

Communication Challenges and Collaboration in Cross-Cultural Design Project Teams: A Pilot Study in the Manufacturing Sector in Lagos

Olabisi Cecilia Ayodele¹, Ruth Ajiboye Oghenevavwarehro² & Ebenezer Odji³

¹Department of Industrial design, Faculty of Environmental Sciences. University of Abuja.

²Department of Industrial design, Faculty of Environmental Sciences. University of Abuja.

³Department of Industrial design, Faculty of Environmental Sciences. Lagos State University.

ARTICLE INFORMATION	ABSTRACT
Article history: Published: August 2026 Keywords: Communication Culture Industrial Design Manufacturing Project Management	The emergence of globally dispersed design project management teams has created new challenges in terms of communication, collaboration and cultural fit. With a focus on professionals in cross-cultural project management teams based in Lagos State, Nigeria, this pilot study examined collaboration and communication challenges in global manufacturing. Data were gathered from 20 respondents in a variety of positions, ranging from industrial designers, project managers, to management team members within the manufacturing sector, using a descriptive research design and quantitative methodology. The study revealed a positive correlation between collaboration frequency and team effectiveness, and a negative correlation between communication challenges and team effectiveness, with designers facing higher communication challenges relative to project managers, product engineers, and team leads. Largely, the findings affirm that managing communication effectively and promoting collaborative practices are vital for successful cross-cultural project management.

1. Introduction

The globalisation of manufacturing and product development has transformed how design teams operate. According to Padhi (2016), globalisation has made cross-cultural communication inevitable. Today, design projects often involve professionals from diverse cultural and geographic backgrounds (Cozma-Ivan, 2023; Noel et al., 2023). As teams become increasingly international and cross-cultural, the complexity of managing design workflows across time zones, languages and work cultures has also grown. Cross-cultural teams are particularly prevalent in sectors such as automotive, electronics, textiles, plastic products and other consumer goods manufacturing, with industrial designers playing significant roles in multidisciplinary teams in these sectors. In the textile industry for example, multicultural design management teams bring together professionals from different cultural backgrounds to merge diverse textile traditions, notions and sustainable practices (Liu & Li, 2025; Yerden, 2025). As insinuated by Oktaviani et al. (2026), successful design project management necessitates cultural sensitivity, awareness, respect for local artisan knowledge and open communication. By incorporating heritage techniques like African bark cloth (lubugo), Nigerian Aso Oke, Adire and Indonesian Ikat, these teams can drive innovation while preserving cultural identity and producing sustainable textile products for global markets.

The history of the development of the textile industry in Nigeria forms an important foundation for understanding cross-cultural design teams and artisan collaboration in the Nigerian context. Kaduna Textiles Ltd. was founded in 1955 by Northern Nigerian government officials in collaboration with David Whitehead & Sons, a British textile company.



Figure 1: Textile manufacturing in northern Nigeria with a team that cuts across culture.

Production started in 1957 and, during the 1970s, Kaduna saw significant increase in textile production, dyeing and spinning (Maiwada & Renne, 2013). The Northern Nigerian Regional Development Corporation and the Hong Kong-based Cha Group founded United Nigerian Textiles Limited in 1964, combining Nigerian and Chinese labourers and management into the same design and manufacturing setting. Nigerian and other West African markets were receiving printed cotton textiles from the factory the by 1980s (Renne, 2019). Through the sharing of technical, administrative and local production knowledge, these historical textile design

and manufacturing development records show that cross-cultural design, investment and manufacturing cooperation was already an element of the textile manufacturing industry in Nigeria (Renne, 2019). Collaborations between designers and artisans has remained important despite the subsequent decline in large-scale textile manufacturing due to unstable electricity, poor infrastructure, economic and political shifts and competition from imported textiles (Maiwada & Renne, 2013; Renne, 2019). Nigeria's fashion and textile design industry today unites designers, textile manufacturers and craftspeople whose traditional abilities and knowledge contribute to modern goods and global creative marketplaces (Renne, 2019; UNESCO, 2023). Thus, cross-cultural cooperation has continued to offer a way to combine technical/design proficiency, cultural knowledge and modern design techniques in Nigeria, from British-Nigerian and Chinese-Nigerian industrial partnerships to modern designer-artisan networks.

Beyond textile, into other aspects of design and manufacturing, there has been a significant growth in cross-cultural design team working, which has translated into a significant increase in cross-cultural project management needs globally, including in Nigeria (Jiang, 2024; Odji & Oni, 2024; Rau, 2022). Aside from onsite cross-cultural and international collaborations, companies that, for instance, design in one country and manufacture in another rely heavily on virtual collaboration. While this model may aid in improving efficiency, productivity and provide cost benefits, it also introduces significant risks related to value misalignment, miscommunication and team dysfunctions. According to Gyasi et al. (2021), this global economic pattern has not only led to a diversified trend of transnational trade, presenting a prosperous scene with growing cultural diversity, but has also brought cross-cultural contradictions and conflicts, as cultural diversity often leads to conflicts. Hence, there is the need for project managers to find their ways around not just the technical and timeline challenges but also cultural and interpersonal dynamics, which makes cultural diversity and communication in cross-cultural design teams a key subject for research.

1.1 Problem Statement

Indeed, product design, development and manufacturing has become increasingly globalised, with growing diversity in design project teams. However, despite this evident shift towards globalised design, many organisations still apply traditional project management frameworks that do not significantly account for cultural diversity. As summarised in Table 1, traditional project management frameworks, such as Waterfall and the original PMBOK (Project Management Body of Knowledge) approach, are standardised and based on Western contexts, which may not be suitable for diverse, multinational environments (Adetoba & Potluri, 2025; Masih, 2025). These frameworks overlook the influence of cultural values on decision-making, conflict resolution, time management, and authority dynamics, which are critical in global projects. Applying these frameworks in cross-cultural settings may give rise to misunderstandings, misalignment, reduced team cohesion, and inefficiencies (Adetoba & Potluri, 2025; Anthony, 2025; Königová, 2025).

Table 1: Limitations of Traditional project management frameworks/practices in global contexts

	Traditional PM Frameworks	Limitation in Global Context	
Origin	Developed in Western organisational contexts	May not align with global cultural norms	Origin
Cultural Consideration	Minimal focus on cultural diversity	Overlooks differences in decision-making, conflict resolution, and authority	Cultural Consideration
Structure	Emphasise linear planning, fixed roles, and formal documentation	Rigid processes may hinder flexibility in diverse teams	Structure
Leadership Assumptions	Often promotes directive leadership	May clash with cultural expectations of collaboration or hierarchy	Leadership Assumptions
Communication Style	Assumes standardised norms and styles	Misunderstandings can arise across cultures	Communication Style
Outcome in Multicultural Teams	Can lead to misalignment, inefficiency, and reduced cohesion	Undermines collaboration and project success without adaptation mechanisms	Outcome in Multicultural Teams

Source: Researchers, 2026.

These approaches risk undermining collaboration and project success in globalised or culturally diverse teams. As a result, design teams struggle with challenges such as delayed decision-making, role ambiguity, diminished rates of project success and, most importantly, communication challenges. Hence, with focus on the manufacturing sector, this study investigated how communication challenges in cross-cultural design teams affect project team effectiveness and suggest project management practices that can mitigate such effects.

1.2 Research Objectives

The specific objectives of this pilot study include:

- To evaluate how communication challenges influence multidisciplinary team effectiveness in manufacturing projects.
- Examine level of collaboration among professionals on manufacturing projects.
- To recommend project management practices that enhance collaboration among culturally diverse team members.

1.2 Significance and Scope of the Study

This research provides insight for industrial designers, project managers, team leaders as well as organisational strategists on improving effectiveness in global design environments. The study focuses on Lagos and contributes to both academic literature and practical frameworks via the integration of project management theory with cross-cultural communication concepts.

The study was limited to industrial designers, project management professionals and strategists in Lagos State involved in global manufacturing projects. Lagos state was selected for this pilot study since it is considered the commercial hub of Nigeria. While the findings may reflect broader trends, they are most applicable to similar urban industrial settings in emerging economies.

2. Literature Review

2.1 Cultural Dimensions and Project Management

It has been evidently demonstrated that people of different nationalities have different implicit conceptions of what an organisation or a project is and think differently about the relationship between individuals and the workplace or a specific project (Hofstede, 1983 as cited in Rees-Caldwell & Pinnington, 2013). This conveys the notion that culture, whether organisational or national, impacts on the outcomes or the effectiveness of project management. While Rees-Caldwell & Pinnington (2013) yet opined that the influence of national culture on project management and more specifically project planning was not well understood (leaving a research gap to be filled), the same study nonetheless concluded that national (or organisational culture) impacts on the way a project manager understands the project, for example the planning stage (inclusive of the design stage), which impacts on the eventual failure or success of the project.

Studies consistently show that cultural values and or dimensions significantly influence project management effectiveness (Chipulu et al., 2014; Jetu & Riedl, 2013). Battistella et al. (2023) opined that different cultures can make individuals (or designers) behave differently and this, in turn, may impact on the management of projects. For instance, Battistella et al. (2023) and Maltauro (2024) found that individualism helps to improve team control and dynamics, whereas uncertainty avoidance hinders project processes. More specifically, Battistella et al. (2023) noted that uncertainty avoidance negatively affects project control, while masculinity positively affects project dynamics. In essence, cultural values or dimensions such as power distance and communication styles play key roles in managing projects, particularly the complex/cross-cultural projects. All these confirms that culture plays significant roles in project management in industries, from design to manufacturing and marketing/distribution (Battistella et al., 2023; J. Liu et al., 2015; Piwower-Sulej, 2021).

2.2 Cross Cultural Communication in Industrial Settings

Shamne et al. (2019) noted that business communication, especially at the industrial enterprise, is dependent on various factors, one of which, importantly, is cross-cultural communication. As noted by Odji & Oni (2024), design teams are often multidisciplinary and, sometimes, cross-cultural. This not only makes culture a significant factor among members of project teams, it also makes communication effectiveness and associated challenges significant factors in project management. According to Shamne et al. (2019), the concept of culture in business or corporate ethics has proven inseparable part of communication which is expected to guide the teams members in the management of projects.

Studies in sectors such as construction and manufacturing emphasise that low-context and high-context cultural differences can severely impact on, for example, risk interpretation and team alignment (Eyiah et al., 2025). Jetu et al. (2011) demonstrated that local cultural norms in Sub Saharan environments (e.g., Ethiopia) directly shape project team trust dynamics and communication. As insinuated in studies such as Attah et al. (2024) and Malladi & Chhapola (2025), cross-cultural teams, with diverse skills and expertise, present various advantages such as improvement of knowledge integration across functional boundaries, facilitating streamlined processes and creative problem-solving. However, they also portend significant challenges such as communication laxities (if not attended to). In a global environment the ability to communicate effectively can be a challenge. As Padhi (2016) noted, it can be difficult to effectively communicate in a global environment. Cultural and ethnic differences may cause miscommunications even when members of a team or organisation speak the same language.

2.3 Cross Cultural Communication in Industrial Settings

Cross-cultural manufacturing teams can benefit from the structured approaches offered by project management methodologies such as Agile, Waterfall, Scrum, Lean, Kanban, Critical Path Method (CPM), as well as the Six Sigma (Palmquist et al., 2013; West, 2018). Each approach has its own advantages, dependent on the project: Waterfall works well for projects that are clearly defined and sequential (Aroral, 2021); Agile and Scrum encourage flexibility and iterative teamwork (Famoti et al., 2025); Kanban offers visual clarity (Sunny et al., 2024); Lean encourages efficiency (Badran & Abdallah, 2024); and CPM and Six Sigma aid in quality enhancement and task prioritisation (Russell et al., 2024). Aside from streamlining procedures, these approaches aid culturally diverse team members in better coordinating and communicating with one another.

Using these approaches can help in circumnavigating cultural differences and enhancing project outcomes in manufacturing projects, where teams sometimes involved both local and foreign stakeholders. Clear workflows, visual task tracking, and regular communication techniques promote inclusivity and trust while cutting down on miscommunications and delays (Yesimi et al., 2025; Zaripour, 2024). In essence, project management methodologies can promote productivity, improve teamwork, and aid in the successful completion of challenging manufacturing projects when they are customised or aligned to local contexts and specific team dynamics (Badiru, 1996 as cited in Badiru & Osisanya, 2016; Mainga, 2017; Wawak, 2024). Piwower-Sulej's (2021) study in financial services found that aligning project methodology with organisational culture enhances trust and decision-making. An example is in the adoption of the lean and smart manufacturing approach.

The Lean and smart manufacturing approaches are combining to improve efficiency and adaptability in complex production environments, especially in culturally diverse teams or contexts (Benkhathi et al., 2023; Ding et al., 2023). Lean principles, which involve cross-functional communication, real-time feedback, and collaborative problem-solving, help bridge cultural gaps within distributed teams (Attah et al., 2024). The integration of smart technologies like adaptive human-machine interfaces (HMIs) introduces new challenges and opportunities for inclusion. Hence, lean principles adapted for design require cross-functional communication and real-time feedback, mitigating cultural misalignment in culturally diverse teams (Gutierrez et al., 2022). The rise of smart adaptive HMIs also demands cultural customisation and training for workforce inclusion (Villani et al., 2021).

Although multiple studies have looked into cultural alignment and adaptive training in industrial sectors, limited research addresses these factors explicitly in cross-cultural project/design teams within the global manufacturing sphere.

3. Methodology

3.1 Research Design

The study adopted a descriptive research design with a quantitative approach to identify and analyse patterns, attitudes, and relationships between variables like collaboration and team effectiveness within the manufacturing industry.

3.2 Population and Sampling

A survey was conducted among 20 professionals in Lagos State, Nigeria, who were involved in cross-cultural design projects within global manufacturing firms. The respondents were purposively selected based on their experience in global manufacturing-related projects, current role in multicultural design or engineering teams, and location in Lagos State.

3.3 Data Collection Instrument

A structured questionnaire was created using both close-ended and Likert scale questions to gather data on demographics, team effectiveness, communication challenges, and collaboration effectiveness, with responses rated on a 5-point Likert scale for subjective indicators.

3.4 Variables Measured

As detailed in Table 2, three (3) key variables were measured namely: communication challenges, team effectiveness score and number of collaborations.

Table 2: Measured Variables

Variable	Description	Type
Communication challenges	Degree of difficulties due to language, tone, or context in teams.	Ordinal (1-5)
Team effectiveness score	Overall perception of team productivity and coordination.	Ordinal (1-5)
Number of collaborations	Number of collaborative interactions among culturally diverse members.	Numerical

Source: Researchers, 2026

3.5 Method of Data Analysis

The study used descriptive and inferential statistics to analyse data, including frequencies and percentages for categorical variables like role and gender, mean and standard deviation for central tendency and variation in scores for communication challenges, team effectiveness, and number of collaborations. Correlation analysis was used to determine the strength and direction of relationships, while t-test was used to compare team effectiveness and communication challenges across different roles or genders.

3.6 Validity and Reliability

The instrument used for data collection, structured questionnaire, was reviewed by experts in industrial design, project management and cross-cultural team dynamics, and a pilot test was conducted with three respondents. The internal consistency reliability of the Likert scale items was assessed using Cronbach's Alpha, which indicated high reliability.

3.7 Ethical Considerations

The study involved voluntary, anonymous participation, informed consent from all respondents and confidentiality of collected data strictly for academic/research purposes only.

4. Results

Data from 20 cross-cultural industrial design teams in global manufacturing projects were analysed, focusing on communication challenges and their impact on team effectiveness and collaboration levels.

4.1 Frequency Distribution of Roles

As shown in Table 3, product engineers and team leads made up 30% of the respondents, followed by project managers at 25%, indicating coordination and oversight. Designers were the least represented at 15%, suggesting a smaller emphasis on design compared to engineering and management roles in the manufacturing sector in Lagos. This suggests a emphasis on team structures that are geared towards technical execution and project leadership in the study area.

Table 3: Frequency Distribution of Roles

Role	Frequency	Percentage
Product Engineers	6	30%
Team Leads	6	30%
Project Managers	5	25%
Designers (Product/Industrial Designers)	3	15%
Total	20	100%

Source: Researchers, 2026.

4.2 Descriptive Analysis

As indicated in Table 4, the study revealed moderately high communication challenges (with mean = 3.30, and SD = 1.12), which stemmed from language, tone, and cultural context. However, in spite of these challenges, team effectiveness remained moderately high (with mean = 3.80, and SD = 1.05), suggesting that teams were generally productive and able to work well together. The number of collaborations per respondent ranged from 1 to 4, with an average of 2.7 (at SD = 1.11), which is an indication of a moderate level of cross-functional engagement among the project management team members that participated in the study.

Table 4: Descriptive Statistics obtained

Variable	Mean	Standard Deviation (SD)	Maximum	Minimum
Communication challenges	3.30	1.12	5	1
Team effectiveness score	3.80	1.05	5	2
Number of collaborations	2.70	1.11	4	1

Source: Researchers, 2026.

4.3 Relationship between the Variables (Correlation Analysis)

Pearson correlation coefficients were calculated to explore relationships among communication challenges, team effectiveness, and number of collaborations. The results were as presented in Table 5 below.

Table 5: Results of the correlation analysis

Variable	Correlation (r)	Significance (p-value)
Communication challenges	-0.65	0.002 (significant)
Team effectiveness score	-0.45	0.04 (significant)
Number of collaborations	0.50	0.02 (significant)

Source: Researchers, 2026.

The results shown in Table 5 are indicative of a strong negative correlation between communication challenges and team effectiveness ($r = -0.65$, $p < 0.01$), meaning that greater communication difficulties reduce team performance. A moderate negative correlation also exists between communication challenges and collaborations ($r = -0.45$, $p < 0.05$), suggesting that such difficulties limit collaborative efforts. Conversely, collaborations positively correlate with team effectiveness ($r = 0.50$, $p < 0.05$), indicating that more collaboration enhances team outcomes.

4.4 Group Differences (t-tests)

4.4.1 Comparison of Team Effectiveness by Gender

Pearson correlation coefficients were calculated to explore relationships among communication challenges, team effectiveness, and number of collaborations. The results were as presented in Table 5 below.

Table 6: Comparison of Team Effectiveness by Gender

Gender	Mean Project Team effectiveness	t-value	p-value
Male	3.70	-0.45	0.66
Female	3.90		

Source: Researchers, 2026.

Results highlighted in Table 6 indicate no significant difference existing between female and male respondents regarding perceived team effectiveness ($p > 0.05$).

4.4.2 Comparison of Communication Challenges by Role

ANOVA testing was deemed unreliable because of the small sample sizes recorded within each indicated role in Table 7. However, the descriptive data provides insight into perceived communication challenges across roles. Designers reported the highest mean communication challenges (3.67), slightly exceeding those of team leads (3.17), project managers (3.20), and product engineers (3.33). This suggests that designers are more likely to experience relatively more challenges in communication within the industry, which may potentially be due to collaboration dynamics with other roles or differences in technical language.

Table 7: Comparison of Communication Challenges by Role

Role	Frequency
Product Engineer	3.33
Team Lead	3.17
Project Manager	3.20
Designer (Product/Industrial Designer)	3.67

Source: Researchers, 2026.

Notably, the results recorded in Table 7 indicate that designers in the manufacturing industry are confronted with communication challenges, indicating the need for improved cross-functional strategies, especially between design and engineering teams, due to differences in terminology, priorities, or workflows.

4.5 Summary of Results

Below are the summary of the findings of this study:

- Communication challenges significantly, negatively affect team performance/effectiveness in global manufacturing projects.
- Designers reported slightly more communication challenges than other roles, which is an indication of a potential area of focus for improving intercultural communication.
- There was no significant gender differences in team effectiveness were detected.
- Collaboration among team members positively correlates with higher team effectiveness and fewer communication challenges.

- There was low representation of product/industrial designers on project management teams, relative to other professions within the sector.

5. Discussion

Global project teams, as noted by Taras (2025), have become a keystone of contemporary organisational collaboration; however their effectiveness is often limited by various challenges, one of which is communication hindrances. Project managers can fully realise the potential of their teams or organisations in today's globalised working systems by tackling such underlying challenges, which will help improve trust, coordination, and overall team effectiveness.

5.1 Communication Challenges and Team Effectiveness

This study found a negative correlation between communication challenges and team effectiveness, indicating that as communication challenges increase due to factors such as language barriers, cultural misunderstandings or differences, perceived team effectiveness decreases. This is in line with the outcomes or assertions of existing studies such as Emenike (2025), Erinjogunola et al. (2025) and Taras (2025), indicating the significance of effective communication in cross-cultural projects, particularly in industrial design projects where collaboration and creativity are necessities. According to Emenike (2025), effective communication is necessary within a cross-cultural teams or systems for the promotion of proper team cohesion and the achievement of organisational success. Since most design project teams are multidisciplinary or cross-cultural, as insinuated by Odji & Oni (2024), and designers reported more communication challenges than other roles within the manufacturing sector, then, for improved team effectiveness, alleviating this challenge among designers and others stakeholders within the sector is a necessity.

5.2 Impact of Collaboration on Team Effectiveness

The outcome of the study revealed a positive correlation between the number of collaborations and team effectiveness, indicating the importance of frequent and meaningful cross-cultural and/or professional interactions/collaborations. This leads to knowledge sharing, problem-solving, and mutual support, improving team outcomes, as noted in related studies such as Brooks (2025) and Erinjogunola et al. (2025). However, a moderate negative correlation suggests that teams with communication difficulties engage less in collaborations, potentially due to cultural divides. The findings suggest that project managers should encourage regular, structured collaboration to bridge cultural and communication gaps (Ezeigweneme et al., 2023; Nwulu et al., 2023). According to Nwulu et al. (2023), interdisciplinary collaboration is a vital factor for the successful completion of complex design, engineering or manufacturing projects. This is because it promotes project team effectiveness.

5.3 Gender and Role-Based Differences in Communication Challenges

According to Kober et al. (2024), aside from technical challenges, there are various human and organisational factors that influence the effectiveness of project teams and organisational effectiveness. This study identified effective communication among project team members as one of the key factors influencing the effectiveness of project teams, with impact on organisational performance. This is in congruence with the outcomes of Kober et al. (2024) which identified communication among team members as a key determinant of organisational performance. Furthermore, as this study also revealed, there were significant differences in communications challenges experienced relative to roles, with designers reporting higher communication challenges than managers and engineers, which were attributable to factors such as tone, language, and cultural context. However, this disparity in the level of reported role-based communication challenges experienced by professionals within the manufacturing industry in Lagos may also be due other factors such as the creative nature of design work, professional discrimination, and disparities in professional terminologies and such like.

As can be derived from various studies such as Abdul Ghafar & Ibrahim (2018), Baek et al. (2023), Doornebosch et al. (2024), Erjavec et al. (2022), Mayo & Woolley (2016) and Trstenjak et al. (2025), effective communication in multidisciplinary teams relies on a balance of both enabling and hindering factors. Positive influences may include such things as mutual trust and psychological safety, which create open channels for team members to contribute, enhance responsiveness and clarity. Structured interactions, shared knowledge, and supportive leadership helps in fostering feedback and inclusivity, ensuring diverse voices are heard, while conducive environments and adequate time are germane for meaningful dialogue and collaborative decision-making. Hindering or negative factors that may limit effective communication include rigid hierarchies and power distances, which can inhibit open dialogue, particularly from minority or junior team members. A lack of structured communication processes may also lead to fragmented information or project data sharing, while staffing shortages or overwork can limit focus, while time-zone and geographic separation in, for instance in virtual teams, may hinder consistent engagement and trust-building, which can weaken communication over time and impact negatively on overall organisational performance.

Unlike in the case with roles within the manufacturing sectors, study outcomes suggest no significant gender differences in team effectiveness perceptions, which suggests that collaboration and communication issues transcend gender in cross-cultural projects. This further indicates the possibilities of more broadly applicable and inclusive interventions for improved collaboration and communication in cross-cultural or multidisciplinary teams (Adebayo et al., 2024; De-María et al., 2024; Patabedige & Hemmati, 2024; Shittu, 2022).

6. Conclusion, Recommendations and Implications

6.1 Conclusion

This study investigated the impact of communication challenges on team effectiveness and the role of collaboration in cross-cultural industrial design teams within global manufacturing projects. The study outcomes revealed a negative correlation between communication challenges and team effectiveness, a positive correlation between collaboration frequency and team effectiveness, but no significant gender differences in team effectiveness perceptions. It also showed that designers face higher communication challenges, emphasising the need for role-specific support. Overall, the findings affirm that managing communication effectively and promoting collaborative practices are vital for successful cross-cultural project management.

6.2 Recommendations

Based on the findings, the following recommendations are proposed for teams and organisations managing global design teams:

- Organisations should put in place policies that enhancing intercultural communication in design project management teams (irrespective of the product type).
 - Organisations should also invest in the development and execution of training programs on professional language integration and synergising (among professionals), cultural contexts and communication styles. For example, project managers and team leads could benefit from providing targeted support, such as intercultural communication training or mediated discussions.
 - Introduce virtual meetings, platforms and workshops to foster collaborative environments.
 - Provision of role-specific support for designers facing unique challenges within the industry.
 - Implementation of continuous and structured feedback mechanisms for open discussions and improvement suggestions.
 - Increased involvement of professionally trained product/industrial designers in the product design, development and manufacturing process in the industry. This should expectedly help yield better aesthetically pleasing, credible, persuasive and, not just functional, sustainable products/outcomes (Ario et al., 2020; Odji, 2020; Odji et al., 2019; Odji & Oladumiye, 2019).
- Implementing these recommendations should enhance team effectiveness, minimise misunderstandings, as well as improve industrial design outputs by recognising communication and collaboration as strategic assets.

6.3 Practical Implications, Limitations and Suggestions for Future Research

The study outcome are indicative of the significance of improved communication effectiveness, collaboration, and targeted support for designers and project managers when managing cross-cultural design teams in global manufacturing. It also emphasises the need for to have in place mechanisms to identify as well as resolve emerging issues early and recommends tailored programs or interventions that address issues such as language barriers, cultural context, and tone. However, with a small sample size and reliance on self-reported data, the study's findings may lack generalisability and may be subject to bias. While it seemingly draws attention to some of the limitations of existing project management frameworks for cross-cultural teams, it did not offer a new, better-fitting model, which underscores the need for continued research in this area.

Also, further research within this sphere of study should consider expanding sample sizes to strengthen generalisability, incorporating qualitative methods such as interviews and focus groups to gain deeper insights and examining how specific cultural dimensions affect communication and collaboration in design teams. Researchers are as well encouraged to investigate the effectiveness of different communication tools in bridging cultural gaps and to explore frameworks that are more adaptable to the dynamics of cross-cultural collaboration in industrial design.

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