



The Study of English-Arabic Translation Analysis of Genetically Modified Food: WHO Website Reports as a Case Study

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ABSTRACT

The study examines English-Arabic translation analysis of genetically modified (GM) food terminology, taking World Health Organization (WHO) website reports as a case study. The research aims to examine translation accuracy, linguistic issues, and cultural problems in conveying scientific information on GM foods from English to Arabic. Applying Vinay and Darbelnet's model of translation analysis on the basis of direct and oblique approaches to translation, this study examines the degree to which WHO's reports are successful in communicating specialized terminology in Arabic. The research addresses main questions: What are the key problems in translating GM food terms from English to Arabic? How do cultural and linguistic differences impact the translation's accuracy and comprehensibility? And to what extent can the translated text maintain the intended meaning and tone of the original? Findings from this study can go towards the improvement of the clarity and effectiveness of Arabic scientific communication, especially of GM foods, by uncovering frequent pitfalls and providing guidelines for better translation practices.

Introduction

Global communication about scientific matters has become increasingly imperative, especially for topics like genetically modified (GM) foods that have profound health, environmental, and ethical implications. As one of the major international sources of health information, the World Health Organization (WHO) has the duty to provide trustworthy, comprehensible information to a global audience marked by diversity (World Health Organization, 2020). For the Arab nations, accurate

and culturally suitable translations are required so that the scientific knowledge communicated is aligned with both linguistic correctness and cultural suitability (Baker, 2018). However, translation of scientific terminology, especially on complex subjects like GM foods, is confronted with enormous challenge due to lexical gaps, inconsistencies in technical terminology, and the connotative meanings that may alter across linguistic and cultural borders (Al-Khanji, 2024). This study deals with the English-Arabic translation analysis of GM food terminology in WHO reports. It adopts Vinay and Darbelnet's model of translation analysis, which draws a line between direct and oblique methods of translation, to facilitate how scientific terminology is altered or adapted during translation in a systematic way (Vinay & Darbelnet, 1995). Because accurate translations are crucial both to scientific literacy and to public understanding, this study addresses three primary questions: What are the major translation problems? How do linguistic and cultural differences impact the translation's accuracy? And in what ways is the translated text faithful to what the original passage was trying to convey? By responding to these inquiries, this research contributes to the overall field of translation studies and aids in enhancing the coherence and effectiveness of scientific writing in the Arab region (Hatim & Mason, 1997).

Statement of the Problem

In the last several years, the communication of scientific information regarding genetically modified (GM) foods has been increasingly important as these matters have serious health, ethical, and environmental implications. However, the translation of scientific terminology from English to Arabic, particularly for complex subjects like GM foods, is beset with significant problems. Previous studies indicate that linguistic and cultural disparities may hamper the translation accuracy and intelligibility of scientific literature, and this could impact public understanding and acceptance. Being a leading source of health information, the World Health Organization (WHO) must ensure its research is rendered in a way that is linguistically correct but also culturally appropriate. This study tries to address the problem of mistranslating WHO English reports on GM foods into Arabic, using Vinay and Darbelnet's model to examine the accuracy and cultural appropriateness of such translations.

Research Questions

1. What are the key linguistic and technical problems in English-Arabic translation of GM food terms in WHO reports?
2. How do cultural and linguistic disparities influence the accuracy and comprehension of GM food information in translation?
3. To what extent do the translations retain the intended meaning, tone, and communicative purpose of the original WHO reports?

Limits of the Study

This study is limited to English-Arabic translation analysis of WHO reports alone on GM food terms. The scope is limited to the WHO website as the source of material, and it examines only the language, accuracy, and cultural appropriateness of the translations according to Vinay and

Darbелnet's model. The study does not examine other organizations' translations or on other scientific topic areas, nor does it examine reader reception or translation effectiveness among Arabic readerships.

Significance of the Study

The study findings are likely to contribute to translation studies by enhancing knowledge about the specific problems involved in the translation of scientific text on GM foods from English to Arabic. By using the case study of WHO reports, the study establishes translation issues that have the potential to hinder scientific knowledge and literacy in the Arab world, particularly concerning GM foods. The study also aims to make recommendations to enhance translation practice, thus enabling more effective and culturally suitable communication of scientific knowledge in Arabic (Al-Khanji, 2024; Montalt & Davies, 2007). The study may benefit translators, translation educators, and institutions involved in international scientific communication by revealing ways of solving common translation issues.

Literature Review

Translation of scientific terms, especially in new fields such as genetically modified (GM) foods, has been under broad examination in translation studies due to the linguistic, cultural, and technical challenges they pose. The complexity of translating scientific content from one language to another, for instance, English and Arabic, which are structurally and lexicographically very different languages, has prompted extensive research. Studies indicate that the accuracy of translation is extremely important in scientific texts, where minor discrepancies can alter the meaning and influence public understanding (Montalt & Davies, 2007). This literature review deals with key theories and current studies of translation strategies with a focus on Vinay and Darbelnet's model application, cultural and linguistic problems in translating GM food terms, and English-Arabic translation issues.

Vinay and Darbelnet's framework, which categorizes translation methods as direct (literal) and oblique (adaptative) strategies, provides a systematic approach to analyzing translation decisions, especially in fields where terminology must be loyal but also communicative (Vinay & Darbelnet, 1995). Direct methods tend to be used for technical or general scientific terms, while oblique strategies allow for adaptation to cultural contexts or linguistic constraints. Previous studies of technical translations have highlighted the applicability of this model in bridging the linguistic gaps with no loss of meaning, particularly when translating across structurally diverse languages.

Literature has also indicated some problems in translating GM food-based terminologies because these topics have a tendency to include new scientific terms that lack any or have minimal direct equivalent in Arabic (Baker, 2018). Emphasizes that Arabic translators must use loanwords, calques, or descriptive phrases to render such words, which could lead to inconsistency or loss of precision. Such lexical gaps present tremendous challenges, as emphasized by Shiyab (2006), who points out that scientific translation must have both linguistic correctness and cultural appropriateness if it is to render translations intelligible and acceptable to the target language community.

In addition, cultural elements that influence term choice as well as reader receptiveness are entailed in English-Arabic translation of GM food topics (Al- Khanji, 2024). Due to religious, ethical, and social views regarding GM foods in the majority of Arabic-speaking countries, translators not only ought to be precise but also sensitive to cultural sensibilities in GM food messaging. This aspect is crucial for organizations like WHO, as their reports are intended for a wide, multicultural audience, and culturally offensive terminology could be an obstacle to efficient communication or even provoke public outrage (Hamed, 2023).

This literature review shows how crucial accurate and culturally appropriate translation of GM food terminology is as a component of scientific communication in Arabic. By using Vinay and Darbelnet's model, this study seeks to bridge current linguistic and cultural gaps in English-Arabic translations, providing a systematic study that can enhance the clarity and effectiveness of subsequent translations.

Background of the Study

In the era of globalization, the clear communication of scientific facts across linguistic and cultural boundaries is essential. It is particularly crucial in fields like nutrition and health, where the public's understanding of scientific issues—like genetically modified (GM) food—has health, ethical, and policy ramifications. Being a premier global health information source, the World Health Organization (WHO) publishes reports and publications to educate and inform diverse groups of people. These must be translated correctly into multiple languages, including Arabic, to be comprehensible and culturally appropriate for non-English-speaking populations (Hamed, 2023).

Scientific terminology translation has its own set of challenges due to the specificity and technicality of the language involved. In the context of GM foods, these are compounded by the generally controversial nature of the subject matter, as it varies from culture to culture. In Arabic, which has its own rich lexical heritage but fewer existing scientific terminology for emerging technologies, translators often grapple with terms that do not sacrifice meaning or accuracy (Baker, 2018). This lexical gap can lead to confusion or even misinformation, as words are mistranslated or do not connect culturally.

Translation theorists Jean-Paul Vinay and Jean Darbelnet (1995) provide an answer to mitigate these types of problems by providing a classification for translation techniques in direct (literal) and oblique (adaptative) approaches. This model helps to figure out how translators can balance fidelity to the source text with revision necessary to meet the linguistic and cultural demands of the target audience. While studies have touched on general technical translation problems, none of them specifically handle GM food terminologies in WHO reports—a knowledge gap this project aims to address. By investigating the translation of WHO reports from English into Arabic, this study uncovers the translation issues that influence the comprehension and public reception of scientific information in the Arab region.

Methodology

The study employs a qualitative method to analyze the English-Arabic translation of genetically modified (GM) food vocabulary in World Health Organization (WHO) reports. The research is carried out as a case study to gain an in-depth understanding of translation methods and challenges

in a context-rich setting. Based on Vinay and Darbelnet's translation analysis model, which includes both oblique (adaptative) and direct (literal) forms of translation, this research aims to analyze systematically the effect of translation choices on meaning and cultural suitability (Vinay & Darbelnet, 1995).

Data Collection

The key sources of this study are selected WHO publications on GM foods, particularly paragraphs that contain scientific terminologies to use in the case of GM foods. English original texts and their translations in Arabic are received straight from the official WHO website. The texts are selected in regard to the potential application for GM foods as well as coverage of technical words whose translation could prove difficult.

The analysis occurs in two stages:

Identification of Translation Strategy: Taking Vinay and Darbelnet's approach, the study first identifies instances of direct and oblique translation strategies in the Arabic text. Direct strategies such as borrowing and calque are identified for those +99+terms that retain the English structure or form, whereas oblique strategies such as modulation and equivalence are identified for those terms that require adaptation in order to translate the intended meaning within an Arabic cultural context (Vinay & Darbelnet, 1995).

Linguistic and Cultural Evaluation: The selected translations are then evaluated for linguistic suitability and cultural sensitivity. This involves verification of the degree to which the Arabic translation represents the scientific substance of the source material, and the extent to which the translation complies with cultural expectations and sensitivities within Arabic-speaking communities. Problems, such as lexical shortages and potential ambiguities, are identified and scrutinized to ascertain their significance to comprehension and popular perception.

Reliability and Validity

For reliability, the study employs constant criteria for the identification of translation strategies from established categories in Vinay and Darbelnet's model. Expert review through bilingual specialists in both scientific communication and translation validates the analysis, making sure the findings are reliable and applicable in actual cases of translation (Montalt & Davies, 2007).

Limitations

While this study provides detailed information on translation strategies and challenges, it is limited to WHO reports of GM foods and should not be generalized for other scientific disciplines or other organizations. Future studies can extend the methodology to other types of scientific content and organizations. Translation analysis of English texts of GM Food and their Arabic Translations. To compare the English examples with their Arabic translations based on the methodology, translation precision, technical vocabulary adaptation, and consistency with linguistic and cultural nuances must be measured. Based on Vinay and Darbelnet's model of classifying translation strategies into direct (literal translation) and oblique

(adaptation, modulation, and equivalence) methods, the translations can be examined based on how effective they are in presenting GM food information in Arabic.

Direct Translation (Literal)

Some WHO's terminology for GM food, i.e., "genetically modified organisms" or "GM crops," can be translated accurately directly (e.g., الكائنات المعدلة وراثياً). Direct translation is effective where Arabic terms provide the scientific meaning without cultural color. This method provides accuracy and uniformity in scientific communication and ensures specialized terminology is maintained in translation (Vinay & Darbelnet, 1995).

Oblique Translation: Modulation and Adaptation:

For terms that may have nuanced connotations, adaptation and modulation are employed. For example, "safety assessments" in English can be translated to Arabic as تقييمات السلامة, which has a connotation of "safety" but can be modulated to meet cultural and contextual demands. In such instances, refined nuances in emphasis or tone ensure the technical data is understandable within an Arabic-speaking population's paradigm, fulfilling the WHO's mission of making technical content accessible across the board.

Cultural Adaptation

Certain of the concepts or phrases in relation to GM food, like "genetic divide" or "genetically engineered," require more cultural sensitivity. These concepts might lack immediate equivalents in Arabic and must be translated so that WHO's intended message can be conveyed without misunderstanding. Translations can give Arabic-language readers a more contextualized environment to consider by focusing on broader implications—health consequences, social justice, and environmental impacts—without burdening Arab readers with technical vocabulary.

Analysis of Common Challenges Barriers in scientific translation:

The vocabulary used to define GM foods mostly originate from deficiencies of Arabic equivalents of very specialized vocabulary. A case in point are words like "biotechnology" that may result in hazy translations where exact definitions cannot be discerned. Overcoming these linguistic barriers is essential for preventing confusion where the contexts deal with public health.

Translation Fidelity Evaluation

Lastly, there has to be loyalty to the original text's purpose and tone. For example, words and phrases that connote caution and also call for unbiased scientific evaluations are crucial to WHO's stand regarding GM foods. Translations preserving both informative as well as cautionary tone denote the essence of transparency and honesty in health communications.

Example 1

English: "Genetically modified foods are foods produced from organisms that have had changes introduced into their DNA using genetic engineering techniques."

Arabic Translations:

1. الأطعمة المعدلة وراثياً هي أطعمة تم إنتاجها من كائنات تم إدخال تغييرات على حمضها النووي باستخدام تقنيات الهندسة الوراثية.
2. الأغذية المعدلة جينياً هي أغذية تنتج من كائنات تم تعديل حمضها النووي باستخدام تقنيات التعديل الوراثي.
3. الأطعمة المعدلة جينياً تشمل كائنات تم تغييرها على المستوى الجيني.
4. الأغذية المعدلة جينياً تشمل تغييراً في الحمض النووي باستخدام هندسة وراثية متقدمة.
5. الأطعمة المعدلة وراثياً تُنتج عبر إدخال تعديلات في الحمض النووي.

Example 2

English: "The World Health Organization supports the use of GM foods under rigorous safety assessments to ensure they are safe for consumption."

Arabic Translations:

1. تدعم منظمة الصحة العالمية استخدام الأغذية المعدلة وراثياً تحت اختبارات سلامة صارمة لضمان أمانها للاستهلاك.
2. تدعم منظمة الصحة العالمية الأطعمة المعدلة جينياً شريطة إجراء اختبارات صارمة للأمان.
3. تشجع منظمة الصحة العالمية على استخدام الأطعمة المعدلة جينياً مع تقييمات دقيقة للسلامة.
4. تؤيد منظمة الصحة العالمية الأغذية المعدلة جينياً ضمن إجراءات صارمة للسلامة.
5. تشترط منظمة الصحة العالمية تطبيق معايير أمان صارمة للأطعمة المعدلة وراثياً.

Example 3

English: "GM foods offer the potential for increased food security by improving crop yields."

Arabic Translations:

1. توفر الأطعمة المعدلة وراثياً إمكانية زيادة الأمن الغذائي عبر تحسين غلة المحاصيل.
2. تسهم الأطعمة المعدلة وراثياً في تحقيق الأمن الغذائي من خلال رفع إنتاجية المحاصيل.
3. تساهم الأغذية المعدلة وراثياً في تعزيز الأمن الغذائي بزيادة غلة المحاصيل.
4. قد تؤدي الأغذية المعدلة وراثياً إلى تحسين إنتاجية المحاصيل وزيادة الأمن الغذائي.
5. توفر الأطعمة المعدلة جينياً زيادة في المحاصيل لتعزيز الأمن الغذائي.

Example 4

English: "Some genetically modified organisms (GMOs) are developed to withstand herbicides, allowing farmers to manage weeds without damaging the crops."

Arabic Translations:

1. يتم تطوير بعض الكائنات المعدلة وراثياً لتحمل مبيدات الأعشاب، مما يسمح للمزارعين بإدارة الأعشاب الضارة دون إلحاق الضرر بالمحاصيل.
2. تم تعديل بعض الكائنات وراثياً لتكون مقاومة لمبيدات الأعشاب، مما يسهل السيطرة على الأعشاب.
3. الكائنات المعدلة وراثياً مصممة لتحمل مبيدات الأعشاب، لدعم المزارعين في التخلص من الأعشاب الضارة.
4. بعض الكائنات المعدلة وراثياً تتمتع بقدرة على تحمل مبيدات الأعشاب، مما يحمي المحاصيل.
5. تعد الكائنات المعدلة جينياً أكثر مقاومة لمبيدات الأعشاب، لتسهيل إدارة المحاصيل.

Example 5

English: "Concerns have been raised about the allergenic potential of GM foods, prompting rigorous testing."

Arabic Translations:

1. أثّرت مخاوف حول احتمالية الحساسية الناتجة عن الأغذية المعدلة وراثياً، مما استدعى إجراء اختبارات صارمة.
2. هناك قلق من احتمالية التحسس من الأغذية المعدلة جينياً، مما دفع لإجراء اختبارات مكثفة.
3. طرحت مخاوف بشأن قدرة الأغذية المعدلة وراثياً على التسبب بالحساسية.
4. دفعت المخاوف حول الحساسية المحتملة من الأطعمة المعدلة وراثياً إلى زيادة التدقيق.
5. يتم اختبار الأغذية المعدلة وراثياً بعناية بسبب المخاوف المتعلقة بالحساسية.

Example 6

English: "The concept of 'substantial equivalence' is often used to assess the safety of GM foods by comparing them with traditional foods."

Arabic Translations:

1. يُستخدم مفهوم "التكافؤ الجوهرى" غالباً لتقييم سلامة الأطعمة المعدلة وراثياً مقارنة بالأطعمة التقليدية.
2. "يعتمد تقييم أمان الأغذية المعدلة وراثياً على مفهوم "التكافؤ الجوهرى".
3. يشير مفهوم "التكافؤ الجوهرى" إلى مقارنة الأغذية المعدلة مع التقليدية من حيث الأمان.
4. يتم تطبيق "التكافؤ الجوهرى" لمقارنة الأطعمة المعدلة وراثياً بالأطعمة التقليدية.
5. مفهوم "التكافؤ الجوهرى" يساهم في تقييم سلامة الأغذية المعدلة جينياً.

Example 7

English: "GM foods may help in reducing the environmental impact of agriculture by using less chemical input."

Arabic Translations:

1. قد تساعد الأطعمة المعدلة وراثياً في تقليل الأثر البيئي للزراعة عبر تقليل استخدام المواد الكيميائية.
2. تساهم الأغذية المعدلة جينياً في تقليص الأثر البيئي عن طريق خفض استخدام المواد الكيميائية.
3. الأطعمة المعدلة وراثياً قد تساهم في زراعة مستدامة بفضل استخدام أقل للكيمائيات.
4. تساهم الأغذية المعدلة جينياً في الحفاظ على البيئة عبر تقليل الكيمائيات.
5. يمكن أن تقلل الأغذية المعدلة جينياً من الأضرار البيئية للزراعة.

Example 8

English: "Studies are ongoing to determine the long-term health effects of consuming genetically modified foods."

Arabic Translations:

1. لا تزال الدراسات جارية لتحديد الآثار الصحية طويلة الأمد لتناول الأطعمة المعدلة وراثياً.
2. تُجرى الأبحاث لمعرفة آثار استهلاك الأغذية المعدلة وراثياً على المدى الطويل.
3. يتم التحقيق في التأثيرات طويلة المدى للأطعمة المعدلة وراثياً.
4. لا تزال الدراسات مستمرة بشأن آثار الأغذية المعدلة وراثياً على الصحة.
5. يتم دراسة التأثيرات المحتملة طويلة الأجل للأطعمة المعدلة وراثياً.

Example 9

English: "WHO emphasizes the importance of clear labeling of GM foods to allow consumers to make informed choices."

Arabic Translations:

1. تؤكد منظمة الصحة العالمية على أهمية وضع علامات واضحة على الأغذية المعدلة وراثياً لتمكين المستهلكين من اتخاذ قرارات مستنيرة.
2. تدعو منظمة الصحة العالمية إلى توضيح العلامات على الأغذية المعدلة جينياً لتسهيل الاختيار الواعي.
3. تشدد منظمة الصحة العالمية على ضرورة وضع علامات واضحة على المنتجات المعدلة جينياً.
4. تدعو الصحة العالمية إلى توفير معلومات وافية حول الأغذية المعدلة وراثياً.
5. تشجع منظمة الصحة العالمية على توضيح المحتويات المعدلة وراثياً على المنتجات.

Example 10

English: "Regulatory frameworks for GM foods vary widely around the world, impacting accessibility and acceptance."

Arabic Translations:

1. تختلف الأطر التنظيمية للأغذية المعدلة وراثياً بشكل واسع حول العالم، مما يؤثر على قبولها وتوافرها.
2. الأنظمة التنظيمية للأطعمة المعدلة جينياً متنوعة جداً عالمياً، مما ينعكس على القبول العام.
3. تؤثر الأطر التنظيمية المتنوعة عالمياً على توفر وقبول الأطعمة المعدلة وراثياً.
4. تختلف اللوائح التنظيمية حول الأغذية المعدلة وراثياً دولياً، مما يؤثر على إمكانية الوصول إليها.
5. هناك تباين كبير في الأطر التنظيمية للأغذية المعدلة وراثياً عبر الدول.

Discussion of Results

The current study gives insights into challenges and success in connecting the dots within the area of specialized scientific content across linguistic and cultural boundaries.

Translation Accuracy and Terminology

The employment of literal translation in rendering some terms from the source language SL into the target language TL, like "genetically modified organisms" (المعدلة وراثياً الكائنات), works well because such terms have standardized equivalents in Arabic. This goes in harmony with previous research that scientifically precise terminology is retained in meaning when translated from one language to another (Meyer, 2009). There are also examples where more precise terms like "biotechnology" lack direct translations, causing translation ambiguities. This suggests the requirement for a holistic approach to translation that deals with both linguistic correctness and the context of term use.

Cultural Adaptation and Contextual Nuances

The concept of GM food needs to be adapted culturally in the process of translation. Terms like "genetic divide" underline the need for well-versed translators who master socio-cultural implications, and that literal translations would not meet the need of Arabic-speaking recipients. It also explains that adaptations considering local practice and comprehension are essential for effective communication (Bekhit et al., 2022). In other words, translation is not merely a linguistic undertaking but involves cultural negotiation to ensure that information not only makes sense but also is acceptable (Baker, 2018).

Challenges of Linguistic Gaps

There are primary challenges identified in the analysis, they are highlighted below:

There is a linguistic gap for terms within modern biotechnology. The findings point out that while some concepts are strongly represented in Arabic, others require substantial contextualization or even neologisms. For instance, the term "safety assessments" (السلامة تقييمات) is correctly translated, though its implication can vary based on local practice and regulatory requirements. This goes in harmony with the broader literature that underscores the role of language development in scientific writing, particularly in non-native contexts (Tahaineh, 2014).

Maintaining Tone and Purpose

Maintaining the tone and the purpose of the SL text in the analysis of translation is described as another crucial aspect. The WHO's cautious yet communicative stance on GM foods is vital to public health communication. Translators in question should be capable of depicting the urgency and seriousness that there is in conducting safety assessments without sensationalism, which will be necessary to establish public trust and comprehension. The research shows that translators need to be aware of such issues to maintain the original message (Jiang et al., 2012).

Recommendations for Improvement

The study arrived the following recommendations

Developing Specialized Glossaries: formalized glossaries of Arabic terms for GM foods can help to eliminate inconsistencies and ambiguities.

Training Translators: Specialized training for translators in both scientific terms and cultural context will improve translation quality.

Assigning Experts: It can involve consulting local agricultural and health experts to make the translation more engaging for the target audience.

Conclusions

The study highlighted the dynamics of English-Arabic translation in GM food terminology found in the context of WHO reports. The findings of the study show strengths and weaknesses in the translation of scientific material, referring to the necessity of accuracy, cultural appropriateness, not to mention contextual understanding. Speaking of Word-for-word translations, I believe that it works for straightforwardly translatable scientific jargon, yet linguistic gaps and cultural sensibilities always require the employment of oblique translation methods in search of comprehensibility and usability. Moreover, tone and intent consistency are of great significance to success in public health communication. Finally, this study sheds lights on the significant connection of language, culture and science in GM food communication.

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