitra/introduction.html >.

Franco Aixelá, Javier. 2004. The Study of Technical and Scientific Translation: An Examination of its Historical Development. *The Journal of Specialised Translation*, 1, 29-49.

Herman, Mark. 1993. Technical Translation Style: Clarity, Concision, Correctness. *Scientific and Technical Translation*, edited by Sue E. Wright and Leland D. Wright, John Benjamins Publishing Company, 11-19.

Kingscott, Geoffrey. 2002. Technical Translation and Related Disciplines. *Perspectives: Studies in Translatology*, 10, 247-255.

Lommel, Arle, Uszkoreit, Hans and Burchardt, Aljoscha. 2014. Multidimensional Quality Metrics (MQM): A Framework for Declaring and Describing Translation Quality Metrics. *La Revista Tradumàtica: tecnologies de la traducció*, 12, 455-462.

Lommel, Arle, Uszkoreit, Hans and Burchardt, Aljoscha. 2015. *Multidimensional Quality Metrics (MQM) Definition*. Available at: <http://www.qt21.eu/mqm-definition/definition-2015-12-30.html>.

Mariana, Valerie, Cox, Troy and Melby, Alan. 2015. The Multidimensional Quality Metrics (MQM) Framework: a new framework for translation quality assessment. *The Journal of Specialised Translation*, 23, 137-161.

O'Brien, Sharon. 2012. Towards a Dynamic Quality Evaluation Model for Translation. *The Journal of Specialised Translation*, 17, 55-77.

Olohan, Maeve. 2016. *Scientific and Technical Translation*. London and New York: Routledge.

Park, William M. 1993. Translating for the Small World. *Scientific and Technical Translation*, edited by Sue E. Wright and Leland D. Wright, John Benjamins Publishing Company, 101-107.

Pavlović, Nataša. 2015. *Uvod u teorije prevođenja*. Zagreb: Leykam international d.o.o.

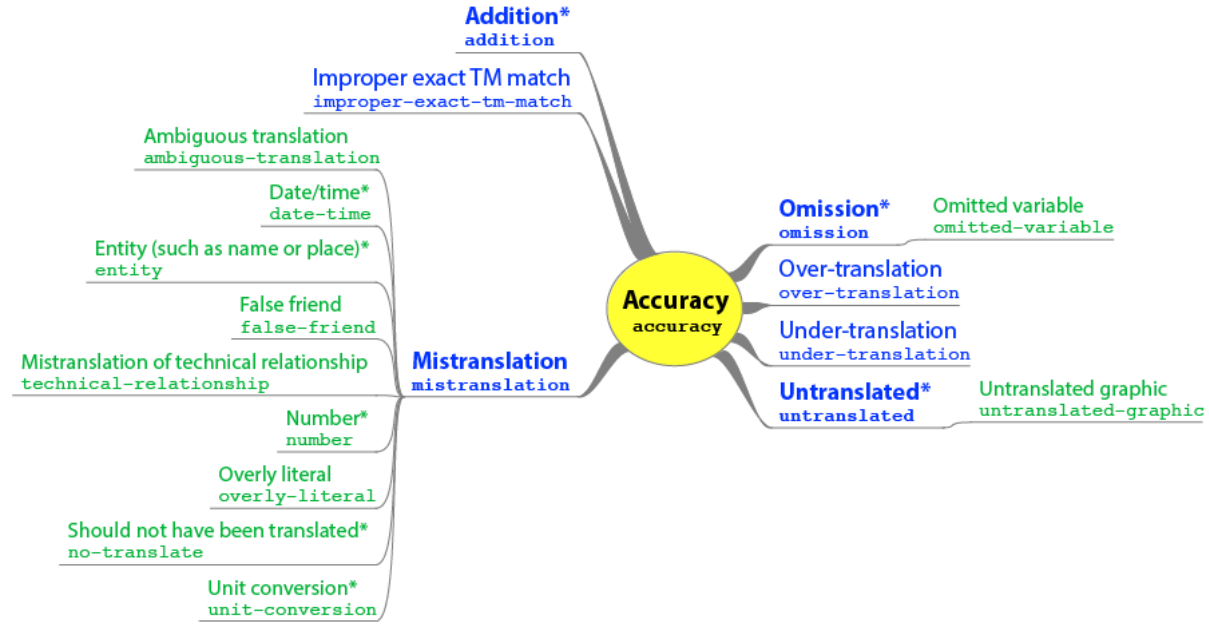
Pinchuck, Isadore. 1977. *Scientific and Technical Translation*. London: Andre Deutsch.

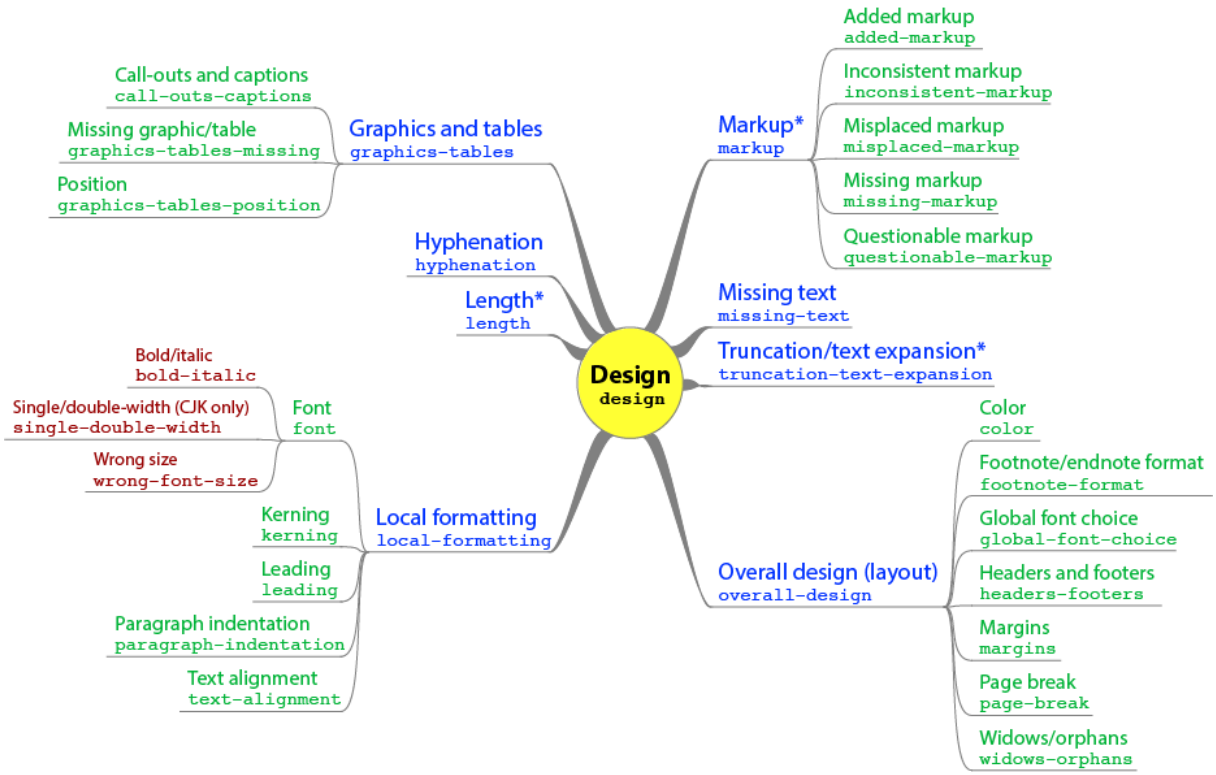
Tsai, Yvonne. 2014. Quantitative Analysis of Patent Translation. *The Journal of Specialised Translation*, 21, 52-70.

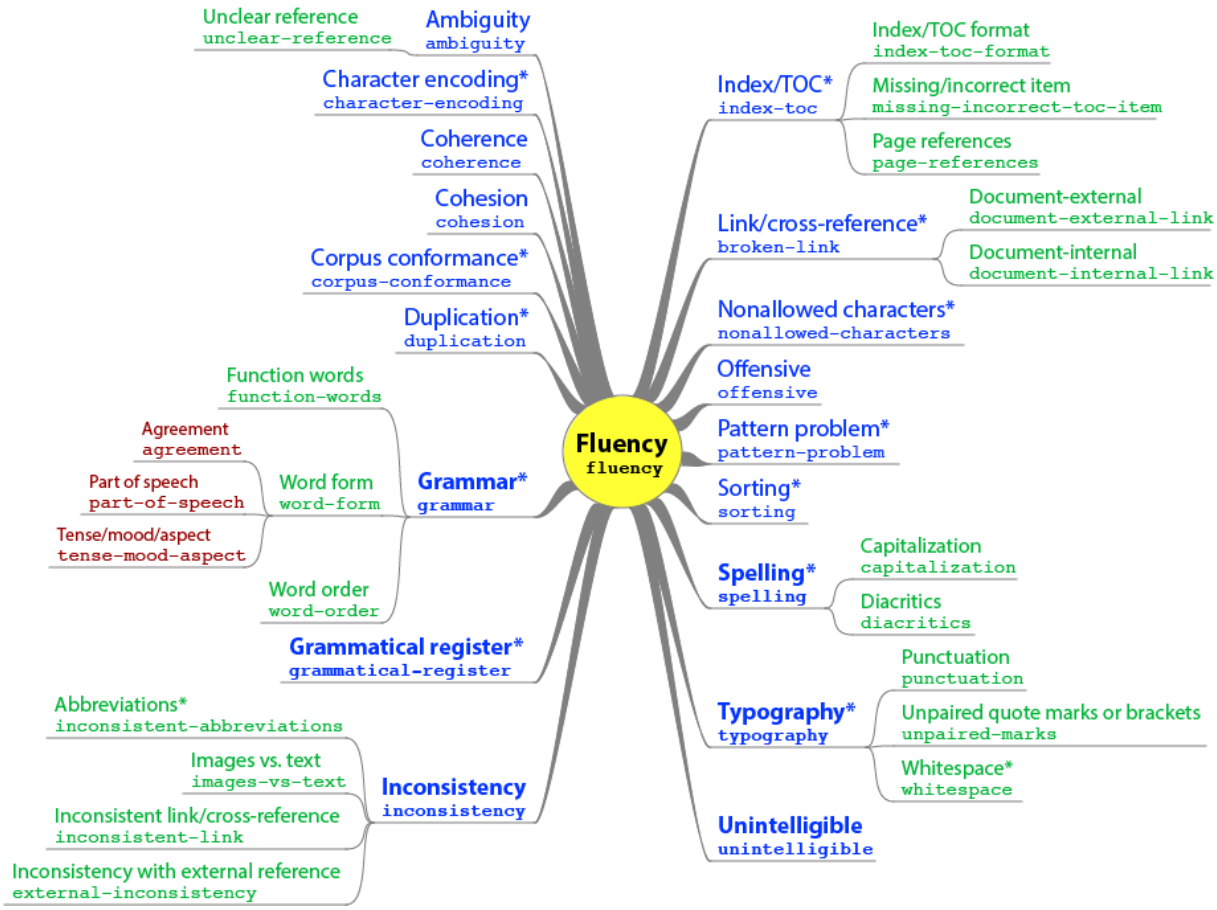
Vivax. 2020. Available at: <https://www.vivax.com/hr/brend-vivax.aspx>.

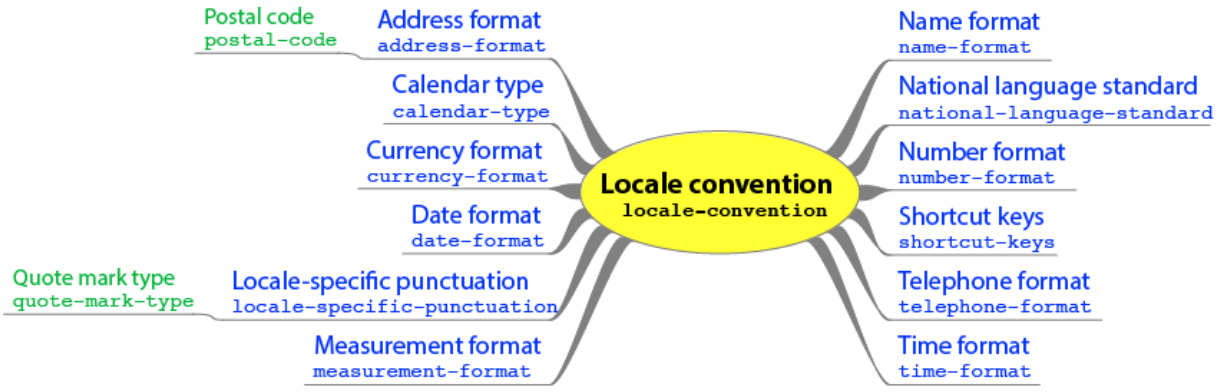
Williams, Malcolm. 2009. Translation Quality Assessment. *Mutatis Mutandis*, 1, 3-23.

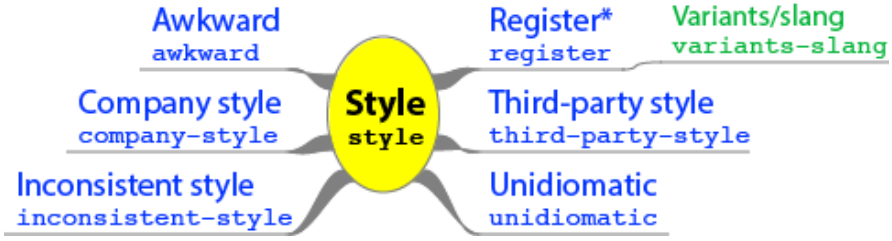
Appendix: Complete hierarchical list of all MQM categories

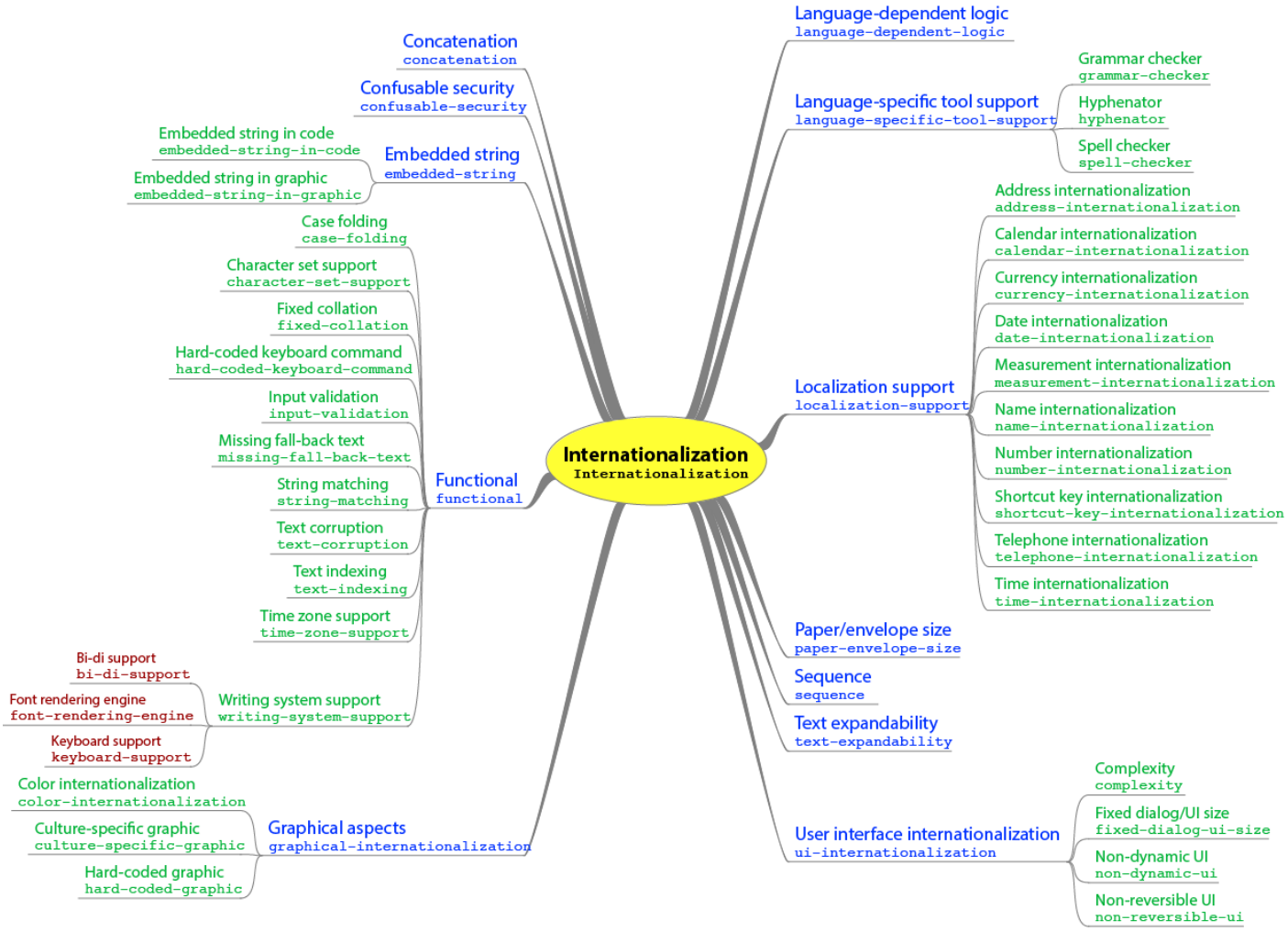


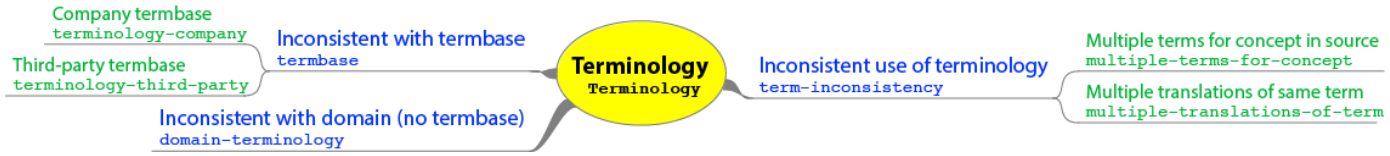



Fluency
fluency
Ambiguity
ambiguity
Unclear reference
unclear-reference
Character encoding*
character-encoding
Coherence
coherence
Cohesion
cohesion
Corpus conformance*
corpus-conformance
Duplication*
duplication
Grammar*
grammar
Function words
function-words
Word form
word-form
Agreement
agreement
Part of speech
part-of-speech
Tense/mood/aspect
tense-mood-aspect
Word order
word-order
Grammatical register*
grammatical-register
Inconsistency
inconsistency
Abbreviations*
inconsistent-abbreviations
Images vs. text
images-vs-text
Inconsistent link/cross-reference
inconsistent-link
Inconsistency with external reference
external-inconsistency
Index/TOC*
index-toc
Index/TOC format
index-toc-format
Missing/incorrect item
missing-incorrect-toc-item
Page references
page-references
Link/cross-reference*
broken-link
Document-external
document-external-link
Document-internal
document-internal-link
Nonallowed characters*
nonallowed-characters
Offensive
offensive
Pattern problem*
pattern-problem
Sorting*
sorting
Spelling*
spelling
Capitalization
capitalization
Diacritics
diacritics
Typography*
typography
Punctuation
punctuation
Unpaired quote marks or brackets
unpaired-marks
Whitespace*
whitespace
Unintelligible
unintelligible


Locale convention
locale-convention
Address format
address-format
Postal code
postal-code
Calendar type
calendar-type
Currency format
currency-format
Date format
date-format
Locale-specific punctuation
locale-specific-punctuation
Quote mark type
quote-mark-type
Measurement format
measurement-format
Name format
name-format
National language standard
national-language-standard
Number format
number-format
Shortcut keys
shortcut-keys
Telephone format
telephone-format
Time format
time-format


Style
style
Awkward
awkward
Company style
company-style
Inconsistent style
inconsistent-style
Register*
register
Variants/slang
variants-slang
Third-party style
third-party-style
Unidiomatic
unidiomatic


Internationalization
Internationalization
Concatenation
concatenation
Confusable security
confusable-security
Embedded string
embedded-string
Embedded string in code
embedded-string-in-code
Embedded string in graphic
embedded-string-in-graphic
Functional
functional
Case folding
case-folding
Character set support
character-set-support
Fixed collation
fixed-collation
Hard-coded keyboard command
hard-coded-keyboard-command
Input validation
input-validation
Missing fall-back text
missing-fall-back-text
String matching
string-matching
Text corruption
text-corruption
Text indexing
text-indexing
Time zone support
time-zone-support
Writing system support
writing-system-support
Bi-di support
bi-di-support
Font rendering engine
font-rendering-engine
Keyboard support
keyboard-support
Graphical aspects
graphical-internationalization
Color internationalization
color-internationalization
Culture-specific graphic
culture-specific-graphic
Hard-coded graphic
hard-coded-graphic
Language-dependent logic
language-dependent-logic
Language-specific tool support
language-specific-tool-support
Grammar checker
grammar-checker
Hyphenator
hyphenator
Spell checker
spell-checker
Localization support
localization-support
Address internationalization
address-internationalization
Calendar internationalization
calendar-internationalization
Currency internationalization
currency-internationalization
Date internationalization
date-internationalization
Measurement internationalization
measurement-internationalization
Name internationalization
name-internationalization
Number internationalization
number-internationalization
Shortcut key internationalization
shortcut-key-internationalization
Telephone internationalization
telephone-internationalization
Time internationalization
time-internationalization
Paper/envelope size
paper-envelope-size
Sequence
sequence
Text expandability
text-expandability
User interface internationalization
ui-internationalization
Complexity
complexity
Fixed dialog/UI size
fixed-dialog-ui-size
Non-dynamic UI
non-dynamic-ui
Non-reversible UI
non-reversible-ui


Terminology
Terminology
Company termbase
terminology-company
Third-party termbase
terminology-third-party
Inconsistent with termbase
termbase
Inconsistent with domain (no termbase)
domain-terminology
Inconsistent use of terminology
term-inconsistency
Multiple terms for concept in source
multiple-terms-for-concept
Multiple translations of same term
multiple-translations-of-term


Verity
verity
Lists
incomplete-list
Procedures
incomplete-procedure
Completeness
completeness
Culture-specific reference
culture-specific-reference
End-user suitability
end-user-suitability
Legal requirements
legal-requirements
Locale-specific content
locale-specific-content