ISSN: 2392-5442
ESSN : 2602-540X
V/13 N/02 Year/2026
P 194 - 207

Sport system journal

International scientific journal published by: Ziane Achour –Djelfa- Algeria

Received: 2026-03-24 A ccepted: 2026-08-21

# Human Versus Machine Translation in Sports Media: A Mixed-Methods Study on Conveying Psychological Content to Arabic-Speaking Audiences

**Abire Ziane** [1*]

[1] Université of Amar Telidji - Laghouat (Algeria), a.ziane.sh@lagh-univ.dz

**Abstract:**

This study investigates the comparative effectiveness of human versus machine translation in conveying psychological and emotional dimensions within sports media discourse to Arabic-speaking audiences. Employing a mixed-methods design, the research combines a content analysis of five international sports articles addressing athletes' mental health with a survey of 120 Arabic-speaking sports media consumers. Quantitative findings reveal that 52.5% of participants rated human-translated content as having "high" psychological impact, compared to only 40.8% for machine-translated content. Chi-square analysis confirms statistically significant differences ($\chi^2 = 44.20$, $p < 0.001$), supporting the superiority of human translation in preserving psychological depth. Qualitative content analysis further demonstrates that human translation excels in cultural mediation, terminological accuracy, and emotional resonance, while machine translation exhibits semantic flattening and reduced affective engagement. The findings underscore the necessity of human oversight in translating emotionally sensitive media content and challenge the adequacy of fully automated translation systems in contexts requiring psychological nuance. This study contributes to the intersection of translation studies, sports media, and AI ethics by proposing a framework for evaluating psychological translation quality.

**Keywords:** Machine translation; human translation; psychological content; sports media; Arabic-speaking audience.

***Corresponding author** a.ziane.sh@lagh-univ.dz*

## 1. INTRODUCTION

The rapid integration of artificial intelligence into media production has transformed the landscape of specialized translation, particularly in domains requiring nuanced understanding of psychological and emotional content. Machine translation systems, powered by neural networks and deep learning algorithms, now operate at unprecedented speed and scale, raising critical questions about their capacity to replace or augment human translators in emotionally sensitive contexts (Farghal & Haider, 2024; LAIDI, 2024).

Sports media represents a particularly salient domain for examining this question. Contemporary sports journalism increasingly addresses athletes' mental health, psychological resilience, and emotional struggles—topics that demand precise linguistic formulation to preserve both scientific accuracy and emotional resonance (Toufik & Aissa, 2024). When such content is translated for Arabic-speaking audiences, the challenge intensifies, as Arabic communicative norms place high value on emotional expressiveness and cultural sensitivity (Mahbouba, 2024).

The central question guiding this study is: Can machine translation effectively convey the psychological and emotional dimensions of sports media discourse to Arabic-speaking audiences? Or does human translation remain essential for preserving the psychological depth of such content? While existing research has evaluated machine translation from technical and linguistic perspectives (Vieira, Machine translation in the news: A framing analysis of the written press, 2020; Lu, 2024), few studies have systematically examined its psychological impact on audiences—particularly in emotionally charged sports contexts.

This study addresses this gap by employing a mixed-methods design combining content analysis of translated sports articles with a survey of Arabic-speaking media consumers. The research objectives are: (1) to compare the effectiveness of human and machine translation in conveying psychological content, (2) to analyze how translation type affects audience emotional engagement, and (3) to provide practical recommendations for media organizations handling psychologically sensitive material.

The following hypotheses guide the investigation:

**H1:** Human translation effectively conveys psychological and emotional messages in sports texts and enhances audience emotional engagement.

**H2:** Machine translation exhibits deficiencies in rendering nuanced psychological meanings, leading to weaker emotional resonance.

**H3:** Human-translated texts contain clearer and more culturally coherent psychological content compared to machine-translated texts.

**H4:** Human translation demonstrates superior use of precise emotional terminology, resulting in higher-quality media content.

## 2. LITERATURE REVIEW

### 2.1 Machine Translation: Advances and Limitations

Machine translation has undergone significant advancements in recent decades, particularly with the integration of deep learning techniques and neural networks (Neural Machine Translation – NMT). These developments have led to a relative improvement in translation accuracy and quality, especially in general linguistic contexts (Farghal & Haider, 2024). However, existing studies continue to highlight machine translation's limitations in rendering nuanced emotional content and complex cultural expressions (LAIDI, 2024), particularly in texts with high psychological or affective intensity (Huber, 2014). One of the core issues lies in the reliance of machine models on statistical matching rather than semantic comprehension or pragmatic awareness, often resulting in the loss of deeper meanings embedded within the text.

### 2.2 Human Translation and Cultural Mediation

Human translation remains the cornerstone of accurate and fluent meaning transfer, owing to the human translator's capacity to understand context, navigate cultural differences, and employ stylistic adaptability. Professional translators are better equipped to handle emotional and psychological discourse in ways that preserve both the structure and spirit of the original text (Sophie, 2025). Human translation is also more effective in performing "cultural mediation," as it transcends linguistic transfer to construct messages semantically and emotionally aligned with target audience expectations (Mahbouba, 2024).

For Arabic-speaking audiences, cultural adaptation becomes essential. Translators must employ formulations that align with Arabic cultural frameworks and reflect collective sensitivities surrounding personal dignity, honor, self-worth, and emotional expression (Mahbouba, 2024). Arabic-speaking audiences demonstrate heightened sensitivity to texts addressing psychological issues,

necessitating translation approaches that are both contextually nuanced and emotionally attuned.

**2.3 Psychological Content in Sports Media**

The term psychological content refers to textual material that addresses individuals' or groups' mental, emotional, or behavioral states. Both psychological and media literature emphasize the critical importance of language in shaping the emotional impact such content has on its recipients (Hartmann, 2024). Expressing psychological concepts with precision is particularly sensitive in topics involving stress, anxiety, or mental health, where linguistic formulation must balance scientific clarity with emotional resonance.

Sports media discourse is characterized by its emotionally charged and enthusiastic tone, wherein athletic performance intersects with psychological and affective analysis—both of athletes and audiences (Toufik & Aissa, 2024). The growing focus on athletes' mental health has intensified discussions around psychological stress, public pressure, and athletic identity. Sports media today serves as a multidimensional platform for entertainment, emotional mobilization, and affective commentary, all of which pose unique challenges for accurate translation.

**2.4 The Human-Machine Distinction in Psychological Translation**

The fundamental distinction between human and machine translation (Sophie, 2025) is most apparent when handling psychological content. While machine translation often lacks emotional precision and cultural coherence, human translation demonstrates a superior capacity to reconstruct psychological messages within the cultural context of the Arabic-speaking world—particularly in emotionally sensitive media discourses. This distinction is especially critical in sports media, where texts are often laden with themes of triumph, frustration, pressure, retirement, and self-disclosure. Human translation is demonstrably more effective in conveying this genre of discourse to Arabic audiences in a manner that respects the symbolic and emotional dimensions of sport (Toufik & Aissa, 2024). In contrast, machine translation is prone to literalism and semantic flattening.

Studies show that Arabic-speaking audiences' reception of psychological content heavily depends on the nature of the translated language and its alignment with Arabic communicative and cultural styles (Mahbouba, 2024). The more humanized and context-sensitive the translation, the more likely audiences are to

engage both emotionally and cognitively. Hence, the effectiveness of translation in sports media hinges on its ability to transmit the psychological and emotional depth of the original discourse to an audience with a high degree of cultural sensitivity to symbolic and expressive content (Vieira, O'Sullivan, Zhang , & O'Hagan , 2022). This renders human translation a central tool in cultural and affective mediation within contemporary sports media landscapes.

## 3. METHODOLOGY

### 3.1 Research Design

This study adopts a mixed-methods research design, integrating both quantitative and qualitative approaches to examine the impact of translation type—human versus machine—on the transmission of psychological and emotional dimensions within sports media discourse to Arabic-speaking audiences. The methodological framework was carefully constructed to encompass all relevant components, including setting, sample, tools, and procedures (Mahbouba, 2024), thereby enhancing replicability and ensuring methodological rigor.

### 3.2 Study Sample

The study sample consisted of:

- **Quantitative component:** A purposive sample of 120 Arabic-speaking followers of digital sports media who have prior experience engaging with translated content.
- **Qualitative component:** Five international articles (from platforms such as Al Jazeera, BBC, NDTV, etc.) that focus on athletes' mental health.

Articles selected for analysis explicitly addressed psychological or emotional experiences of professional athletes and were available in both human and machine-translated forms. Articles lacking clear psychological dimensions or not translated from a foreign source were excluded.

### 3.3 Research Instruments

**A. Questionnaire:**

- The questionnaire consisted of two main sections:
    - Section One: Assessed audience perception of psychological dimensions in human-translated texts (9 items).
    - Section Two: Assessed perception of psychological dimensions in machine-translated texts (9 items).
- A three-point Likert scale was used (Agree – Disagree – Neutral).
- A pilot study was conducted with a trial sample of 20 participants.

**Psychometric Properties:**

- Validity: Content validity was established drawing on expert review by academic specialists.
- Reliability: Cronbach's Alpha coefficient was calculated, yielding a value of 0.902, indicating excellent internal consistency.

**Table 2. Reliability Statistics**

| Number of Items | Cronbach's Alpha |
|---|---|
| **18** | 0.902 |

**Table 3. Correlation Coefficients Between Dimensions and Total Score**

| Dimension | Correlation Coefficient | Significance Level (p-value) |
|---|---|---|
| **Section One** | 0.83 | 0.000 |
| **Section Two** | 0.89 | 0.000 |

**B. Content Analysis Sheet:**

- The content analysis was guided by five psychological indicators: emotional resonance, terminological accuracy, cultural mediation, stylistic consistency, and pragmatic function.
- Both human and machine translations of each article were analyzed and compared across these indicators.

**3.4 Data Collection and Analysis**

- The questionnaire was distributed electronically via social media platforms and targeted sports-related online communities.
- Quantitative data were analyzed using SPSS software, applying frequency and percentage analysis and chi-square tests ($\chi^2$), degrees of freedom (df), significance level ($\alpha$), and p-values.
- Qualitative content analysis was conducted manually using a thematic deductive approach.

**4. RESULTS**

This section addresses the study's central research question: To what extent can human and machine translation accurately convey psychological dimensions in sports media discourse and influence audience reception? To answer this

question, the study utilized two complementary tools: a structured questionnaire administered to a sample of recipients and a qualitative content analysis of translated texts.

### 4.1 Analysis of the First Hypothesis

**H1:** Human translation effectively conveys psychological and emotional messages in sports texts and enhances emotional engagement among audiences.

**Table 4. Chi-Square Test Results for Perception of Psychological Messages**

| Level of Impact | Frequency | Percentage | $\chi^2$ | df | p-value |
|---|---|---|---|---|---|
| **Low** | 18 | 15.00% | 44.20 | 2 | < 0.001 |
| **Moderate** | 39 | 32.50% | | | |
| **High** | 63 | 52.50% | | | |
| **Total** | 120 | 100% | | | |

*Note. $\chi^2$ critical value at df = 2, $\alpha = 0.05$ is 5.99. Results are statistically significant.*

The data in Table 4 indicate statistically significant differences in participants' responses regarding the effectiveness of human translation in conveying psychological dimensions. More than half of the sample (52.5%) rated the impact of human translation as "high," while only 15% considered it "low." The computed chi-square value ($\chi^2 = 44.20$) exceeds the critical threshold (5.99) with 2 degrees of freedom at a significance level of $\alpha = 0.05$, yielding a p-value of $< 0.001$, thus supporting the hypothesis.

These results reinforce the notion that human translation goes beyond literal linguistic conversion by amplifying the semantic and emotional depth of sports discourse in alignment with the audience's psychological and cultural context. This is attributed to the human translator's capacity to recognize affective cues in the original text and reproduce them in ways that resonate with the psychological frameworks of Arabic-speaking audiences. This finding aligns with (Souhaila & Nassira, 2024), who argued that unlike machine systems, human translation interacts with language as a living entity, not as a set of symbols detached from collective sentiment.

### 4.2 Analysis of the Second Hypothesis

**H2:** Machine translation weakens the transmission of nuanced psychological messages, leading to reduced emotional engagement among audiences.

**Table 5. Chi-Square Test Results for Emotional Engagement with Translated Sports Texts**

| Level of Engagement | Frequency | Percentage | $\chi^2$ | df | p-value |
|---|---|---|---|---|---|
| **Low** | 24 | 20.00% | 39.85 | 2 | < 0.001 |
| **Moderate** | 47 | 39.17% | | | |
| **High** | 49 | 40.83% | | | |
| **Total** | 120 | 100% | | | |

*Note. $\chi^2$ critical value at df = 2, $\alpha$ = 0.05 is 5.99. Results are statistically significant.*

As Table 5 shows, 40.83% of participants reported "high" emotional engagement when exposed to human-translated sports texts, while only 20% reported "low" engagement—indicating a significant influence of translation type on audience emotional response. The chi-square test yielded a value of 39.85, exceeding the critical value of 5.99 (df = 2, $\alpha$ = 0.05), with a p-value of < 0.001, confirming statistically significant differences in audience engagement based on translation mode.

These results strongly support the second hypothesis, demonstrating that machine translation—due to its limitations in processing emotional meanings—leads to a notable decline in affective engagement. The absence of cultural sensitivity (Carvalho, Ramires, & Iglesias , 2023) and emotional intelligence in machine systems hinders their ability to reproduce expressions requiring a nuanced understanding of psychological contexts, ultimately weakening the text's emotional impact on recipients.

### 4.3 Analysis of the Third and Fourth Hypotheses Drawing on Media Content

The third and fourth hypotheses were examined using qualitative analysis of selected translated sports media content, with the aim of assessing the extent to which human and machine translation preserve the psychological, emotional, and pragmatic dimensions of the original texts. The analysis of five carefully selected media articles revealed substantial differences between the two types of translation.

**Table 6. Qualitative Analysis of Translation Differences Across Analytical Categories**

| No. | Article | Source | Analytical Category | Human Translation Feature | Machine Translation Limitation |
|---|---|---|---|---|---|
| **1** | Mbappé | Al Jazeera, 2025 | Emotional Significance | Preserved psychological nuance through distinction between "mental state" and "psychological condition" | Reduced to generic "psychological" term, losing specificity |
| **2** | Guardiola | Man City, 2024 | Terminological Accuracy | Used precise term "psychological fatigue" with rhetorical emphasis | Used "mental fatigue" without contextual depth |
| **3** | Simone Biles | BBC, 2021 | Cultural Mediation | Employed culturally resonant expression reflecting personal agency and commitment | Rendered as flat statement lacking emotional weight |
| **4** | Luis Enrique | NDTV, 2025 | Stylistic Framing | Used idiomatic expression conveying personal significance ("means a lot to me personally") | Used literal translation lacking emotional resonance |
| **5** | Siddhartha | Anyawuike, 2023 | Pragmatic Function | Enhanced communicative relevance through strategic reformulation | Remained superficial without contextual adaptation |

### 4.3.1 Analysis of the Third Hypothesis

**H3:** Human translation incorporates clearer and more culturally congruent psychological content compared to machine translation.

The results of the content analysis demonstrate that human translation transcends literal transfer by offering culturally and psychologically sensitive interpretation of the original texts, aligning more closely with the emotional expectations of Arabic-speaking audiences.

In the Simone Biles article (BBC, 2021), the human-translated phrase reflects expressive and declarative patterns characteristic of emotional communication in Arabic, while the machine version lacks emotional resonance and depth of personal engagement. Similarly, in the Luis Enrique article (France-

Presse, 2025), the human translation captures a culturally familiar emotional nuance, unlike the machine translation, which is flat and emotionally detached. In academic contexts, the translation of Ozioma Siddharta's article (Anyawuike, 2023) clearly illustrates the superiority of human translation in pragmatic framing, demonstrating enhanced communicative relevance while the machine translation remains superficial.

These analyses confirm that human translators, being cognitively and culturally aware, are capable of reconstructing media messages in a way that preserves their psychological and semantic depth. Thus, the third hypothesis is clearly supported.

### 4.3.2 Analysis of the Fourth Hypothesis

**H4:** Human translation demonstrates superior use of precise emotional terminology compared to machine translation, thereby enhancing the quality of the transmitted media content.

This hypothesis is evident in the lexical choices that reveal clear differences between human and machine outputs. In the Mbappé article (aljazeera, 2025), the human-translated phrase shows clear terminological distinction between mental and psychological states, while the machine version lacks accuracy and terminological sensitivity. A similar case appears in the Guardiola article (Smith, 2024), where the human version provides psychologically and rhetorically rich expression, while the machine version is flat and devoid of the persuasive tone needed to convey emotional nuance.

Across other analytical categories—such as "emotional significance" and "stylistic framing"—human translations utilize deeper, more resonant expressions. These choices reflect linguistic and emotional sensitivity, extending the translation beyond literal reproduction toward affective and audience-centered communication. Consequently, the fourth hypothesis is supported by multiple qualitative indicators across the sample texts.

## 5. DISCUSSION

### 5.1 Human Translation and Emotional Engagement

The quantitative findings strongly support the first hypothesis, with 52.5% of participants rating human-translated content as having "high" psychological impact. This result can be attributed to the human translator's capacity to interpret emotional constructs in ways that align with the linguistic and cultural

sensitivities of Arabic-speaking audiences—a capacity machine translation lacks due to its limited psychological and semantic depth ($\chi^2 = 44.20$, $p < 0.001$). These findings are consistent with Vieira (2020), who noted that human translation in journalism enables deeper emotional resonance when comparing audience responses to machine versus human-translated content.

**5.2 Reduced Emotional Engagement in Machine Translation**

The results confirm the second hypothesis, confirming a widely noted trend in the literature regarding the limitations of machine translation in conveying complex psychological meanings. The questionnaire results showed significantly lower emotional engagement with machine-translated texts, reflecting reduced affective responses among audiences. This limitation stems from the inability of machine translation systems to provide contextual or interpretive nuance, as they rely primarily on syntactic pattern-matching devoid of emotional depth, thereby weakening the overall communicative effect (Vieira, O'Hagan, & O'Sullivan, Understanding the societal impacts of machine translation: a critical review of the literature on medical and legal use cases, 2021). These findings affirm that nuanced emotional content cannot be effectively conveyed without human intervention that considers the psychological and cultural context of the receiver.

**5.3 Cultural Coherence in Human Translation**

Content analysis substantiates the third hypothesis, revealing that human translation is more culturally adaptive, particularly when rendering emotionally sensitive expressions into Arabic. This coherence illustrates not only linguistic competency but also a deep understanding of the receiver's psychological environment—echoing (Lu, 2024), who emphasizes the need for both cultural and psychological sensitivity in media translation, especially when addressing mental health or athletic performance.

**5.4 Accuracy of Psychological Terminology in Human Translation**

The fourth hypothesis is supported by evidence that human translation demonstrates superior precision in using emotionally charged terminology. Examples such as "mental fatigue" versus "psychological fatigue," or "mental state" versus "mindset," reveal a deeper understanding of modern psychological concepts in media messages to ensure accurate psychological impact. These results align with (Yamin, 2014), who found that machine translation often fails to retain a substantial portion of the emotional load due to algorithmic limitations in processing intent and emotional nuance.

The findings carry significant implications across various fields, including sports journalism, emotionally-driven newswriting, public psychological content creation, and translator training. They are particularly relevant for media organizations that increasingly rely on machine translation systems (Vieira, Machine translation in the news: A framing analysis of the written press, 2020). However, the study has limitations, most notably the small sample size and the restricted temporal scope of the content analyzed. Therefore, generalizing the results requires broader sampling and temporal variation in media content.

## 6. CONCLUSION

This study demonstrates that human translation significantly outperforms machine translation in conveying psychological and emotional dimensions within Arabic-language sports media. Quantitative analysis revealed that 52.5% of participants rated human-translated content as having "high" psychological impact, compared to only 40.8% for machine translation, with chi-square analysis confirming statistical significance ($\chi^2 = 44.20$, $p < 0.001$). Qualitative content analysis further established that human translation excels in cultural mediation, terminological precision, and emotional resonance—areas where machine translation exhibits systematic deficiencies.

These findings challenge the adequacy of fully automated translation systems for emotionally sensitive media content and underscore the necessity of human oversight. The study contributes a preliminary framework for evaluating psychological translation quality in sports media, with implications for journalism practice, translator training, and AI ethics.

The results confirm the need for the implementation of rigorous human review processes for emotionally sensitive media texts, along with the development of specialized training programs for translators in the domain of psychological translation. It also proposes the creation of a qualitative assessment tool to evaluate translation quality based on emotional and cultural indicators.

Future research should extend this inquiry across broader media platforms and text genres, employing psychophysiological tools to assess audience responses. Longitudinal studies examining the cumulative effects of translation type on audience attitudes toward mental health in sports would further advance understanding of this critical intersection between technology, language, and human psychology.

## 7. REFERENCES


1. aljazeera. (2025, Jan 21). *Mbappe says mental shift helped change his Real Madrid 'situation'*. Retrieved from aljazeera: https://www.aljazeera.com/sports/2025/1/21/mbappe-says-mental-shift-helped-change-his-real-madrid-situation
2. Anyawuike, O. S. (2023). Sports Translation and Interpreting: Football as a Case Study. *NIGERIAN JOURNAL OF AFRICAN STUDIES, 5*(1).
3. BBC. (2021, July 27). *Simone Biles says 'I have to focus on my mental health' after pulling out of team final*. Retrieved from BBC: https://www.bbc.com/sport/olympics/57982665
4. Carvalho, I., Ramires, A., & Iglesias , M. (2023). Attitudes towards machine translation and languages among travelers. *Information Technology & Tourism, 25*, 175–204. Retrieved from https://link.springer.com/article/10.1007/s40558-023-00253-0
5. Farghal, M., & Haider, A. S. (2024). Translating classical Arabic verse: human translation vs. AI large language models (Gemini and ChatGPT). *Cogent Social Sciences, 10*(1). doi:https://doi.org/10.1080/23311886.2024.2410998
6. France-Presse, A. (2025, June 29). *PSG Preparing For 'Emotional' Reunion With Lionel Messi At Club World Cup*. Retrieved from sports.ndtv: https://sports.ndtv.com/fifa-club-world-cup/psg-preparing-for-emotional-reunion-with-messi-at-club-world-cup-8788129
7. Hartmann, K. (2024). Unlocking the language: Key features of emotions. *Acta Psychologica, 251*. doi:https://doi.org/10.1016/j.actpsy.2024.104628
8. Huber, L. (2014). Psychology of Translation in Cross-Cultural Interaction. *Procedia - Social and Behavioral Sciences*, 217–226. doi:10.1016/j.sbspro.2013.07.054
9. LAIDI, A. F. (2024). Can machine translation substitute human translators? *TOBNA journal for Academic scientific studies, 7*(2), 1872-1887.
10. Lu, Y. (2024). Comparative study of machine translation versus human translation. *7*(2), 61-66. doi:10.23977/langl.2024.070211
11. Mahbouba, B. (2024). Teaching Journal Writing Through Translation: A Pedagogical Perspective. *Revue algérienne des lettres, 8*(2), 118-138. Retrieved from https://asjp.cerist.dz/en/article/248296
12. Smith, J. (2024, Apr 12). *Pep Guardiola says he has no doubts that his players will be ready for the challenge of the final weeks of the season.* Retrieved from mancity: https://www.mancity.com/news/mens/pep-guardiola-man-city-luton-town-freshness-63848547
13. Sophie, E. R. (2025). Machine Translation vs. Human Translation in Industry Settings. 1-29. Retrieved from

https://www.researchgate.net/publication/390979935_Machine_Translation_vs_Human_Translation_in_Industry_Settings

14. Souhaila, F., & Nassira, B. (2024). Towards An Interculturally-based Syllabus To Develop English As A Foreign Language Learners' Intercultural Communicative Competence. *Revue algérienne des lettres*, 274-289.
15. Toufik, B., & Aissa, E. (2024). Youth Interest In Creating Sports Content On Youtube As A Profitable Activitya Survey Study On A Sample Of Youtube Users. *Sports Creativity Magazine, 15*(1), 562-581. Retrieved from https://asjp.cerist.dz/en/article/245551
16. Vieira, L. N. (2020). Machine translation in the news: A framing analysis of the written press. *Translation Spaces, 9*(1), 98–122. doi:10.1075/ts.00023.nun
17. Vieira, L. N., O'Hagan, M., & O'Sullivan, C. (2021). Understanding the societal impacts of machine translation: a critical review of the literature on medical and legal use cases. *Information, Communication & Society, 24*(11), 1515-1532. doi:https://doi.org/10.1080/1369118X.2020.1776370
18. Vieira, L. N., O'Sullivan, C., Zhang , X., & O'Hagan , M. (2022). Machine translation in society: insights from UK users. *Language Resources and Evaluation, 57*, 893–914. Retrieved from https://link.springer.com/article/10.1007/s10579-022-09589-1
19. Yamin, B. M. (2014). A Comparative Study Of Machine And Human Translation: The Case Of English-arabic Literary Translations. *Revue Maghrébine des Langues, 9*(1), 145-160.