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Exploring Scientific Jargon: Diverse Translation Theories for Conveying Computer Scientific Terms into Arabic

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Abstract

Translating computer scientific terms into Arabic represents a challenge that necessitates not only linguistic expertise but also a nuanced understanding of both source and target languages. Despite the increasing demand for accurate scientific translation in Arabic-speaking communities, the process is far from being simple. This study embarks on an exploration of scientific translation with a particular focus on computer scientific terms. It aims to identify the challenges encountered by translators and check if the application of translation theories is practical for creating new terms in Arabic. The study is significant as it addresses the pressing need for accurate scientific translation into Arabic language which contributes to the enhancement of communication and knowledge dissemination. An examination of various translation strategies helped to uncover the applicability of translation theories in this context. By scrutinizing the linguistic nuances, we seek to unravel the complexities inherent in translating computer scientific terms into Arabic. Findings not only shed light on the practical application of translation theories but also underscore the importance of context and domain-specific knowledge in achieving accurate and sensitive translations. Ultimately, this study contributes to the broader discourse on scientific translation by offering recommendations for enhancing the precision and fluency of computer scientific translation into Arabic, thereby facilitating the seamless exchange of knowledge across linguistic boundaries.

Keywords: Arabic terminology, computer science terms, methods, scientific jargon, solutions, translation theories

ملخص:

تمثل ترجمة المصطلحات العلمية الحاسوبية إلى اللغة العربية تحديًا لا يتطلب الخبرة اللغوية فحسب، بل يتطلب أيضًا فهمًا دقيقًا لكل من لغة المصدر واللغة الهدف.فعلى الرغم من الطلب المتزايد على الترجمة العلمية الدقيقة في المجتمعات الناطقة باللغة العربية، إلا أن العملية لازالت صعبة. تحاول هذه الدراسة الخوضفي مجال الترجمة العلمية مع التركيز بشكل خاص على المصطلحات العلمية الحاسوبية.وتهدف إلى تسليط الضوء على التحديات التي يواجهها المترجمون في هذا المجال المتخصص والتحقق من مدى فعالية تطبيق نظريات الترجمة في إنشاء مصطلحات جديدة إلى اللغة العربية. وقد ساعد الفحص لبعض استراتيجيات الترجمة المختلفة في الكشفعن إمكانية تطبيق نظريات الترجمة في هذا السياق. فمن خلال التدقيق في الفروق اللغوية، سعى البحث إلى كشف عن التعقيدات الكامنة في ترجمة المصطلحات العلمية الحاسوبية إلى اللغة العربية. لم تسلط النتائج الضوء على التطبيق العملي لنظريات الترجمة فحسب، بل أكّدت أيضًا أهمية السياق والمعرفة الخاصة بالمجال في تحقيق ترجمات دقيقة وحساسة.في الأخير، يساهم هذا البحث في الخطاب حول الترجمة العلمية من خلال تقديم توصيات قابلة للتنفيذ لتعزيز دقة وطلاقة الترجمة العلمية الحاسوبية إلى اللغة العربية، وبالتالي تسهيل التبادل السلس للمعرفة.

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Introduction

A correct translation is the ultimate goal of all translators. This task can be challenging because words carry meanings related to society, culture, and religion, which can be difficult to understand. The same applies to translating scientific terms because they are holders of concepts that need a constant check-up on the domain that they belong to. They also need a deep look at how they are created (Arbitrary or non-arbitrary, reasoned by convention and sound symbolism). However, the creation of terms can sometimes be as simple as moving from everyday language to LSP, such as the word script, which means handwriting as distinct from print; written characters.'' It also means in computing'' an automated series of instructions carried out in a specific order.'' It can mean in psychology '' the social role or behavior appropriate to particular situations that an individual absorbs through cultural influences and association with others''.

The same idea is demonstrated by Hijazi (1993) "A word can shift from common Language to specialized language carrying with it a new meaning, a new concept and will hold terminological dimensions'' (p 15). The expression every term is essentially a word, but not every word can be considered a term can be related to Hijazi (1993) idea, as he explains how it is possible for words to gain a terminological dimension, but it won't be the same for terms that were created amid specialized subjects to be words and ready for common usage. Besides that, translating a term or choosing the right concept can be very delicate and crucial to the product. Prior Arab linguists were very aware of this problem and paid a lot of attention while choosing the adequate terms that fit the description of their concepts.Shahin(2007) pointed out this matter while describing the translation works of medical and chemical terms from Greek to Arabic by Hunayn, who made an apparent effort to carefully choose the right Arabic words that became one of the constituents of the Arabic medical legacy. He, therefore, presented to the generations to come terms that are used with their original concepts, up to this day (p.103).

Ancient Arab translators had two significant ways of translating consequential texts from other languages into Arabic. The first was a word-for-word translation, and the second way was a sense-for-sense translation. These two ways of transferring magisterial works are mentioned by Souci (1989), who pointed out that the first one was ineffectual due to the lack of sense and incapability of producing a coherent text neither in Arabic nor in foreign languages, besides the absence of the beauty of aesthetic, free of all grammar and does not result in a good translation. In the second way, the translator reads the text carefully, understands its meaning, and then translates it into Arabic. This approach is effective, particularly in translating medical and logical texts (p. 16). Hunayn favored the second method for its efficiency; he used to carefully look for an Arabic term that was equivalent to the Greek one.

In today's digital age, with the increasing use of technology, there is a critical need for quick and efficient translation methods to accurately translate computer applications and terminology from English to Arabic. This study aims to examine the main translation theories and methods that apply to translating computer scientific terms into Arabic. By digging into theoretical frameworks, this inquiry tries to discern the most effective approaches for accurately conveying the nuances of specialized terminology across linguistic boundaries.

Secondly, we investigate the linguistic challenges inherent in translating computer concepts into Arabic and examine their implications for translation accuracy. The scope of this research encompasses a comprehensive review of existing translation theories, translation practices in computer science, and an analysis of linguistic factors influencing translating specialized terminology. It will help address these challenges that require a nuanced understanding of translation theories and methodologies, as well as a recognition of the linguistic richness and cultural diversity inherent in both languages. By exploring diverse translation theories and methodologies, this research aims to provide insights and recommendations for overcoming these challenges and achieving accurate translations of computer scientific terms into Arabic. Through its contribution to enhancing communication and accessibility in the digital realm, this research holds significant potential to trace a path for Arabic-speaking individuals and communities to create their terminology in computer science.

Few objectives emerge from addressing the challenges in translating computer scientific terms from English to Arabic. Firstly, it seeks to comprehensively review and evaluate existing translation theories and methodologies relevant to this domain. Secondly, this study tries to identify and propose practical strategies for overcoming translation barriers encountered in the process, with a specific focus on achieving linguistically accurate translations. Finally, this study aims to contribute to the professional development of translators, educators, and practitioners involved in the translation of computer scientific terms into Arabic by offering recommendations and best practices derived from the findings of this research by examining various theoretical frameworks and putting them into practice. They will identify if those theories are effective approaches for bridging the linguistic gaps.

To guide this investigation, the study poses two primary research questions.

1. Can translation theories and methodologies be relevant to the translation of computer scientific terms into Arabic?
2. What linguistic challenges arise in translating specialized computer terminology into Arabic, and how do they impact translation accuracy?

To explore the application of translation theories in translating computer terms into Arabic, a practical methodology was implemented. A variety of computer terms were chosen randomly and translated using different translation theories, particularly those advocated by Vinay, Darbelnet, and other scholars. This approach aimed to provide empirical evidence on the applicability of translation theories in practice and contribute to developing effective translation strategies for Arabic.

Literature Review

Translating technical and scientific terms, particularly in the field of computer science, presents a significant challenge for translators due to the specialized nature of the terminology. In recent years, there has been a growing interest in exploring the methodologies and strategies employed in translating such terms into Arabic, aiming to overcome linguistic barriers and ensure accurate communication.

One critical aspect of translating technical terms is the application of translation theories, which provide frameworks for understanding the process of translation and guiding the selection of appropriate strategies. Studies such as the one by Madan (2016) have

examined the challenges faced by translators in translating computer science texts into Arabic and the effectiveness of various translation theories in addressing these challenges. Her study has highlighted the importance of derivation in the translation process and has proposed strategies for enhancing the accuracy and fluency of translations.

Additionally, research by Elgobshawi (2022) has assessed learners' preferences and attitudes towards translated and Arabized computer terminology. It addressed the obstacles of Arabic scientific terminology and how these obstacles affected learners. These studies have emphasized the role of context and domain-specific knowledge in achieving accurate translations and have identified best practices for translators working in this field.

Furthermore, the work carried out by Saleh (2023) is considered a comprehensive work that addresses the issues of using computers in the service of the Arabic language. He addressed various topics. The most important ones were the use of computers in teaching the Arabic language, and in machine translation and computer-assisted translation, including the role of artificial intelligence in translation from and into Arabic, in addition to the automatic Arabization of foreign names. He also addressed the uses of computers in lexical research, dictionary making, and the study of scientific terminology and publishing them in the form of automated term banks. He concludes with studies on the use of computers in linguistic research and the creation of linguistic corpora.

Overall, the literature on translating computer scientific terms into Arabic provides a comprehensive overview of the challenges, methodologies, and best practices in this field. By integrating theoretical insights with practical case studies, researchers can contribute to the development of more accurate and culturally sensitive translations, ultimately facilitating the exchange of knowledge and innovation across linguistic boundaries.

Translating Scientific Terms Using Vinay and Darbelnet Techniques

In modern times, Arab translators generally pursue several techniques in translating scientific terms, some of which emerged after the development of linguistics and the independence of translation as a science. In the early 1960s, a book titled 'Comparative Stylistics of French and English' authored by Jean Darbelnet from France and Jean-Paul Vinay from Canada identified seven methods of translation. These techniques are used in all languages and among the translators. The procedures are in two parts:

- Direct Translation
- Indirect Translation

Direct Translation

It consists of three techniques. They are as follows:

Borrowing

It's a translation method that's simple and easy for translators to employ. It involves directly adopting words from the source language in their original form. The identical word or term found in the original text is also copied in the target text.

Frequently used in specialized languages because many terms that exist in one language aren't found in others, the solution is to borrow the word directly into the target language while conveying its concept. Bayer (2007) identifies it as follows:

> Borrowing in translation is not always due to a lexical shortage of the target language; however, this approach is employed to maintain the unique essence of a word within its local context or out of concern for losing the nuanced cultural and semiotic aspects

of the word during translation. (p. 68)

This quote emphasizes that borrowing isn't just a result of a lack of equivalent words in the target language, but rather a deliberate choice to preserve the unique essence and cultural nuances of a word within its local context.

Below is a table presenting illustrative examples

Table1.*Examples of borrowing*

Arabic	To English	English	To Arabic
الجبر	Algebra	Technology	تكنولوجيا
شيفرة	Cipher	Windows	ويندوز
وورد	Word	Ms-Dos	أم أس- دوس
صفر	Zero	Automatic	أتوماتيكي
الخوارزمية	Algorithm		

Calque

This technique is similar to borrowing, where phrases are directly lifted or transferred from the source to the target language. Vinay and Darbelnet categorized this approach into two types of calques:

Calque of Expressions

The intention is to copy expressions, structures, and conventions from one language to another, such as:

Table 2.*Calque of expression*

English	Arabic
Time Machine	آلة الزمن.

Structural Calque

It involves Introducing a new linguistic structure into the target language, such as:

Table 3.*Structural calque*

English	Arabic
Techno-Functional	تكنو- وظيفي

Literal Translation

It is a translation technique focusing mainly on recreating the same verbal or written product. This method is known as meta-phrase or word-for-word translation. Typically, translating directly word for word from one language to another results in a meaningless translation, rendering such efforts futile. However, Vinay and Darbelnet advocate for literal translation that leads to a coherent and meaningful text. This approach can be beneficial for technical texts or when dealing with languages closely related in cultural terms.

Table 4. *Literal translation*

English	To Arabic
-The computer stopped.	- توقف الكمبيوتر.

In this context, literal translation doesn't just mean translating word for word but extends to translating sentence for sentence. Newmark(1988 c) elaborates that “Literal translation ranges from one-word to one-word, through group to group, collocation to collocation, clause to clause, to sentence to sentence” (p. 69).

Indirect Translation

Transposition

The technique known as transposition involves replacing one word with another while maintaining the intended meaning of the message. Beyond its role as a translation strategy, transposition can also be applied within a single language (Vinay & Darbelnet, 1995, p. 36).

In general, there is a transformation of grammatical classes from the original text to the target text. The same idea was supported by Catford (1978), who used the term “shift” to define it as: 'The deviations from literal correspondence when transitioning from the source language (SL) to the target language (TL),' and categorize these deviations as level shifts and category shifts (Venutti, 2003, 141). Newmark (1988) also says: "Shift reflects the grammatical adjustments made during translation from the original language to the target language" (p. 84). Word categories often change when translators prioritize meaning over literal translation. The Target Text is poorly produced if the translator’s primary concern is the grammatical structure. In their analysis, Vinay and Darbelnet identified two types of Transposition:

Obligatory Transposition (Compulsory)

This form of transposition is employed when the target language lacks an equivalent expression or cannot convey the meaning of the original language."

Table5.*Obligatory transposition*

To English	To Arabic
As soon as the computer starts.	بمجرد اشتغال الكمبيوتر. مع اشتغال الكمبيوتر. مع انطلاق الكمبيوتر.

In the Arabic language, we could give three options for the same meaning (grammatically changed structures), but in English, there's no choice between the two forms; the base form is the only possibility" (Vinay & Darbelnet, 1995, p.36).

Table 6.*Obligatory transposition*

To English	To Arabic
-The engineer boosts the performance of the computer. - The engineer gives the computer a performance boost.	ـ يعزّز المهندس من اداء الكمبيوتر.

Like the first example, English could offer two options for the same meaning (structures with grammatical changes), whereas Arabic only allows one possible form.

Optional Transposition

It is the opposite of the first type, used when the target language can provide more than one corresponding translation of the original text.

Table7. *Optional Transposition*

English	To Arabic
After it initiates. After its initiation.	بعد أن يقلع. بعد اقلاعه.

All of the above translations match. No matter what language the source is, the translations remain correct. Translators can choose between keeping the same structure and changing it in the target language.

Table 8.*Optional transposition*

To English	To Arabic
Technology interests all of us.	التكنولوجيا تهمنا جميعاً.
	تهمنا التكنولوجيا جميعاً.
Technology is of interest to all of us.	التكنولوجيا ذات أهمية لنا جميعا.

The comment is the same here, but Arabic has more translation options. It can change the sentence structure from subject-verb-object to verb-subject-object or into a prepositional phrase.

Modulation

Vinay and Darbelnet(1995) describe modulation as a shift in the message achieved by altering the perspective. The change is warranted when a literal or transposed translation yields grammatical correctness. It is deemed inappropriate or cumbersome in the target language (p. 37). It is a complete structural or stylistic change performed on the Target text. In other words, it is a form of expressing the same message differently. Modulation vividly demonstrates the distinction between word-for-word translation and a translation that preserves coherent meaning. It empowers the translator to introduce aesthetic elements while maintaining the essence of the original message. Nonetheless, this often results in differences between the Source Text (ST) and the Target Text (TT) sentences. Hardin and Picot (n.d.) define modulation as "A change in the point of view that allows expressing the same phenomenon differently" (p. 21).

Modulation facilitates the shift from abstract to concrete, from specific parts to the whole, or from cause to effect. Vinay and Darbelnet outlined two types of modulation:

Optional Modulation (free)

The translator is free to create the target text in any manner they choose, as long as they maintain the original meaning. The sentences' structures are less important compared to the meaning. Moving from the original to the target language shall create the same sense. Both English and Arabic can produce the same sentence structure or present different ones while retaining the same meaning.

Obligatory Modulation (Fixed)

In contrast to the first modulation type, the translator has no choice but to find an equivalent in the target language. Vinay and Darbelnet (1995) believe that translators proficient in both the source and target languages can effectively utilize fixed modulation. They argue that such translators understand the expression's frequency of use, its general acceptance, and the support provided by dictionaries or grammars for the preferred expression (p. 38).

Table 9. *Fixed modulation*

English	To Arabic
Deep blue screen.	معطّل

If the translator focuses on the structure of the French sentence and tries to literally translate it into English or Arabic, it won't make any sense. Fixed Modulation is necessary to create a meaningful sentence and an understandable TT.

Equivalence

Expressing the same situation in two different styles, but equivalent in terms of meaning rather than linguistic or structural level. This translation technique creates a TT expressing the same reality using a completely different semantic structure. Therefore, we find the use of equivalence dominant in translating names of institutions, machinery, new technological products, and terms.

Adaptation

This technique is employed when the situation referred to in the source language is unfamiliar in the target's language culture. The translator modifies the original text to ensure that the target text's reader can grasp its meaning. Translation involves more than just transferring words, terms, and phrases; it also involves conveying aspects of civilization and culture. When translators encounter a target language message that may lack meaning, they can adapt it by finding an equivalent with the same meaning.

Ways of Translating Scientific Terms According to Different Schools

The techniques created by Vinay and Darbelnet are well-known among Arab Translators because of their simplicity in conveying vocabulary, terminology, and speech. However, these procedures are not the only ones in translation. Several theories differ according to the schools of their founders. We recall among them:

Catford Theory

Arab translators use Catford's techniques in translation to find suitable equivalents for scientific terms in Arabic. In his book "A Linguistic Theory of Translation", Catford (1978) delves into the intricacies of the translation method. He argues that translation involves replacing a text in one language with a text in another language. A theory of translation must draw upon a theory of language (p.01). Catford introduces numerous techniques for translation grounded in linguistics including:

Phonological Translation

Catford (1978) described phonological translation as a form of restricted translation in which the phonology (sound system) of the source language text is replaced by the equivalent phonology of the target language. The grammar and vocabulary of the source language text remain unaltered, except for any incidental grammatical or linguistic deviations that may occur during the process (p. 56). This definition is of most interest to Arab translators because most scientific terms are translated by Borrowing, besides keeping the same phonological order. It is a type of combination between phonological Translation and borrowing.

Table 10.*Phonological translation*

English	To Arabic
Technology	تقانة
Technique	تقنية
Bluetooth	بلوثوت

Graphological Translation

Catford (1978) defines graphological translation as a form of restricted translation in which the graphical features (such as layout, font, and formatting) of the source language text are replaced with equivalent graphical features in the target language. The criterion for equivalence lies in their relation to the same visual elements. Discussing graphological translation poses more significant challenges than phonological translation because we lack a

systematic theory of visual elements, or "general graphemes," from which to derive categories for describing these graphical features (p. 62).

Table 11.*Graphological translation*

English	To Arabic
A+	أ موجب
B+	ب موجب
C++	سي ++
X	س

The above English terms are translated to calligraphically equivalent terms with close phonology. In general, most people agree that a term used in a particular subject means something else in other subjects.

Nida's Theory

Nida is known for two approaches. He favored the concept of equivalence. (1) Formal equivalence and (2) dynamic equivalence

Formal Equivalence

The translator is interested in the original form and grammar of the source text. They focus on the form of the message. Nida emphasizes that in formal equivalence, the primary aim of the translator is to achieve a high degree of similarity between the original and translated texts, particularly in terms of their linguistic structures. According to Nida, "Formal equivalence focuses on the message itself, in both form and content. In such translation, one is concerned with such correspondences as poetry to poetry, sentence to sentence, and concept to concept. Viewed from this formal perspective, the translator ensures that the translated message closely matches the various elements of the original message. This entails constant comparison between the message in the target culture and that in the source culture to uphold standards of accuracy and correctness (Nida,1964 a, p. 159).

Dynamic Equivalence

In this form of equivalence, the emphasis is on the meaning conveyed by words, sentences, or expressions in the source language, which is then transferred to the target language accordingly. The success of the translation is gauged by how the reader of the target text experiences a similar response to that of the reader of the source text. Transferring the proper message to the audience and having the correct response is the most important while using this technique. Messages need to be understood and appreciated by the targeted audience. Translators reach high translation quality only if the response of the Target text readers is similar to that of the Source text readers. Nida (1964) suggests that in formal equivalence, the focus is on the response of the target audience. A dynamic equivalence is when a bilingual and bicultural person says, 'That is just how we would say it!' However, it's essential to understand that dynamic equivalence translation is not merely another message that is more or less similar to the source's. It is a translation and must reflect the meaning and intent of the source.

Peter New Mark's Theory

Newmark attempted to develop methods that applied to a wide range of texts. He devised eight procedures that he believed were suitable for any type of text, categorizing them into two groups: source language-oriented methods and target language-oriented methods.

Table12.*NewMarks approaches*

SL emphasis	TL emphasis
Word-for-word translation	Adaptation
Literal translation	Free translation
Faithful translation	Idiomatic translation
Semantic translation	Communicative translation

Peter Newmark provides the following explanation:

SL Emphasis Methods

Word for a Word Translation

This method involves a literal translation, maintaining the same word order as the source language. It's often shown as interlinear translation, with the target language immediately below the source language words. Translators translate cultural words literally. This method is used either to preserve the structure of the source language or to address a difficult text before undertaking a full translation.

Literal Translation

In literal translation, grammatical structures of the source language are converted into their closest equivalents in the target language, while lexical words are translated individually and out of context. This method is used as a preliminary step to identify potential translation issues.

Faithful Translation

Faithful translation aims to convey the exact contextual meaning of the original text within the constraints of the target language's grammatical structures. It preserves cultural nuances and deviations from the source language norms, staying true to the author's intentions and the text's realization.

Semantic Translation

Similar to faithful translation, semantic translation focuses on conveying the precise contextual meaning of the original text. However, it places more emphasis on maintaining the aesthetic value of the source language text, ensuring that the translation sounds natural and pleasant. It may compromise on literal meaning to avoid jarring effects in the target language.

TL Emphasis Methods

Adaptation

This method allows great freedom in translation. It is suitable for plays and poetry. It preserves the themes, characters, and plots of the original text while adapting to the culture of the target language.

Free Translation

Free translation reproduces the content of the original without adhering closely to its form. It often results in a more extended paraphrase that may deviate significantly from the original text, sometimes to the extent of being considered an intra-lingual rather than an accurate translation.

The Idiomatic Translation

The Idiomatic translation aims to convey the message of the original text. It may distort nuances of meaning by favoring colloquialisms and idioms that may not exist in the source language.

Communicative Translation

Communicative translation focuses on conveying the exact contextual meaning of the original text in a way that is easily understandable and acceptable to the target audience, both in terms of content and language.

Challenges Encountered while Translating Scientific Terminology

The translation of scientific terminology requires a specialized translator whose main goals are objectivity, accuracy, and honesty. There is no room for free action here. This type of translation should be dealt with carelessly because each term holds a scientific concept and only experts know its real meaning. This unique language is distinguished first and foremost by its special terminology. The growing complexity of technical content and specialized knowledge, along with the interconnections between specialist fields, requires more accurate specialist communication. For these reasons, translators should always be in contact with specialists while working on terminology that needs lengthy research.

Moreover, translators translating terms from SL to TL are somehow considered creators of terms in their language of origin. The translator's goal in employing suitable practices and methods is to create and deliver a fitting translation while cataloguing terms alongside their definitions and contexts for future reference. While the translator may utilize principles of terminology for resolving translation issues related to terminology, their primary focus is not on defining terminology itself. Felber (1989) believed that specialists are the only ones qualified to define terms relevant to their fields of specialization and to evaluate these definitions, as no one else understands the elements of their subject or its specific ideas.

Indeed, new or nascent terms are terms that did not exist in Arabic before. They are a pure creation of foreign specialists who give them a name and a concept. Many translators struggle to find equivalents for these terms, leading them to either borrow them or translate their concepts rather than the terms themselves. We should note that these problems are ordinary in most languages. However, the origin of the Arabic language (Semitic) makes it a bit difficult to find close translations to those of Latin origins. The Russian linguist Fedorov (2021) mentioned multiple difficulties:

1. The term is a new vocabulary that doesn’t exist in the target language. If it does exist, it won’t be as close to the original one. It is often incomplete and does not give the same concept as in its native language. (Computer- ordinateur -حاسوب و كمبيوتر بالعربية)

2. In specialized languages, it is understood that each concept should be defined by a single term. However, many target languages lack this clarity, with several ideas being defined by the same term.

Table 13.*Multiple Terms for one concept*

English	To Arabic
Cache	ذاكرة انتقالية الاحتفاظ بنسخة للوصول السريع الذاكرة المؤقتة إنتقالى تخزين مؤقت

Fedorov (2021) thinks that borrowing is the optimal solution to this problem. He believed that most translation challenges arise from linguistic issues; therefore their solutions should also be linguistic in nature (p. 51).

Newmark (1988 c) links problems of translation with cultural aspects. He believes that the translator cannot convey written texts entirely because each text has elements that link it to its environment and culture, therefore all translations are approximate (p. 56). On the other hand, Nida (1964b) believed that translators should analyze the surface structure to reach the deep structure, which is often overlooked by many translators (p. 62).

Other challenges can be related to the rapid technological advancements and cultural exchanges between nations, leading to a significant increase in the quantity of terms and vocabulary. All languages, including Arabic, seek to convey these terms to cope with this development and cultural contact. They have ways to derive or translate them.

The previous reasons are just the tip of the iceberg. The complexity of translating scientific terms into Arabic extends beyond the lines of this article. The unification of the Arabic scientific term is something that arab translation committees are working hard to fulfill, not only recently, but it has been a problem ever since its peak. Drawing from the insights gained from this study, we can propose several recommendations to optimize the translation of computer scientific terms into Arabic. Firstly, translators are encouraged to use theories like Vinay and Darbelnet's and other relevant translation theories to help them translate better and make their translations more consistent and coherent. However, given the inherent variability in the Arabic language and the potential for multiple equivalents for each translated term, translators should prioritize context and domain expertise in selecting the most appropriate translation equivalents. Additionally, the development of specialized glossaries and terminology databases, informed by linguistic research and domain-specific knowledge, can aid translators in navigating the complexities of translation and ensuring.

Conclusion

This study has explored diverse translation theories and methodologies, with a particular focus on the applicability of theories such as those proposed by Vinay and Darbelnet, in enhancing the translation of computer scientific terms into Arabic. Through a comprehensive review of theoretical frameworks, as well as an analysis of linguistic factors influencing the translation process, this research has shown how different theories can be used to handle translation in this area. However, it has also become evident that the translation of computer scientific terms into Arabic often results in multiple equivalents for each translated term, reflecting the richness and diversity of the Arabic language. This highlights how important it is to consider context and expertise in choosing the right translations, and shows why we need to keep researching and improving translation methods to deal with language differences and subtle meanings.

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