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Studying the impact of emotion-AI in cross-cultural communication on the effectiveness of global media

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Introduction: Emotion-AI, which integrates artificial intelligence in recognizing and processing emotions, holds significant potential in enhancing cross-cultural communication, particularly in global media contexts. This study investigates the impact of emotion-AI on global media communication, focusing on its role in bridging cultural gaps, fostering emotional connections, and improving cross-cultural understanding.

Method: A descriptive cross-sectional survey using structured questionnaires collected data from 1,108 global media consumers. Fuzzy-set qualitative comparative analysis (fsQCA) assessed participants' media-related emotion-AI experiences, perceptions, and reactions.

Result: Emotion-AI's capacity to deepen emotional relationships (62.1%) and respect for cultural diversity (62.7%) is well-known and appreciated. However, there are still many people who are worried about emotions being oversimplified (34.7%), which shows that technology cannot handle nuanced cultural manifestations of emotion just yet. Also, many look forward to seeing emotion-AI improve in the future, especially when it comes to fixing its present problems. With a solution coverage of 93% and consistency of 81%, the analysis further shows that positive experiences and perceptions are needed to create pleasant reactions. This highlights the crucial relevance of cultural adaptability and emotional accuracy in global media environments.

Discussion: This study sheds light on emotion-AI's involvement in cross-cultural communication and global media efficacy, affecting system development, and content integration. Emotion-AI could improve global communication by recognizing cultural differences and encouraging cultural tolerance.

KEYWORDS

emotion-AI, cross-cultural communication, global media, fuzzy-set qualitative comparative analysis, cultural adaptability, emotional accuracy

1 Introduction

In this age of globalization, communicating effectively across cultural boundaries has become crucial in determining how different groups of people engage with one another (Aljarelah, 2024). As a medium that allows for the dissemination of information across national and cultural lines, global media plays an important role in shaping global attitudes and interpersonal dynamics (Coker, 2023). Global media has enormous promise, yet significant obstacles exist to facilitating fruitful cross-cultural relationships. Recent technological advances have created Emotion-AI, which detects and reproduces human

emotions while understanding emotional intelligence. This new technology transforms the modern way of producing, distributing, and using media entertainment (Aririguzoh, 2022; Coker, 2023). Technology enhances cultural connection and emotional connections in exchange between different cultures. The study combines knowledge from media studies with AI research and cross-cultural communication to develop its concepts (Zhang and Jing, 2022; Xia et al., 2024). According to Afrouzi (2021) high-context and low-context definitions, fundamental cultural communication analysis stems from how people understand the context. These theories guide our understanding of how media materials link with diverse audiences by highlighting why non-verbal cues and emotional responses plus context understanding matter (Danaher et al., 2023). The research uses the technology acceptance model (TAM) to show how users around the globe respond to and adopt Emotion-AI technology. The research shows how Emotion-AI merges AI with emotional intelligence theory to improve mutual emotional understanding across different cultures (Na et al., 2022; Wang C. et al., 2023).

Research investigating the impact of emotion-AI on intercultural communication is noticeably lacking despite the technology's increasing prevalence in the media business. The current body of research on emotion-AI has ignored chiefly its worldwide impact on communication in favor of examining its technical features or function in specific regional settings. Global media platforms must deliver content that reaches audiences in every country (Zhai et al., 2024; Ho et al., 2024). Today, media businesses rely heavily on AI to transform content for audiences worldwide. According to current communication theories, the emotional complexities of cross-cultural interactions remain unacknowledged. Different emotional terms, cultural interpretations, and wrong non-verbal interpretations create this difficulty (Dwivedi et al., 2023; Xia et al., 2024). The power of Emotion-AI to process cultural and emotional distinctions intrigues us, but expert knowledge remains low about its use in global media and its influence on cultural connections through these channels (Chen and Ibrahim, 2023; Wang J. Z. et al., 2023). This research studies how emotion-AI helps or hinders cross-cultural communication in international news.

In addition, this study is noteworthy as it uses a fresh method to study how emotional and cross-cultural communication in global media interacts with one another. Due to their increasing prevalence, media practitioners, and scholars must comprehend the consequences of emotion-AI technologies on cross-cultural interactions. This research is essential for building AI systems that can better understand and connect with diverse audiences worldwide, ensuring that media is sensitive to different cultures and emotionally intelligent. In addition, the study's methodological technique, fuzzy-set qualitative comparative analysis (fsQCA), is a first for this type of research; it sheds light on the intricate and varied aspects of cross-cultural communication. Therefore, this research aims to investigate how emotion-AI technology affects the efficacy of media material in communicating across cultural boundaries, focusing on global media and cross-cultural communication.

Nevertheless, this study is significant for two reasons. First, delving into the crossroads of cross-cultural communication and AI in the international media scene addresses a significant void in the literature. Second, it provides valuable information for media organizations and AI developers, which they may use to make media that is both effective and respectful to different cultures. This research lays the groundwork for future studies and practical uses of AI in global media strategy by being the first to explore the influence of Emotions on cross-cultural communication. The unique contribution of this study lies in its examination of the unexplored impact of emotion-AI on cross-cultural communication in global media. This research makes a substantial contribution to the literature as it is the first study to use fsQCA methodology to assess this issue, filling a critical gap in both AI and media studies and providing a nuanced understanding of how different cultural variables interact with Emotion-AI technology in global media contexts both academically and industrially. Theoretically, it contributes to resolving the theoretical understanding of the how and why of Emotion-AI roles in cross-cultural communication as a unique perspective on the emotional dynamics of global media. The findings of this research lay the groundwork for future studies on the integration of emotion-AI in global media, positioning this study as a pioneering work in a rapidly evolving field.

2 Methodology

This study examined how people from various cultural backgrounds perceive and react to emotion-AI in cross-cultural communication based on their experiences. A descriptive cross-sectional survey design was used since the study aimed to investigate complex interrelationships. This technique for systematically collecting data from all types of populations is common in social sciences to facilitate robust statistical and qualitative analysis (Teng, 2023). The following sections appear as a research technique: population, sampling, data collection, model and variable definition, and analysis.

2.1 Research design

Global media consumers' experiences, perceptions, and responses to emotion-AI in cross-cultural communication were examined using a descriptive cross-sectional survey. The reasons for choosing this design are that it systematically collects data from the broad and diverse sample required for the kind of analysis of relationships of critical variables. This was an appropriate methodology because of the research's cross-sectional nature, which enabled us to capture a single point in time in the respondents' interactions with Emotion-AI, thereby ensuring that the results reflect the business case of current trends in global media consumption (Maier et al., 2023). This design is likely to be used to discover correlations and patterns that help explain how emotion-AI affects perceptions and responses played out in international media environments. The methodology took a quantitative path to obtain reliable and comparable data that ensured the business' effectiveness. The standardized metrics were applied to assess respondents' experiences and perceptions; the reactions were analyzed to understand patterns that indicate the grand scheme of emotion-AI's impacts. Such a robust framework is

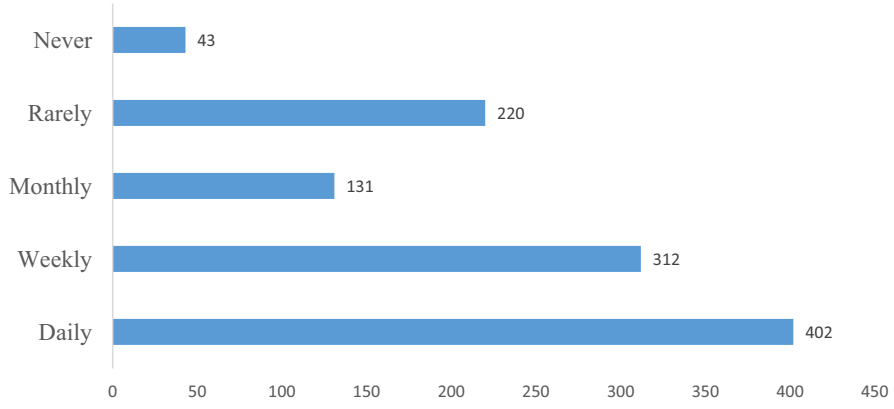

FIGURE 1
Global media consumption.

consistent with existing practice in cross-cultural media studies and technology adoption research, leading to a profound exploration of the subject (Alsaleh et al., 2019).

Figure 1 illustrates the research design employed in this study, showing the demographic data of the respondent's worldwide media consumption. These characteristics give a general picture of the sample group, highlighting its diversity and appropriateness for examining the effects of emotion-AI in cross-cultural communication, and international media situations. Daily media consumption is the most common (36.3%), followed by weekly (28.2%) and occasionally (19.9%). Only 3.9% of respondents claimed to have never engaged with global media, while only 11.8% stated they do so frequently. This pattern indicates that respondents are heavily exposed to global media, providing a solid foundation for evaluating the effectiveness of emotion-AI in these contexts.

2.2 Population and sampling

The study targeted global media consumers who had prior exposure to Emotion-AI technologies. This demographic was deemed appropriate due to their direct engagement with the subject matter, enabling relevant, and meaningful data collection. A convenience sampling method was employed to recruit participants, utilizing social media platforms and other digital channels for survey distribution (Alsaleh et al., 2019). This approach ensured accessibility to a geographically diverse population while optimizing resource use for participant recruitment. The study achieved a sample size of 1,108 respondents, meeting statistical requirements for reliable analysis and representation. Of these, 50.2% (n = 556) were female, and 49.8% (n = 552) were male, providing a balanced gender representation. Participants predominantly fell within the 18–29 age group (40.9%), followed by 30–39 years (22.6%) and 40–49 years (16.8%). Individuals below 18 years and those aged 50–59 and 60 and above accounted for 8.4%, 5.9%, and 5.5%, respectively. Educationally, the majority held a bachelor's degree (64.6%), with secondary-level education (19.2%), master's degrees (12.6%), and doctorate degrees (3.5%) comprising the rest. This distribution underscores a highly educated sample likely to have nuanced interactions with emotion-AI systems. The sampling strategy and demographic composition enhance the generalizability and validity of the findings, ensuring that insights reflect diverse perspectives and experiences. Table 1 provides a detailed breakdown of the demographic characteristics.

TABLE 1 Demographic characteristics of respondents.

	Frequency	Percent
Gender		
Male	552	49.8
Female	556	50.2
Age		
Below 18	93	8.4
18–29	453	40.9
30–39	250	22.6
40–49	186	16.8
50–59	65	5.9
60 and above	61	5.5
Education level		
Secondary level	213	19.2
Bachelor's degree	716	64.6
Master's degree	140	12.6
Doctorate degree	39	3.5

2.3 Data collection

The Wenjuanxing platform (https://www.wjx.cn/) was used to administer a structured online survey to collect data (Teng, 2023). The study revealed more about people's opinions,

experiences, and responses toward emotion-AI in international media environments. The survey link and participation were promoted through digital networks for broad reach and targeted outreach via social media platforms.

The survey instrument was divided into four main sections: demographic data, emotional experiences, opinions on its reliability and cultural significance, and responses to its application in media communication. Likert scale items ranging from 1 (strongly disagree) to 5 (strongly agree) were widely employed to capture complex attitudes and ideas. To guarantee clarity, reliability, and relevance, the questionnaire was pre-tested with a pilot group before it was fully implemented (Teng, 2023). The demographic and descriptive information collected in the 1,108 responses is summarized in Table 1. The high response rate suggests that the dissemination plan worked well and that the study needs to be addressed by the intended audience. Because the data collection process was digital, efficiency was guaranteed, and sources of bias inherent in traditional methodologies were reduced. Moreover, Wenjuanxing allowed us to manage and prepare the data for further research (Teng, 2023).

2.4 Model specification and variables

The fsQCA methodology is used to study which factors account for the cases that have responded favorably to emotion-AI in international media. This approach efficiently finds the relationships between the factors and their compatibility with each other accountable for the result (Teng, 2023). The model equation can be written as follows:

$$\text{REACTIONS} = f(\text{PERCEPTIONS}, \text{EXPERIENCES})$$

The dependent variable in this case was REACTIONS, which stood for respondents' favorable reactions to Emotion-AI. The independent variables were EXPERIENCES, which recorded the quantity and quality of interactions with Emotion-AI, and PERCEPTIONS, which demonstrated its reliability and cultural significance. Theoretical and empirical evidence supporting these constructs' crucial roles in influencing attitudes toward technological advancements led to their selection. Data calibration was carried out to convert raw scores into fuzzy-set membership values and ensure compliance with the requirements of the fsQCA analysis. In order to build a truth table and perform a necessity-sufficiency analysis, calibration metrics such as minimum, mean, and maximum values were completed (see Table 2) (Cangialosi, 2023; Pappas and Woodside, 2021). In the context of cross-cultural media communication, this model specification emphasizes the study's focus on comprehending the interaction between experiences, perceptions, and reactions.

2.5 Data analysis

The collected data were processed and analyzed using fsQCA 3.0 software, enabling examination of complex causal relationships through Boolean logic. Demographic data and Likert-scale responses were summarized in the first phases using descriptive statistical analysis (Pappas and Woodside, 2021; Teng, 2023). The next step was calibration, which transformed the raw data into fuzzy-set values using standards from the dataset (see Table 2 for calibration metrics). The necessity analysis identified conditions for achieving positive reactions, with consistency and coverage values evaluated against established thresholds (see Tables 3, 4) (Cangialosi, 2023). The truth table was then constructed to examine combinations of EXPERIENCES and PERCEPTIONS, analyzing their consistency with the desired outcome. This process allowed for identifying sufficient conditions and generating an intermediate solution, highlighting key pathways to favorable responses. Intermediate solution analysis revealed that EXPERIENCES and PERCEPTIONS significantly contribute to positive reactions, with combined conditions covering 93% of cases and achieving a solution consistency of 0.81 (Table 5). The results demonstrate the value of integrating theoretical insights with empirical data to uncover actionable findings. This methodological approach, rooted in fsQCA, provides a nuanced understanding of the factors driving positive responses to emotion-AI in global media. By leveraging individual and combined effects, the analysis offers robust evidence for the significance of experiences and perceptions in shaping attitudes toward emerging technologies (Fainshmidt et al., 2020; Teng, 2023).

TABLE 2 Calibration metrics for experiences, perceptions, and reactions.

	Minimum	Mean	Maximum
Experiences	1.4	3.730686	5
Perceptions	1.6	3.718412	5
Reactions	1.6	3.745126	5

TABLE 3 Necessity test of single condition variable.

Condition variable	Consistency	Coverage
Experiences	0.858083	0.852179
~Experiences	0.537194	0.667663
Perceptions	0.858083	0.864803
~Perceptions	0.533890	0.651654

3 Findings

This study compiles the respondents' experiences with emotion-AI in global media in Table 6. It shows the distribution of answers throughout the five degrees of agreement, which go from strongly disagree to agree strongly, and the mean scores and standard deviations for each question. This study examines how participants engage with and perceive emotion-AI in global media contexts.

Approximately 63% of respondents agreed or strongly agreed that they frequently encounter emotion-AI-mediated content, with an average score of 3.77 (SD = 1.114). This highlights the widespread presence of Emotion-AI technologies in global media and suggests that respondents are familiar with these tools. Nearly

TABLE 4 Truth table for experiences, perceptions, and reactions.

Experiences	Perceptions	Number	Reactions	Raw consist.	PRI consist.	SYM consist.
1	1	401	1	0.919516	0.843094	0.876479
0	1	176	1	0.893308	0.540655	0.571671
1	0	184	1	0.863592	0.46588	0.494063
0	0	347	0	0.684975	0.220057	0.230472

TABLE 5 Intermediate solution analysis for truth table.

Frequency cutoff		176	
Consistency cutoff		0.863592	
	Raw coverage	Unique coverage	Consistency
EXPERIENCES1	0.858083	0.0702223	0.852179
PERCEPTIONS1	0.858083	0.070223	0.864803
Solution Coverage		0.928306	
Solution Consistency		0.81264	

60% of respondents agreed or strongly agreed that emotion-AI accurately interprets emotions across cultures, yielding an average score of 3.69 (SD = 1.142). However, 17.4% disagreed, indicating that while most view the technology as effective, some remain skeptical of its accuracy in cross-cultural settings. With an average score of 3.76 (SD = 1.123), this item received positive responses from about 63% of participants who agreed or strongly agreed. This implies that Emotion-AI is valuable for increasing media settings' knowledge of cultural diversity. With an average score of 3.72 (SD = 1.167), over 62% of respondents agreed or strongly agreed with this statement. This study shows how emotion-AI might improve emotional ties in cross-cultural communication through international media. With an average score of 3.72 (SD = 1.145), over 61% of respondents agreed or strongly agreed that they considered utilizing Emotion-AI products simple. The usability of Emotion-AI technologies is largely considered favorably, although 16.8% disagree, indicating that user-friendliness has to be enhanced.

Table 7 presents respondents' perceptions of the role of emotion-AI in cross-cultural communication through global media. It includes the distribution of responses across five levels of agreement for each item, along with average scores and standard deviations. These results offer insights into how emotion-AI is perceived in bridging cultural gaps, its reliability, and its overall contribution to understanding.

Most respondents (61%) agreed or strongly agreed that Emotion-AI effectively bridges cultural communication gaps in global media, resulting in an average score of 3.72 (SD = 1.156). This indicates a positive perception of Emotion-AI's ability to reduce cultural barriers in global media contexts. Around 61% of participants also agreed or strongly agreed that Emotion-AI is reliable in handling complex emotions, with an average score of 3.71 (SD = 1.135). Despite this, 16.8% expressed skepticism, highlighting that improvements in reliability are needed. With an average score of 3.73 (SD = 1.118), ~61% of respondents viewed Emotion-AI as providing valuable insights into cultural nuances. This suggests that emotion-AI is a helpful tool for enhancing cross-cultural understanding. Interestingly, 62.2% of respondents agreed or strongly agreed that Emotion-AI often oversimplifies emotions, leading to misconceptions, with an average score of 3.73 (SD = 1.139). This outcome raises questions about how emotion-AI oversimplifies emotions, which may limit its use in complex cultural settings. With an average score of 3.71 (SD = 1.132), around 61% of respondents agreed or strongly agreed that emotion-AI enhances cross-cultural comprehension in international media. This confirms the widespread belief that emotion-AI contributes positively to intercultural communication.

Table 8 compiles respondents' answers about the role of emotion-AI in global media, with special emphasis on how effectively it is seen to handle cultural diversity, enhance communication effectiveness, and adjust to overcome limitations. The table also shows each remark's average ratings and standard deviations, showing how Emotion-AI is seen as a global media breakthrough. Approximately 63.2% of respondents agreed or strongly agreed that they feel confident in Emotion-AI's ability to handle cultural diversity in communication, with an average score of 3.73 (SD = 1.114). This suggests moderate confidence in Emotion-AI's capability to manage cultural diversity effectively.

The statement "emotion-AI significantly enhances the effectiveness of global media communication" received a similar level of agreement, with 61.6% of respondents agreeing or strongly agreeing and an average score of 3.72 (SD = 1.132). These results reflect the perception that emotion-AI positively contributes to communication within global media. With 62.3% of participants agreeing or strongly agreeing, "Emotion-AI makes global media content more engaging and relatable" had the highest average score in the table (3.74, SD = 1.137). This shows that respondents are interested in how Emotion-AI might increase engagement and relatability in global media. The highest agreement level (63.4%) was observed for the item "I believe Emotion-AI can evolve to address its current limitations in cross-cultural contexts," with an average score of 3.8 (SD = 1.121). This optimism reflects the belief that Emotion-AI has the potential to improve and overcome its limitations in addressing cross-cultural complexities. For the statement "I believe Emotion-AI is a necessary innovation for improving global media effectiveness," about 62% of respondents agreed or strongly agreed, resulting in an average score of 3.72 (SD = 1.134). This finding underscores the recognition of Emotion-AI as a valuable tool for advancing global media communication.

Table 2 displays the minimum, mean, and maximum values derived from the overall mean scores of the statements related to emotion-AI in media contexts within the experiences, perceptions,

TABLE 6 Respondents' experiences with emotion-AI in media.

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average	SD
I frequently encounter emotion-AI-mediated content in global media.	37 (3.3%)	126 (11.4%)	247 (22.3%)	347 (31.3%)	351 (31.7%)	3.77	1.114
Emotion- AI accurately interprets emotions across different cultures.	41 (3.7%)	152 (13.7%)	248 (22.4%)	339 (30.6%)	328 (29.6%)	3.69	1.142
Emotion-AI improves my understanding of diverse cultural perspectives in global media.	36 (3.2%)	135 (12.2%)	242 (21.8%)	341 (30.8%)	354 (31.9%)	3.76	1.123
Emotion-AI enhances emotional connection in cross-cultural communication through media.	49 (4.4%)	145 (13.1%)	226 (20.4%)	339 (30.6%)	349 (31.5%)	3.72	1.167
Emotion-AI tools are easy to engage with in global media contexts.	38 (3.4%)	148 (13.4%)	249 (22.5%)	320 (28.9%)	353 (31.9%)	3.72	1.145

TABLE 7 Perceptions of emotion-AI in cross-cultural communication.

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average	SD
Emotion-AI effectively bridges cultural communication gaps in global media.	46 (4.2%)	139 (12.5%)	248 (22.4%)	324 (29.2%)	351 (31.7%)	3.72	1.156
Emotion-AI is reliable in interpreting complex emotional expressions.	39 (3.5%)	147 (13.3%)	248 (22.4%)	339 (30.6%)	335 (30.2%)	3.71	1.135
Emotion-AI provides meaningful insights into cultural nuances in communication.	36 (3.2%)	137 (12.4%)	258 (23.3%)	340 (30.7%)	337 (30.4%)	3.73	1.118
Emotion-AI sometimes oversimplifies emotions, leading to misinterpretation.	342 (30.9%)	347 (31.3%)	237 (21.4%)	140 (12.6%)	42 (3.8%)	3.73	1.139
Overall, emotion-AI contributes positively to cross-cultural understanding in global media.	40 (3.6%)	140 (12.6%)	255 (23%)	337 (30.4%)	336 (30.3%)	3.71	1.132

and reactions sections. These measurements were used to calibrate additional analysis. The minimum score for experiences was 1.4, with a mean score of 3.73, and a maximum of 5. Respondents often reported high levels of participation in emotion-AI-mediated events, as shown by the majority of values falling into the upper range, which indicates happy experiences. The mean score for perceptions was 3.72, the highest possible score was 5, and the lowest possible score was 1.6, which was slightly higher. These results suggest that perceptions of emotion-AI in cross-cultural communication and media contexts are predominantly positive, though slightly less so than experiences.

Reactions also had a minimum score of 1.6, with the highest mean score among the three sections at 3.75 and a maximum of 5. This reflects a strong view on Emotion-AI's perceived worth as an invention and its potential to enhance global media. Experiences, perceptions, and emotions are regularly rated favorably in Table 2, with mean scores close to 4 on a 5-point scale. These results suggest that respondents generally thought that Emotion-AI has a beneficial function in global media despite minor disparities in emphasis among the three components. This calibration offers a solid foundation for further fsQCA research.

3.1 Additional analysis

3.1.1 The necessity analysis of single condition variable

Table 3 presents the results of a necessity test for single condition variables—Experiences and Perceptions, as well as their negations (∼Experiences and ∼Perceptions)—in explaining positive reactions to Emotion-AI in global media. The table displays each condition's consistency and coverage values, providing insight into their essentiality in producing the outcome. Experiences are often a prerequisite for successful responses, as seen by the consistency score of 0.86, which satisfies the traditional standard of $\geq$0.85. Based on the coverage of 0.85, a sizable percentage of respondents who gave affirmative answers appear to have this condition.

The negation of Experiences (∼Experiences) exhibits a lower consistency of 0.54, which falls below the threshold for necessity, implying that a lack of experiences is not a reliable predictor of the outcome. The coverage of 0.67 indicates its presence in many cases, but its inconsistency limits its necessity. Perceptions have a high consistency of 0.86, similar to experiences, indicating

TABLE 8 Reactions to emotion-AI in global media contexts.

Item	Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Average	SD
I feel confident in the ability of Emotion-AI to handle cultural diversity in communication.	37 (3.3%)	141 (12.7%)	230 (20.8%)	373 (33.7%)	327 (29.5%)	3.73	1.114
Emotion-AI significantly enhances the effectiveness of global media communication.	37 (3.3%)	147 (13.3%)	242 (21.8%)	341 (30.8%)	341 (30.8%)	3.72	1.132
Emotion-AI makes global media content more engaging and relatable.	39 (3.5%)	141 (12.7%)	238 (21.5%)	338 (30.5%)	352 (31.8%)	3.74	1.137
I believe Emotion-AI can evolve to address its current limitations in cross-cultural contexts.	26 (2.3%)	145 (13.1%)	234 (21.1%)	318 (28.7%)	385 (34.7%)	3.8	1.121
I believe Emotion-AI is a necessary innovation for improving global media effectiveness.	40 (3.6%)	144 (13%)	237 (21.4%)	350 (31.6%)	337 (30.4%)	3.72	1.134

that they are required for affirmative responses. Its coverage value of 0.86 demonstrates its importance in a sizable percentage of circumstances and further supports its classification as a key factor. The negation of perceptions (~Perceptions) is not a reliable indicator of negative responses, with a consistency of 0.53 below the necessary threshold. The coverage of 0.65 does not demonstrate that it is required, although it is often present.

Table 4 presents the truth table generated for analyzing experiences, perceptions, and reactions to emotion-AI in global media using fsQCA. The table includes combinations of experiences and perceptions, the number of cases, reactions, and the consistency metrics—raw Consistency, Proportional Reduction in Inconsistency (PRI) Consistency, and Symmetric Consistency.

Combination 1 (Experiences = 1, Perceptions = 1, Reactions = 1)

This combination evokes happiness and reflects the respondents' good experiences and viewpoints. Positive experiences, perceptions, and attitudes are strongly aligned, as evidenced by the highest raw consistency (0.92) and the greatest number of examples (401).

Combination 2 (Experiences = 0, Perceptions = 1, Reactions = 1)

Respondents who express favorable opinions despite unsatisfactory or unpleasant experiences give positive answers. With a raw consistency of 0.89 and a PRI consistency of 0.54, this combination, which comprises 176 examples, demonstrates a notable degree of ambiguity in the link between perceptions and responses.

Combination 3 (Experiences = 1, Perceptions = 0, Reactions = 1)

Pleasant responses are the consequence of this group reflecting pleasant experiences but neutral or negative judgments. The experience-reaction relationship is moderately supported by its 184 cases, which have a PRI consistency of 0.47 and a raw consistency of 0.86.

Combination 4 (Experiences = 0, Perceptions = 0, Reactions = 0)

This combination results in neutral or negative emotions and represents respondents with neutral or negative experiences and attitudes. A poorer alignment is shown by the 347 examples, with the lowest raw consistency (0.68) and PRI consistency (0.22).

The consistency metrics in Table 4 show the various degrees of agreement between combinations (Perceptions = 1, Experiences = 1). Positive combinations exhibit the most substantial alignment, whereas negative combinations have the weakest correlations. These findings demonstrate the significance of perceptions and experiences in shaping positive reactions to emotional AI global media.

3.1.2 Truth table analysis

Table 5, the truth table analysis's intermediate solution, highlights the essential explanatory criteria for obtaining favorable responses to emotion-AI in international media. The raw and unique coverage values for each condition are included, as well as the analysis's frequency and consistency cutoffs and the entire solution's coverage and consistency. The analysis employed a frequency cutoff of 176 and a consistency cutoff of 0.863592. These cutoff points guarantee that the included solutions are consistently compatible with the result and empirically significant (enough examples).

Positive experiences (EXPERIENCES1) demonstrate a raw coverage of 0.86, indicating that this condition accounts for 85.8% of cases with positive reactions. Its unique coverage of 0.07 demonstrates its unique contribution, which extends beyond overlaps with other disorders. Its consistency of 0.85 indicates it is very well aligned with happy emotions. Given their raw coverage of 0.86 and unique coverage of 0.07, positive perceptions (PERCEPTIONS1) are equally significant in determining positive reactions. Its marginally higher consistency of 0.86 emphasizes its reliability as a contributing factor.

The combined circumstances (EXPERIENCES1 and PERCEPTIONS1) may be responsible for 93% of cases with positive responses, according to the total solution coverage of 0.93.

The criterion and the result have a considerable but imperfect fit, as indicated by the solution consistency of 0.81. Table 5 indicates that pleasant experiences and favorable perceptions are necessary to encourage favorable reactions to Emotion-AI in global media. Even when their contributions overlap, their combined effect covers most situations. The high solution coverage and consistency level validate how well these criteria explain the desired outcome.

4 Discussion

Emotion-AI integration in cross-cultural communication within global media has garnered significant attention in academic and practical domains. This study contributes a pioneering perspective by investigating how user experiences, perceptions, and reactions to Emotion-AI technology influence its effectiveness in global media contexts. The results align with and expand upon prior studies, offering novel insights into the interplay between emotion recognition, cultural nuances, and media engagement.

The findings illustrate that emotion-AI is positively utilized in international media. Most respondents (63%) reported regular encounters with emotion-AI-mediated content, with 62.1% agreeing that it enhances emotional connections and 62.7% noting its role in improving appreciation of cultural diversity. The increasing use of Emotion-AI in media ecosystems and its ability to promote cross-cultural communication is demonstrated by these high average scores (∼3.7 across all items). This aligns with what Madanian et al. (2023) found, which showed how media content with emotion-recognition technologies makes experiences more personalized and increases engagement by using cues that people can relate to emotionally. Nevertheless, the large standard deviations (∼1.1) indicate much personal variation in the experiences, suggesting that emotion-AI systems should be made more accessible and universal. According to Van Kleef et al. (2010), emotion as Social Information (EASI) theory, this realization aligns with the idea that people's interpretations of emotional manifestations differ depending on their culture and the specific circumstances around them (van Doorn et al., 2015). While existing emotion-AI systems are helpful for many users, these variances show that they do not consider subtle contextual differences in how people express and receive emotions (Khare et al., 2024). According to Lewis and Sauro (2021), usability is one of the most important factors when using a new technology. Emotion-AI has been well-received because it follows these concepts. Although most users have a positive impression of Emotion-AI, the wide range of reactions highlights the need for continuous design refinement. In order to overcome inequalities in accessibility and user engagement, Emotion-AI can improve its service to broader demography by improving user interfaces and increasing datasets to encompass varied cultural situations (Kolomaznik et al., 2024).

The results also show that Emotion-AI has promising potential; 61% of people who took the survey think it helps people from different cultures communicate more effectively and comprehend each other's subtleties. However, 60.6% think that emotion-AI can accurately decipher complicated facial expressions, supporting the emotional intelligence theory, which shows that reading and understanding emotions is key to good communication. Emotion-AI systems help develop emotional intelligence in cross-cultural relationships through their capability to detect and respond to emotional cues. Even though 34.7% of respondents expressed concerns, emotion-AI simplifies emotional experiences when processing many unique emotions. Hoemann et al. (2019) state that the concept of created emotions leads people to express their doubts, which align with what the researchers stated in their main argument. They argue that emotional reactions come only from specific social settings and cultural frameworks, not from a universal feeling. The most likely reason emotion-AI oversimplifies emotions is that it relies on generic emotion recognition models that do not consider how cultural factors influence how people show their feelings (Hoemann et al., 2019; Barrett, 2017). The system needs improvements because Emotion-AI both helps users communicate better but also has the potential to reduce effective interaction. Research by Pugh et al. (2021) showed that how people show and understand emotions depends on cultural backgrounds. The system shows how cultural sensitivities must be considered because its sample reveals that emotion-AI produces misconceptions between ethnic groups. Better emotional expression recognition systems require updates that handle cultural diversity while using training data from various sources (Pugh et al., 2021; Gunkel et al., 2016).

The research shows that over 60% of respondents trust Emotion-AI to handle cultural differences, and another 62% believe it is an essential technology for worldwide media. The survey results show that people expect positive changes in emotion-AI because most respondents chose this answer. People see the system's struggles today but feel its growth potential. The study's results show the same findings as TAM from Ho et al. (2024). According to Gkinko and Elbanna (2022), two key factors affecting tech adoption are how helpful and easy users think something is because emotion-AI helps connect with viewers more emotionally; it shows why it is needed to reach worldwide audiences successfully. Following the MAIN model, emotion-AI continues to improve and be flexible; it has a good chance of success. The MAIN model describes how well digital technology works and how it makes people feel in control, which drives how much users get involved (Vicci, 2024; Khogali and Mekid, 2023). The effectiveness and usefulness of emotion-AI come from allowing it to improve continually. It is noteworthy that experiment participants identified two key limitations in emotion-AI, including the interpretation of cultural diversity, similar to the findings of Barrett et al. (2019), who found that cultural differences in how emotions are spoken make scanning for emotions between countries particularly hard. The results show that Emotion-AI needs adaptive training capabilities to handle different cultural feedback as it works, helping it provide better and more universal results in any setting.

The study's calibration metrics show consistent positive sentiments across Experiences (mean: 3.73), Perceptions (3.72), and Reactions (3.75). Among all requirements, Perceptions, and Experiences showed the highest agreement level (more than 85%) when participants rated them as positive. This lends credence to the research of Groves et al. (2015), who contended that successful cross-cultural interactions necessitate cultural intelligence, which they defined as having three components: cognitive, emotional,

and behavioral. When used in media settings, emotion-AI can help bring people of different cultural backgrounds together by evoking good emotions and experiences. The truth table findings show a strong correlation between good experiences, perceptions, and reactions, further validated by high raw consistency scores (≥0.86). With an 81% consistency rate and a 93% solution coverage rate, the intermediate solution analysis highlights the components' explanatory ability. The results confirm that user satisfaction matters most when building AI emotion systems (Connell et al., 2023). Cultural theory on individualism vs. collectivism explains why people react differently to emotion-AI. Solutions that account for users' cultural norms receive more positive user feedback since they use the communication styles that users find most comfortable.

The study demonstrates that people respond to artificial intelligence that demonstrates emotions in numerous ways, with positive and negative reactions. Although many people had positive interactions, problems around respect for other cultures and wrong simplifications remain. The product has trouble reading hidden messages and body language in societies where most communication is not spoken, as Pang et al. (2024) described. To correctly understand and address these problems, emotion-AI must integrate more advanced cultural intelligence methods. The system can use this information to communicate better with people of different cultures. Emotion-AI works better in countries where people speak plainly and rely on genuine feelings during conversations. This proof shows why emotion-AI systems must be able to understand and adapt to different cultures (Ahmad et al., 2023). Narimisaei et al. (2024) show that computer learning systems can automatically add cultural elements, making programs better suited to different people's backgrounds and settings.

This study fits with other research exploring how emotion-AI relates to communication and media. Two recent examples highlight how facial expression analysis helps draw consumers into ad content (Ballesteros et al., 2024) and why identifying emotional sentiment helps tailor information for distinct groups (Diwan et al., 2025). Research supports and confirms positive comments about emotion-AI, showing that it powers creative mass media that connect deeply with audiences. Research has found and explored cross-cultural communication despite lacking earlier attention, whereas the current study focuses exclusively on this area (Gu, 2024; Saheb et al., 2024; Asif and Gouqing, 2024). The research develops unique fsQCA methods to reveal how perception and experience drive users' reactions to emotion-AI technology. This method delivers fresh findings by showing how intricate cross-cultural connections work.

To further enhance the emotional intelligence of AI systems in cross-cultural media contexts, future development could benefit from integrating concepts derived from human cognitive science, particularly Theory of Mind (ToM) and Metacognition. ToM refers to the ability to attribute mental states, like beliefs, desires, and intentions, to others, and to understand that these states differ from one's own (Cuzzolin et al., 2020; Bamicha and Drigas, 2024). Incorporating ToM principles into emotion-AI would enable systems to anticipate better and interpret culturally diverse emotional responses, enhancing the AI's contextual sensitivity. This could drastically improve communication efficacy by enabling AI to distinguish between culturally specific emotional cues, thereby avoiding misinterpretations (Pergantis et al., 2025).

Similarly, embedding metacognitive mechanisms would allow emotion-AI systems to self-monitor and adjust their responses based on feedback or error recognition. Metacognition supports internal evaluation, allowing AI to gauge the confidence of its emotional interpretations and revise outputs dynamically. For instance, when faced with ambiguous non-verbal cues, a metacognitive AI system could flag uncertainty and seek contextual clarification, thereby reducing the risk of emotional oversimplification or cultural misreading (Cuzzolin et al., 2020; Pergantis et al., 2025). Integrating these two faculties would not only align emotion-AI with more sophisticated human cognition but also contribute to creating more adaptive, culturally intelligent media technologies. Future studies should explore how ToM and metacognition could operationalize AI systems' learning loops and reflection cycles, making them more emotionally accurate and context-aware (Bamicha and Drigas, 2024; Chen et al., 2024).

5 Conclusion

This research explored how people interact with emotion-AI through global media by conducting a survey. The findings demonstrate that media integration of Emotion-AI technology brings people together across social and cultural boundaries. Research shows that Emotion-AI enhances communication since users report having had good experiences with its products and stronger emotional ties. Feedback from users demonstrates the platform's capability to work across cultures, though simplicity issues remain a concern. The research outcomes confirm that emotional perception and usage experiences create the basis for emotional reactions. While Emotion-AI faces significant limitations, this strong solution coverage and consistency scores align well with users' needs. The fact that people are hopeful about its future shows how important it is to make incremental improvements so that it becomes more reliable and sophisticated. Consistent use and positive opinions among respondents indicate that it strengthens emotional ties and promotes an understanding of cultural variety. The research shows how Emotion-AI helps different countries develop cross-border dialogues. The research reveals that responses to Emotion-AI result from the combination of what users see and feel throughout usage. The results of consistency and necessity tests provide a road map for creating a user-centered emotion-AI system, where good perceptions and experience are critical factors in favorable reactions. This highlights how critical it is for technology design to be inclusive, user-friendly, and culturally adaptable. Furthermore, fsQCA enables the study to provide a unique methodological approach and detail how factors lead to good reactions to emotion-AI.

Although this research has its merits, it also sees the shortcomings of current Emotion-AI systems. Because a significant minority of respondents were worried about simplification and emotional mistakes, iterative improvements are necessary. Its algorithm refinement must handle the complexity of cross-cultural communication and the problem of capturing cultural nuances and correcting biases in emotion recognition. Vividly,

however, these constraints also demonstrate what could be an opportunity to advance and innovate in the sector. This study enriches both theory and practice. Theoretically, it provides the groundwork for future research on how Emotion-AI interacts with cultural media in international media. It can help Emotion-AI developers with their algorithmic design if they consider the current cultural intelligence. If Emotion-AI can fix its present problems, it could be an excellent tool for helping to create inclusive and meaningful cross-cultural relationships. Lastly, with more growth, Emotion-AI can become a powerful tool to help progress media communication worldwide. Moreover, it could become a tremendous development tool in increasing connected society, forming emotional bonds, and transcending cultural boundaries. Emotion-AI works with an outlook of cultural adaptability and emotional correctness to facilitate inclusive, meaningful, and effective cross-cultural communication.

5.1 Recommendations and future suggestions

This research has the potential to assist both academics and the industry significantly. It emphasizes the importance of multidisciplinary approaches combining computer science, cognitive psychology, and cultural anthropology in developing Emotion-AI systems sensitive to different cultures. According to the findings, Emotion-AI solutions should stress accessibility and usability, emphasizing the value of user-centered design in technological development. This work provides methodological insights into the intersection of AI and cross-cultural communication using fsQCA. It also provides a foundation for researchers to continue researching this connection. To make Emotion-AI as effective as possible in global media, developers should prioritize improving cultural adaptability and emotional accuracy. This entails incorporating dynamic learning algorithms that respond to cultural feedback and diversifying training datasets to cover various cultural scenarios. Industry stakeholders and cultural specialists should work together to ensure that Emotion-AI systems are designed with cultural intelligence as their foundation. There should also be an endeavor to make these systems more user-friendly and accessible so everyone can use them, leveling the playing field regarding participation and experience.

Additionally, media businesses should use emotion-AI to create content that consumers can relate to emotionally and culturally. Media companies can boost audience engagement and cross-cultural connections by incorporating emotion-AI into their content development operations. However, it is critical to maintain ethical considerations and ensure that emotion-AI systems are used responsibly and transparently. Future studies that apply emotion-AI to various cultural circumstances should examine the influence of cultural elements on user experiences and perceptions. As emotion-AI technologies advance, longitudinal research may shed information on how these dynamics evolve.

Furthermore, it is recommended that interdisciplinary collaborations be sought to create Emotion-AI systems that can adapt to different cultures. These systems should incorporate ideas from the social sciences, humanities, and AI ethics. In conclusion, researchers should look into how Emotion-AI could be supplemented by other new technologies for cross-cultural communication, such as generative AI and improved natural language processing. In the future, research can help solve the complicated problems of global media communication by investigating these synergies.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

LF: Methodology, Writing – original draft, Writing – review & editing.

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The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Generative AI statement

The author(s) declare that no Gen AI was used in the creation of this manuscript.

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Supplementary material

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