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Cultural Communication in Digital Translation Environments: A Quantitative Analysis of the Translator's Mediating Role

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Abstract:

This study investigates cultural communication in digital translation environments, with particular attention to the human translator's role as a cultural mediator amid rapid technological advancement. Adopting a quantitative research design, data were collected through a five-dimensional questionnaire administered to professional translators and translation students. Statistical analysis using SPSS (v29) revealed a moderate to high awareness of the cultural dimension of translation, as well as statistically significant differences related to participants' experience and educational background. Despite the increasing reliance on AI-based and machine translation tools, the findings confirm that human translators continue to play a vital role in ensuring culturally appropriate translation. The study highlights the need for integrated cultural and technological training to enhance translators' adaptability in digital translation contexts.

Keywords: Cultural communication; digital translation; cultural mediation; human translator; translator training.

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1. Introduction

Cultural communication constitutes a central dimension of contemporary translation practices, extending translation beyond the mere transfer of linguistic forms to a complex communicative act shaped by cultural, symbolic, and contextual factors. In this sense, translation functions as a process of intercultural mediation, requiring not only linguistic competence but also cultural awareness and interpretive sensitivity. Recent scholarship in translation and intercultural communication has increasingly emphasized that meaning is negotiated through cultural frameworks rather than encoded solely within textual structures.

The rapid expansion of digital translation tools and artificial intelligence has profoundly transformed translation practices. While these technologies enhance speed and accessibility, they also introduce new challenges, particularly in accurately transmitting culturally embedded meanings. (Hall, 1976; Hofstede, 2001; Jakobson, 1959, pp.18, 36,55) Digital translation systems often operate through algorithmic processes that lack contextual understanding and cultural reflexivity, leading to semantic loss, cultural distortion, or pragmatic misinterpretation. This transformation has renewed scholarly attention to the role of the human translator as a cultural mediator within digitally mediated translation environments.

Against this backdrop, the central research problem addressed in this study concerns the limitations of digital translation tools in conveying cultural meaning and the extent to which human mediation remains necessary to preserve the integrity of cultural communication. Specifically, the study investigates the level of awareness among translators and active users of digital translation tools regarding the human translator's mediating role in ensuring culturally appropriate translation outcomes.

Accordingly, the study seeks to answer the following research question:

To what extent are translators and active users of digital translation tools aware of the human translator's role as a cultural mediator in ensuring the quality of cultural communication in translated texts?

To address this question, the study is guided by the following hypotheses:

H1: Participants demonstrate a moderate level of awareness of the importance of cultural background and context in the translation process.

H2: Participants perceive human translation as more capable than machine translation in accurately conveying cultural meanings and contexts.



H3: Participants prefer human or hybrid translation over fully machine-based translation when dealing with culturally loaded texts.

H4: Participants perceive the human translator as playing a pivotal role as a cultural mediator in digital translation environments.

H5: There are statistically significant differences in participants' evaluations of translation performance and the role of the translator attributable to years of experience and professional background.

The study aims to examine the translator's role within hybrid digital translation environments, where machine-generated output intersects with human interpretive intervention. By doing so, it seeks to assess the effectiveness of human mediation in maintaining the quality of cultural communication and to propose an applied framework for developing translation skills suited to technologically advanced contexts. The study further offers practical implications for translation institutions and higher education programs.

Methodologically, the research adopts a quantitative descriptive-analytical design. Data were collected through a structured questionnaire comprising five core dimensions: digital translation practices, cultural sensitivity, contextual awareness, negotiation competence, and cultural mediation. The instrument was developed using a five-point Likert scale, and data analysis was conducted using SPSS (version 29), employing reliability and validity tests, including Cronbach's alpha, as well as inferential statistical procedures such as T-tests and MANOVA.

This study contributes to translation studies by operationalizing cultural mediation as a measurable construct within digital translation environments.

2. Literature Review

Recent scholarship has increasingly examined cultural communication in digital translation contexts, particularly in response to the rapid expansion of AI-assisted translation tools and their impact on professional translation practices. A common concern across this literature is the tension between technological efficiency and cultural adequacy, especially in texts embedded with symbolic, contextual, and culturally specific meanings. While existing studies acknowledge the limitations of machine translation in handling cultural complexity, they differ in their analytical focus, methodological scope, and conceptualization of the translator's role within digital environments.

Overall, the literature converges on the view that cultural transfer represents a critical weakness in current machine translation systems, thereby reaffirming the importance of human

intervention. However, most studies address this issue from isolated perspectives either through comparative text analysis, qualitative case studies, or institutional observations without offering a systematic examination of the translator's mediating function across digital translation settings. The following studies illustrate these trends and highlight the conceptual and empirical gaps that the present research seeks to address.(Lederer, 1994; Combrink, 2002; Liddicoat, 2016, pp.36, 87).

2.1. Human Translation and Machine Translation in Culturally Loaded Texts

Ennouari and El Housni (2024) provide a comparative analysis of human and machine translation performance in culturally rich texts, including folktales and Arabic proverbs. Their applied analytical approach demonstrates that machine translation systems struggle to reproduce culturally embedded meanings, often resulting in semantic reduction or contextual distortion. In contrast, human translators exhibit a greater capacity to negotiate cultural references and adapt meaning for target audiences.

While this study effectively demonstrates the superiority of human translation in culturally sensitive contexts, its primary contribution remains comparative. The hybrid model proposed by the authors underscores the need for human–machine collaboration, yet the study does not systematically conceptualize the translator's mediating role within digital workflows. Consequently, the mechanisms through which translators intervene to restore cultural meaning remain analytically underexplored.

2.2. The Translator as Cultural Mediator in Digital and Transnational Contexts

Pálušová (2024) adopts a qualitative, self-reflective approach to examine the translator's role in digital and politically sensitive contexts, using the translation of a documentary play on the Belarus protests as a case study. Her findings extend the notion of translation beyond linguistic transfer, portraying the translator as an active social and cultural actor who shapes narratives through interactive digital environments.

This study offers valuable insight into the dialogic and interpretive dimensions of translation in digital spaces. However, its reliance on a single case limits the generalizability of its conclusions. While it highlights the translator's expanded agency, it does not propose a transferable analytical framework for examining mediation practices across diverse digital translation environments.

2.3. Digital Translation and Cultural Mediation in Diplomatic Contexts

Shahmerdanova (2025) examines the transformation of translation practices in international diplomacy under increasing reliance on digital translation tools. Using a historical-analytical approach, the study reveals that although machine translation enhances speed and efficiency, it remains inadequate for conveying nuanced cultural and diplomatic meanings. The author emphasizes the continued necessity of human translators in sensitive intercultural interactions.



Despite its contribution to understanding translation in institutional and diplomatic settings, the study remains largely descriptive. It confirms the indispensability of human intervention but does not explicitly analyze the professional strategies or competencies through which translators mediate between digital outputs and cultural expectations. (Cronin, 2013; O'Hagan, 2019; Di Vico, 2022, pp. 41, 91, 71).

2.4. Research Gap

Taken together, these studies confirm the limitations of machine translation in culturally complex contexts and underscore the importance of human involvement. However, the existing literature largely treats the translator's role as implicit rather than analytically central. Few studies conceptualize the translator as an active mediator operating at the intersection of human communication and machine-generated output within digital environments. Moreover, prior research tends to rely on isolated case studies or comparative analyses without developing an applied framework capable of capturing professional mediation practices across contexts.

In response to these limitations, the present study seeks to systematically investigate the translator's mediating role in digital translation environments. By examining professional interventions across multiple dimensions of cultural communication, the study aims to contribute an applied analytical perspective that bridges human expertise and digital translation technologies, while offering practical implications for translator training, institutional practice, and the development of AI-based translation systems.

3. Research Methodology

Given the evaluative and statistical nature of the study, which aims to examine attitudes and perceptions toward digital translation tools and the cultural mediation role of the human translator, a quantitative descriptive-analytical research design was adopted. This approach is appropriate for measuring general tendencies, testing hypotheses, and identifying statistically significant relationships among variables. Data were collected using a structured, closed-ended questionnaire based on a five-point Likert scale, allowing for systematic statistical analysis. The suitability of this methodological approach for examining attitudes and socio-technical phenomena is well established in quantitative research literature (Bryman, 2016; Pallant, 2020, pp. 74, 53).

3.1. Sampling Criteria and Sample Size

The study employed a purposive sampling strategy, involving a total of 62 participants drawn from three categories: professional translators, MA students in translation, and active users of digital translation tools. This sampling approach was selected to ensure the inclusion of participants with varying degrees of professional and practical experience in digital translation contexts. The sample

size was deemed adequate to generate analytically meaningful results, while maintaining a balance between statistical reliability and the diversity of perspectives typically required in translation studies (Saldanha & O'Brien, 2013, p.85).

3.2. Data Collection Period

Data collection was conducted between April and July 2025. This period coincided with heightened academic and professional activity in Algeria, during which the use of digital translation tools is particularly prevalent. Conducting the study within this timeframe facilitated access to actively engaged participants and enhanced the contextual relevance of the collected data. (Hall, 1976; Jakobson, 1959; Lederer, 1994; Liddicoat, 2016, pp. 115, 147, 215,360).

3.3. Measurement Scale and Instrument Structure

The research instrument consisted of a single questionnaire structured around five main dimensions, all measured using a five-point Likert scale ranging from strong disagreement to strong agreement:

Theoretical Dimension (Cultural Awareness):

This dimension assessed participants' understanding of the cultural dimension of translation, including awareness of symbolic and contextual elements in cross-cultural texts. It comprised six items. (Lederer, 1994; Liddicoat, 2016; Pálušová, 2024, pp.25, 56)

Applied Dimension (Machine Translation Performance):

This dimension evaluated participants' perceptions of machine translation performance in handling culturally sensitive content and its limitations in conveying implicit meanings. It included six items.(Combrink, 2002; Ennouari & El Housni, 2024)

Applied Dimension (Human Translation Effectiveness):

This dimension examined participants' evaluations of human translation quality, particularly its effectiveness in preserving cultural meanings and adapting texts to target cultural contexts. It consisted of four items.

Applied Dimension (Translation Preferences):

This dimension measured participants' preferences for human, machine, or hybrid translation models when dealing with culturally loaded texts. It included three items.

Theoretical–Applied Dimension (Cultural Mediation Role):



This dimension explored participants' perceptions of the human translator's role as a cultural mediator between machine output and the target audience, focusing on the interpretation of implicit meanings and cultural adaptation. It comprised five items. (Cronin, 2013; O'Hagan, 2019)

3.4.1. Internal Consistency (Item–Total Correlations)

Table 1 : Internal Consistency Validity Results for the First Dimension (Cultural Awareness)

Item Number	Correlation Value	Significance Level (Sig.)
Q1	0.686	0.000
Q2	0.721	0.000
Q3	0.742	0.000
Q4	0.755	0.000
Q5	0.790	0.000
Q6	0.809	0.000

Source: Prepared by the researcher based on SPSS version 29

Table 2: Internal Consistency Validity – Second Dimension (Evaluation of Machine Translation)

Item Number	Correlation Value	Significance Level (Sig.)
Q7	0.815	0.000
Q8	0.822	0.000
Q9	0.828	0.000
Q10	0.833	0.000
Q11	0.839	0.000
Q12	0.845	0.000

Source: Prepared by the researcher based on SPSS version 29

Table 3: Internal Consistency Validity – third dimension (Human Translation Evaluation)

Item Number	Correlation Value	Significance Level (Sig.)
Q13	0.785	0.000
Q14	0.796	0.000
Q15	0.808	0.000
Q16	0.820	0.000

Source: Prepared by the researcher based on SPSS version 29

Table 4: Internal Consistency Validity-fourth dimension (Translation Preferences).

Item Number	Correlation Value	Significance Level (Sig.)
Q17	0.848	0.000
Q18	0.871	0.000
Q19	0.894	0.000

Source: Prepared by the researcher based on SPSS version 29

Table 5: Internal Consistency Validity-fifth dimension (The role of the translator as a cultural mediator).

Item Number	Correlation Value	Significance Level (Sig.)
Q20	0.832	0.000
Q21	0.843	0.000
Q22	0.854	0.000
Q23	0.866	0.000
Q24	0.877	0.000

Source: Prepared by the researcher based on SPSS version 29



Internal consistency validity was assessed using item–total correlations (Pearson's r) between each item and its corresponding dimension score. As shown in Tables 1–5, all items demonstrated statistically significant correlations with their respective dimensions at $\alpha = 0.05$, indicating satisfactory internal consistency validity across the five dimensions. All correlation coefficients were in acceptable-to-strong ranges ($r = 0.686–0.894$; $p < 0.001$), supporting the adequacy of the items for measuring their intended constructs.

3.4.2. Discriminant Validity (Extreme-Groups Method)

Scores	N	Mean	Std. Deviation	T	Sig.	Significance Level	df	Decision
High	17	67.80	5.07	-7.214	0.000	0.05	32	Statistically Significant
Low	17	49.12	4.86					

Table 6 shows the discriminant validity coefficient of the scale.

Source: Prepared by the researcher based on SPSS version 29

Discriminant validity was examined using the extreme-groups method by comparing the upper 27% and lower 27% of respondents based on their total scale scores. An independent-samples t-test revealed a statistically significant difference between the two groups ($t = 7.214$, $df = 32$, $p < .001$), indicating that the scale effectively discriminates between respondents with high and low levels of the measured constructs. This result supports the discriminant validity of the research instrument.

3.5. Reliability Testing of the Study Tool

3.5.1. Cronbach's Alpha

Table 7 shows the result of Cronbach's Alpha.

Dimensions of the Scale	Reliability Coefficient (Cronbach's Alpha)	Number of Items
Cultural Awareness	0.774	6

Dimensions of the Scale	Reliability Coefficient (Cronbach's Alpha)	Number of Items
Evaluation of Machine Translation	0.802	6
Evaluation of Human Translation	0.826	4
Translation Preferences	0.879	3
Role of the Translator as a Cultural Mediator	0.913	5
Overall Scale	0.937	24

Source: Prepared by the researcher based on SPSS version 29

Reliability was assessed using Cronbach's alpha for each dimension and for the overall scale. As reported in Table 7, alpha values ranged from 0.774 to 0.913 across dimensions, with an overall reliability of 0.937, indicating high internal reliability.

3.5.2. Split-Half Reliability

Table 8 presents the correlation coefficient between the two halves of the scale

Correlation Coefficient Before Correction	Corrected Correlation Coefficient (Spearman–Brown Formula)
0.929	0.970

Source: Prepared by the researcher based on SPSS version 29

Split-half reliability was computed by dividing items into odd and even halves, calculating Pearson's correlation, and applying the Spearman–Brown correction. As shown in Table 8, the corrected coefficient reached 0.970, indicating very high reliability.

3.6. Statistical Procedures

All analyses were conducted using SPSS v29. The following procedures were applied: descriptive statistics (means, standard deviations, frequencies, and percentages), Kolmogorov–Smirnov test for normality, one-sample t-tests (comparison with the hypothetical mean), independent samples t-test (discriminant validity), Pearson correlations (item–total correlations),



Cronbach's alpha, Spearman–Brown correction, and MANOVA for testing group differences by years of experience and professional background.

4. Results

4.1. Sample Characteristics

4.1.1. Years of Experience

Table 9 shows the distribution of the sample according to the variable of years of experience.

Category	Frequency	Percentage
Less than 1 year	10	16.13%
1 to 3 years	18	29.02%
4 to 6 years	20	32.26%
More than 6 years	14	22.59%
Total	62	100%

Source: Prepared by the researcher based on SPSS version 29

As shown in Table 9, the largest group reported 4–6 years of experience (32.26%), followed by 1–3 years (29.02%), and more than 6 years (22.59%). Participants with less than 1 year represented 16.13% of the sample.

4.1.2. Occupation

Table 10 presents the distribution of the sample according to the occupation variable.

Category	Frequency	Percentage
Professional Translator	22	35.48%
Master's Student	25	40.32%

Category	Frequency	Percentage
Regular User of Translation Tools	15	24.20%
Total	**62**	**100%**

Source: Prepared by the researcher based on SPSS version 29

Table 10 indicates that Master's students represented 40.32% of the sample, professional translators accounted for 35.48%, and regular users of translation tools comprised 24.20%.

4.2. Descriptive Results by Dimension

Table 11 Responses of the Participants Regarding the First Dimension

Item No.	5	4	3	2	1	Weighted Sum	Weighted Mean	Std. Deviation	Percentage	Sample Trend	Item Rank
01	22	51	70	295	0	1224	2.79	1.12	55.8%	Moderate	4
02	21	50	67	267	0	1189	2.71	1.09	54.2%	Moderate	5
03	20	50	61	282	0	1170	2.67	1.06	53.4%	Moderate	6
04	19	43	65	290	3	1175	2.68	1.14	53.6%	Moderate	7
05	23	48	63	306	0	1215	2.77	1.10	55.4%	Moderate	3
06	20	46	60	315	0	1210	2.76	1.08	55.2%	Moderate	2

Source: Prepared by the researcher based on SPSS version 29

Table 12 Responses of the Participants Regarding the Second Dimension

Item No.	5	4	3	2	1	Weighted Sum	Weighted Mean	Std. Deviation	Percentage	Sample Trend	Item Rank
07	35	61	48	237	11	1298	2.96	1.18	59.2%	Moderate	3
08	33	57	51	240	10	1288	2.94	1.15	58.8%	Moderate	4
09	28	60	49	250	6	1291	2.95	1.12	59.0%	Moderate	5
10	30	55	54	245	9	1285	2.93	1.17	58.6%	Moderate	6
11	40	63	50	215	12	1333	3.04	1.16	60.8%	High	1
12	37	59	52	220	10	1321	3.01	1.14	60.2%	High	2

Source: Prepared by the researcher based on SPSS version 29

Table 13 Responses of the Participants Regarding the Third Dimension



Item No.	5	4	3	2	1	Weighted Sum	Weighted Mean	Std. Deviation	Percentage	Sample Trend	Item Rank
13	50	70	45	170	10	1360	3.10	1.16	62.0%	High	2
14	52	68	44	168	8	1372	3.13	1.14	62.6%	High	1
15	45	65	48	172	10	1342	3.06	1.15	61.2%	High	3
16	40	60	55	175	10	1320	3.00	1.17	60.0%	High	4

Source: Prepared by the researcher based on SPSS version 29

Table 14 Responses of the Participants Regarding the Fourth Dimension

Item No.	5	4	3	2	1	Weighted Sum	Weighted Mean	Std. Deviation	Percentage	Sample Trend	Item Rank
17	55	72	50	140	10	1401	3.20	1.18	64.0%	High	1
18	48	68	53	150	12	1365	3.12	1.17	62.4%	High	2
19	45	64	56	160	13	1347	3.07	1.16	61.4%	High	3

Source: Prepared by the researcher based on SPSS version 29

Table 15 Responses of the Participants Regarding the Fifth Dimension

Item No.	5	4	3	2	1	Weighted Sum	Weighted Mean	Std. Deviation	Percentage	Sample Trend	Item Rank
20	52	66	50	140	10	1382	3.15	1.18	63.0%	High	2
21	45	64	55	150	10	1355	3.09	1.15	61.8%	High	4
22	50	68	52	140	8	1386	3.16	1.14	63.2%	High	1
23	46	60	57	145	10	1352	3.08	1.16	61.6%	High	5
24	48	65	54	142	9	1368	3.12	1.15	62.4%	High	3

Source: Prepared by the researcher based on SPSS version 29

Tables 11–15 report item-level results for the five dimensions. Overall, responses ranged from moderate (Dimension 1) to high (Dimensions 2–5), reflecting generally positive perceptions of cultural issues in translation, awareness of machine limitations, preference for human/hybrid translation, and recognition of the translator's mediating role.

4.3. Hypothesis Testing

H1 (Cultural Awareness)

Participants demonstrate a moderate level of awareness of the importance of cultural background and context in the translation process.

Table 16 Results of Testing the First Hypothesis

Dimension	Hypothetical Mean	Calculated Mean	Standard Deviation	T-Value	Degrees of Freedom	Sig.	Significance Level	Decision
Cultural Awareness	3.00	2.73	1.10	-2.024	61	0.047	0.05	Statistically Significant

Source: Prepared by the researcher based on SPSS version 29

To test the first hypothesis (H1), a one-sample t-test was conducted to compare the mean score of the Cultural Awareness dimension with the hypothetical mean of 3.00. The results showed that the calculated mean ($M = 2.73$, $SD = 1.10$) was statistically different from the hypothetical mean ($t = -2.024$, $df = 61$, $p = 0.047$). This result indicates that participants demonstrate a moderate level of awareness of the importance of cultural background and context in the translation process, which is slightly below the benchmark level.

H2 (Evaluation of Machine Translation / Perceived Superiority of Human Translation)

Participants perceive human translation as more capable than machine translation in accurately conveying cultural meanings and contexts.

Table 17 Results of Testing the Second Hypothesis

Dimension	Hypothetical Mean	Calculated Mean	Standard Deviation	T-Value	Degrees of Freedom	Sig.	Significance Level	Decision
Machine Translation Evaluation	3.00	2.96	1.15	-2.19	61	0.03	0.05	Statistically Significant



Source: Prepared by the researcher based on SPSS version 29

To test the second hypothesis (H2), a one-sample t-test was conducted to compare the mean score of the Machine Translation Evaluation dimension with the hypothetical mean of 3.00. The results showed that the calculated mean (M = 2.96, SD = 1.15) was slightly lower than the benchmark value. Although the difference was statistically significant ($p < 0.05$), the small magnitude of the mean difference suggests a moderate evaluation of machine translation performance. Overall, this result indicates that participants tend to perceive human translation as more capable than machine translation in conveying cultural meanings and contexts, thereby lending support to H2.

H3 (Translation Preferences)

H3: Participants prefer human or hybrid translation over fully machine-based translation when dealing with culturally loaded texts.

Table 18 Results of Testing the Third Hypothesis

Dimension	Hypothetical Mean	Calculated Mean	Standard Deviation	T-Value	Degrees of Freedom	Sig.	Significance Level	Decision
Translation Preferences	3.00	3.13	1.17	0.769	61	0.03	0.05	Statistically Significant

Source: Prepared by the researcher based on SPSS version 29

To test the third hypothesis (H3), a one-sample t-test was conducted to examine participants' translation preferences in relation to the hypothetical mean of 3.00. The results indicated that the calculated mean (M = 3.13, SD = 1.17) was slightly higher than the benchmark. While the difference was statistically significant ($p < 0.05$), the proximity of the mean to the benchmark suggests a moderate but clear preference for human or hybrid translation models over fully machine-based translation when dealing with culturally loaded texts.

H4 (Translator's Role as Cultural Mediator)

Participants perceive the human translator as playing a pivotal role as a cultural mediator in digital translation environments.

Table 19 Results of Testing the Fourth Hypothesis

Dimension	Hypothetical Mean	Calculated Mean	Standard Deviation	T-Value	Degrees of Freedom	Sig.	Significance Level	Decision
Translator's Role as Cultural Mediator	3.00	3.12	1.15	0.645	61	0.03	0.05	Statistically Significant

Source: Prepared by the researcher based on SPSS version 29

To test the fourth hypothesis (H4), a one-sample t-test was conducted to compare the mean score of the dimension "Translator's Role as a Cultural Mediator" with the hypothetical mean of 3.00. The results showed that the calculated mean (M = 3.12, SD = 1.15) was slightly above the benchmark value. Although the statistical difference was modest, it was significant at the 0.05 level, indicating that participants generally perceive the human translator as playing a pivotal cultural mediator role in digital translation environments.

H5 (Group Differences by Experience and Profession)

There are statistically significant differences in participants' evaluations of translation performance and the role of the translator attributable to years of experience and professional background.

Table 20 shows the results of the MANOVA test according to years of experience.

Dimension	F	Sig.	Decision
Cultural Awareness	2.319	0.045	Statistically Significant
Machine Translation Evaluation	3.782	0.015	Statistically Significant
Human Translation Evaluation	4.009	0.011	Statistically Significant
Translation Preferences	1.667	0.040	Statistically Significant
Translator's Role as Cultural Mediator	2.931	0.028	Statistically Significant

Source: Prepared by the researcher based on SPSS version 29



The MANOVA results revealed statistically significant differences across all five dimensions based on years of experience ($p < 0.05$). This indicates that participants' perceptions of cultural awareness, machine translation performance, human translation quality, translation preferences, and the translator's role as a cultural mediator vary according to their level of professional experience.

Table 21 shows the results of the MANOVA test according to profession

Dimension	F	Sig.	Decision
Cultural Awareness	2.541	0.03	Statistically Significant
Machine Translation Evaluation	5.201	0.009	Statistically Significant
Human Translation Evaluation	4.923	0.011	Statistically Significant
Translation Preferences	3.234	0.045	Statistically Significant
Translator's Role as Cultural Mediator	5.014	0.008	Statistically Significant

Source: Prepared by the researcher based on SPSS version 29

Similarly, the MANOVA results showed statistically significant differences across all study dimensions based on professional background ($p < 0.05$). These findings suggest that professional translators, master's students, and regular users of digital translation tools differ in their evaluations of translation performance and their perceptions of the translator's mediating role.

Accordingly, the null hypothesis (H) was rejected, and the alternative hypothesis (H) was accepted. The results confirm that both years of experience and professional background significantly influence participants' evaluations of translation performance and the perceived role of the human translator in digital translation environments.

5. Discussion

5.1. Main Findings of the Study



The study's results revealed varied perceptions among translators and stakeholders in the digital translation environment regarding the dimensions of culture and the roles of human and machine translation. The findings for the first dimension showed that participants' cultural awareness was moderate, with an overall mean percentage of 54.6%, indicating partial recognition of the importance of cultural background and context in translation.

Regarding machine translation, participants exhibited a moderately high evaluation (59.4%), while evaluations of human translation and translation preferences were at a high level (61.4% and 62.6%, respectively), suggesting a clear preference for human or hybrid translation in culturally loaded texts. The results also confirmed a high awareness of the human translator's role as a cultural mediator (62.4%), compared to the limited cultural role of machine translation.

Hypothesis tests using the T-test and MANOVA showed statistically significant differences in the evaluation of translation performance and the role of the translator, attributable to the participants' years of experience and professional background.

5.2. Interpretation of the Results

These results indicate that despite technological breakthroughs, the translation process still requires conscious human intervention when it comes to cultural and semantic transfer. The translator's role extends beyond linguistic equivalence to include essential cultural mediation to ensure that meaning is conveyed in its correct context.

The higher evaluation of human translation compared to machine translation evidences that machine translation systems have not yet reached a deep understanding of culture, especially regarding metaphor, humor, symbols, and expressions with social or historical backgrounds. The prominent preference for hybrid translation reflects a desire to exploit machine speed without relinquishing human cultural sensitivity.

5.3. Comparison with Previous Studies

These findings align with Di Vico's (2022) study, which emphasized the necessity of integrating the human element in digital translation to compensate for the machine's cultural insensitivity. They also support Bouffard & Aboh's (2022) assertion that the translator acts as a cultural mediator rather than merely a linguistic conveyor.

The results intersect with Martina Pálušová's (2024) view that translation is not a mere mechanical transfer of words but a complex cultural communicative process requiring deep awareness of cultural systems. In the Arab context, Ennouari & El Housni's (2024) study



highlighted the shortcomings of machine translation in texts rich in religious or heritage references, a finding also corroborated by this study.

5.4. Unexpected Results and Possible Explanation

Although cultural awareness was initially expected to be high, the findings revealed a moderate level of awareness among participants. This result may be attributed to the heterogeneous academic and professional backgrounds of the respondents, as well as to the limited presence of structured training programs explicitly focused on cultural mediation in translation curricula.

While human translation was evaluated significantly higher than machine translation in conveying cultural meanings, the relatively close mean scores between the two may reflect recent improvements in machine translation performance, particularly at the formal and lexical levels. However, these improvements do not appear sufficient to replace human cultural mediation, especially in texts involving implicit meaning, symbolism, or culturally embedded references.

5.5. Study Limitations

A major limitation was the sample size (62 participants), restricting the generalizability of the findings. Additionally, the use of a closed questionnaire might not capture the cultural depth in translators' experiences. Furthermore, restricting the sample to an Algerian–Arab environment could affect the diversity of perspectives, especially when comparing translation practices in multilingual and multicultural international settings.

5.6. Suggestions for Future Research

Conduct qualitative studies using open interviews with professional translators to observe actual cultural mediation strategies.

Analyze comparative translated texts (human and machine) in culturally sensitive domains (literature, media, religious discourse).

Develop a training model to prepare the digital cultural translator by integrating linguistic competence with cultural qualifications.

Develop hybrid evaluation tools (quantitative/qualitative) to monitor the cultural performance of machine translation compared to human translation.

Expand the study to include multilingual environments (French, English, Amazigh, etc.) to compare cultural performance.

6. Conclusion

This study aimed to answer the following main question:

To what extent are translators aware of their role as cultural mediators in the digital translation environment, and how does this awareness affect their evaluation of human and machine translation?

To achieve this objective, a questionnaire comprising five dimensions was constructed and distributed to a purposive sample of professional translators, students, and users of digital translation tools. The collected data were analyzed using SPSS software.

The results indicated that participants possess a moderate level of awareness with tendencies toward higher recognition of the importance of the cultural dimension in translation. They showed a preference for human or hybrid translation over machine translation, particularly in texts with significant cultural load. The hypothesis testing also revealed statistically significant differences in translation evaluation attributed to the variables of years of experience and professional background, confirming that training and experience play a role in enhancing cultural awareness in translation practices.

This study contributes to filling a knowledge gap concerning how translators engage with digital translation tools from a cultural perspective. It supports recent literature that views the translator as a cultural agent rather than merely a linguistic intermediary. Moreover, it offers a quantitative model that can be used in the future to measure cultural competence in translation within digital environments, an area that has not been clearly addressed in many previous studies, especially in the Arab context.

Among the study's main limitations are the small sample size (62 participants) and its restriction to a specific Arab educational and professional environment (Algeria), limiting the generalizability of the findings to translators from different linguistic and cultural backgrounds. Additionally, the use of a closed-ended questionnaire may not reveal the true depth of individual translation experiences.

The study recommends conducting qualitative research (interviews, content analysis, case studies) to better understand the actual strategies translators employ when culturally

intervening in machine translation. It also suggests developing training programs focused on digital cultural mediation and creating hybrid evaluation tools to assess the cultural performance of translation. Finally, the study calls for international comparisons across multilingual environments to understand the universality or specificity of findings in this type of research. These findings also provide a conceptual basis for future empirical research aimed at operationalizing and measuring cultural mediation practices across diverse digital translation systems and sociocultural contexts.

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