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Article

Enhancing cross-cultural design competencies: Integrating knowledge, innovation, and ethics for human capital development in global markets

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Abstract: This study investigates the core competencies essential for product designers to excel in cross-cultural global markets, with particular emphasis on implications for human resource development and organizational leadership. As design practices increasingly transcend cultural and geographical boundaries, designers are required to integrate advanced technical proficiency, creative problem-solving, technological adaptability, and cultural intelligence to create inclusive, socially responsible, and market-relevant products. Employing a mixed-methods approach—including focus groups and surveys with design professionals, industry executives, and academic leaders—the research identifies key competencies such as flexibility, intercultural communication, ethical integrity, and systems thinking. The findings underscore the necessity of balancing technical expertise with emotional intelligence and transformational leadership capabilities to effectively lead diverse, cross-functional teams. These competencies contribute significantly to fostering innovation, enhancing employee well-being and job satisfaction, and strengthening organizational resilience, thereby supporting sustainable human resource strategies. Furthermore, the study highlights the importance of continuous professional development and lifelong learning in cultivating culturally competent and ethically driven design talent. The insights offer strategic guidance for human resource professionals, organizational leaders, and educational institutions aiming to develop adaptive, inclusive, and future-ready design capabilities aligned with evolving global demands.

Keywords: cross-cultural design; global product design; human capital development; ethical leadership; workforce sustainability

1. Introduction

As design practices progressively cross national and cultural barriers, it is essential to comprehend how product designers can proficiently function in global markets. Organizations must have designer competencies that adapt to swift technical progress while being attuned to various cultural, social, and ethical settings. Rectifying this deficiency can assist enterprises in developing more pertinent, inclusive, and sustainable products while conforming to shifting global requirements.

This research emphasizes the convergence of culture, technology, and design, offering critical insights into how designers might improve cross-cultural competencies to promote enhanced creativity and inclusivity. The results provide actionable insights for human resource services and organizational strategy, guiding human capital planning, employee training programs, and talent development efforts. By incorporating these findings, firms may enhance sustainable HR practices, bolster workforce resilience, and boost overall employee engagement and well-being. The research seeks to investigate novel paradigms in cross-cultural product design and ascertain the critical abilities required for designers to succeed in global marketplaces.

It aims to offer practical solutions for empowering design professionals, enhancing organizational development, and promoting inclusive, culturally sensitive, and ethically responsible design processes.

2. Literature review

2.1. New paradigms in cross-cultural product design

Cross-cultural product design (CCPD) is essential for developing goods that honor local values while satisfying global requirements. Incorporating cultural elements into design is crucial for improving product acceptance, enhancing user experience, and cultivating brand loyalty (Plocher et al., 2021; Tower, Hewett, & Saboo, 2021). Organizations utilizing CCPD enhance their competitive advantage and augment workforce efficiency by promoting culturally informed practices and fostering inclusive design thinking (Pidduck, Clark, & Zhang, 2024).

The shift toward consumer-centric new product development paradigms emphasizes the necessity for cross-functional team integration and innovative tactics (Wang et al., 2024; Wu, Lin, Liu, & Li, 2024). Organizational structures that empower designers not only boost product output but also strengthen staff satisfaction, engagement, and retention, which are fundamental components of human resource planning and organizational sustainability (Cantoni, Ricciardi, Bisogni, & Zsifkovits, 2024; Nasir, Zakaria, & Yusoff, 2022).

Additionally, integrating CCPD practices supports the alignment of design strategies with broader corporate social responsibility goals, highlighting the importance of ethical and culturally responsive leadership in global design environments (Sastre & Yela Aránega, 2023; Hernández-Ramírez & Ferreira, 2024). This holistic approach ultimately enhances brand reputation, promotes fair labor practices, and contributes to long-term organizational success.

2.2. Adaptability and continuous learning

Adaptability is a crucial skill for designers in rapidly evolving global contexts (Cox et al., 2025). The capacity to adjust design strategies in reaction to changing trends reflects the necessity for ongoing education and professional advancement, which are fundamental components of HR development and workforce sustainability (Pasolong & Setini, 2021; Nasir, Zakaria, & Yusoff, 2022). Continuous learning empowers designers to integrate emerging technologies and respond to diverse consumer expectations, strengthening both innovation and organizational resilience (Hernández-Ramírez & Ferreira, 2024).

As co-design and participative methodologies become increasingly prevalent (O'Donnell et al., 2025), flexibility fosters more resilient teams and improves employee morale and psychological well-being (Cantoni et al., 2024). In addition, fostering an environment that supports continuous skill development and intercultural competence is essential for cultivating entrepreneurial human capital in global organizations (Pidduck, Clark, & Zhang, 2024). These approaches align with contemporary HR strategies that prioritize inclusive learning cultures and support

psychological safety, which are vital for employee engagement and retention (Gardner, 2024).

2.3. Integration of cultural capital

Integrating cultural capital into global perspectives enhances product design and fortifies organizational culture (Pidduck et al., 2024). Embracing varied viewpoints strengthens inclusive design methodologies, promoting equity and social cohesion within organizations and across markets (Plocher et al., 2021; Voulvoulis et al., 2022). This approach not only fosters creativity but also encourages collaboration across diverse teams, leading to innovative solutions that resonate with a broader and more culturally diverse audience (Cantoni et al., 2024; Tower et al., 2021).

By prioritizing cultural awareness and embedding social and symbolic resources into design processes, organizations can create products that authentically reflect the needs, values, and identities of different communities (Alexiou, Hale, & Zamenopoulos, 2022; Moro, Pires, Rita, & Cortez, 2020). Such integration also supports human resource strategies aimed at building psychological safety, enhancing employee well-being, and promoting fairness and inclusion in the workplace (Gardner, 2024). Ultimately, the incorporation of cultural capital empowers organizations to strengthen brand loyalty, enhance market relevance, and position themselves as socially responsible leaders in the global economy (Wu et al., 2024).

2.4. Collaboration, communication, and soft skills

Robust cooperation and communication abilities are essential for effective cross-cultural design leadership (Hanges, Aiken, Park, & Su, 2016; Huang, 2023; Erfan, 2024; Choubey, 2025). Emphasizing these competencies in training and development programs directly strengthens labor relations, promotes employee well-being, and improves overall team performance.

The significance of empathy, cultural awareness, and trust in multinational teams underscores HR's critical role in fostering inclusive and psychologically safe work environments (Markey, Prosen, Martin, & Repo Jamal, 2021; Gafni et al., 2024;Agrawal & Sybol, 2025). These interpersonal and soft skills not only enhance team cohesion but also drive innovation and creativity, enabling diverse groups to generate more contextually relevant and market-responsive solutions.

As organizations continue expanding globally, investing in the development of communication and soft skills becomes vital for sustaining competitive advantage, ensuring equitable participation, and enhancing organizational resilience (Sharma & Kohli, 2024; Karneli, Handayati, & Rijal, 2024; Garrido-Moreno, Martín-Rojas, & García-Morales, 2024; Husieva, Kravchenko, Kyzymenko, Krasilnikova, & Razitskyi, 2025).

2.5. Ethics and transparency

Ethical design methods are intimately aligned with corporate social responsibility and sustainable human resource initiatives (Voegtlin & Greenwood, 2016; Herrera & de las Heras-Rosas, 2020; Sastre & Yela Aránega, 2023; Alizadeh et al., 2023; Onyekwelu et al., 2024). Harmonizing innovation with social responsibility cultivates

trust, enhances employee engagement, and encourages enduring organizational resilience (Ahsan & Khawaja, 2024; Alshukri, Seun Ojekemi, Öz, & Alzubi, 2024; Awad & Martín-Rojas, 2024; Ispiryan, Pakeltiene, Ispiryan, & Giedraitis, 2024; Alzaydi, 2024; Hernández-Ramírez & Ferreira, 2024). These outcomes benefit the organization and contribute positively to the broader community, fostering a culture of accountability and shared values. As companies increasingly prioritize ethical considerations, they position themselves as leaders in both their industries and in the pursuit of a more sustainable future.

2.6. Leadership and management skills

Effective global design leadership amalgamates transformational and digital leadership paradigms (Pasolong & Setini, 2021). These methodologies promote collaborative decision-making and inclusive team dynamics, crucial for improving work satisfaction and organizational identity (Nasir et al., 2022; Kelly, 2019). By fostering a culture of innovation and adaptability, organizations can better navigate the complexities of today's market. This holistic approach not only enhances employee engagement but also drives sustainable growth and competitiveness in a rapidly evolving landscape.

Despite the growing focus on cultural sensitivity and technology adaptability, a deficiency persists in practical frameworks that comprehensively incorporate these competencies into HR and organizational practices.

To illustrate these research objectives in a unified and accessible way, the following figure presents a conceptual diagram summarizing their focus and relationships. This visual representation clarifies how each objective interlinks to support global design leadership, strengthen human capital, and guide inclusive, ethical organizational strategies:

1. Determine critical competencies for global design leadership.
2. Analyze the influence of these competencies on human capital development and workforce sustainability.
3. Formulate recommendations for human resources training and organizational policies to promote inclusive and ethical design processes.

To effectively attain these study aims, a rigorous and meticulously crafted approach was needed. This section delineates the mixed-methods strategy utilized in this study, specifying the processes and instruments applied to thoroughly investigate the indicated competences and their effects.

3. Materials and methods

3.1. Research design

This study adopted a mixed-methods design, integrating focus groups (n = 30) and survey questionnaires (n = 416) to provide a comprehensive exploration of competencies required for cross-cultural product design in global markets. Participants were drawn from four key groups: graduate design students, industry executives, academic administrators, and design faculty members, each representing diverse cultural and professional perspectives.

The focus groups explored critical topics including leadership styles, cultural sensitivity, ethical decision-making, technological integration, teamwork, and professional development. These discussions yielded valuable insights into the alignment between design competencies and human resource practices in a global context.

The survey component assessed competencies necessary for adapting to global market dynamics, integrating cultural knowledge, fostering collaboration, addressing ethical challenges, and developing leadership skills within cross-cultural design environments.

(a) Rationale for Participant Selection

The deliberate inclusion of four participant groups ensured a multi-perspective examination of essential design competencies:

- Graduate Design Students: Represent the future workforce and potential leaders in global design. Their insights reveal expectations regarding curriculum effectiveness, skill readiness, and perceived gaps in educational and training programs.
- Industry Executives: Provide critical perspectives on organizational priorities, market trends, and the skills needed for innovation and leadership in cross-cultural contexts. Their input ensures the alignment of competencies with market demands and strategic human resource objectives.
- Academic Administrators: Offer expertise in curriculum development and program management. Their contributions help identify discrepancies between educational frameworks and industry needs, suggesting ways to incorporate cross-cultural and technological competencies into design education.
- Design Faculty Members: Contribute academic and research-based insights into evolving design practices, ethical considerations, and emerging trends. Their perspectives bridge theory and practice, highlighting the dynamic requirements of global design leadership.

Including participants from diverse cultural and professional backgrounds strengthens the study's validity and ensures that conclusions are relevant, inclusive, and adaptable across various design and organizational contexts.

(b) Rationale for Survey Respondent Selection

The survey targeted 416 respondents across the same four key groups to capture a holistic view of competencies required for global product design:

- Graduate Design Students: Chosen for their representation of the next generation of design professionals, providing perspectives on preparedness and curriculum relevance.
- Industry Executives: Selected to ensure alignment of design competencies with industry needs, strategic HR goals, and global competitiveness.
- Academic Administrators: Included for their role in shaping curricula that address transdisciplinary and multicultural challenges in design education.
- Design Faculty Members: Involved to provide expertise on theoretical foundations, instructional strategies, and evolving educational trends.

The inclusion of culturally diverse respondents enhances the generalizability and applicability of the findings, supporting the development of culturally sensitive and globally relevant design competencies.

3.2. Data collection procedures and instruments

3.2.1. Data collection procedures

This study utilized a mixed-methods approach to thoroughly investigate the competences necessary for cross-cultural product creation in international markets. The data gathering occurred in two primary phases: qualitative (focus groups) and quantitative (survey).

(a) Phase 1: Focus Groups

Initially, focus group talks were held with 30 participants, comprising graduate design students, organizational executives, academic administrators, and design faculty members. The participants were intentionally chosen to embody various opinions and cultural backgrounds. The focus groups were divided into smaller sessions of 7–8 individuals to promote in-depth discussion and active participation.

Before the sessions, participants were given comprehensive information regarding the study's objectives, procedures, and ethical considerations, and they supplied informed consent. Discussions were directed using a semi-structured interview framework, facilitating both uniformity and adaptability to investigate emerging themes. Each focus group lasted roughly 90 to 120 minutes and was audio-recorded with the participants' consent to guarantee precise data collection. Facilitators also recorded notes to augment audio transcripts.

(b) Phase 2: Survey

After the focus group phase, a survey was designed utilizing insights derived from the qualitative talks. The poll was administered to an extensive sample (n = 416), including graduate design students, executives, academic administrators, and design faculty from various cultural and professional backgrounds. The survey was sent in both digital and print formats to enhance accessibility and increase response rates.

Participants were apprised of the survey's objective, guaranteed confidentiality, and granted consent before engaging. The survey was meant to be anonymous to promote candid and reflective responses and is projected to need roughly 20–25 minutes for completion.

3.2.2. Instruments for data collection

Focus Group Instrument

The focus group tool comprised a semi-structured interview guide featuring open-ended questions categorized into subject sections:

- Leadership in design and international markets
- Cultural assimilation and user-centric design
- Proficient communication and teamwork abilities
- Ethical and sustainable design methodologies These guides enabled facilitators to examine participants' experiences, views, and recommendations concerning essential design competencies in global contexts.

Survey Instrument: Structured Questionnaire

The survey instrument consisted of four primary components; each aligned with essential study emphasis areas:

(a) Technical and Creative Competencies

Items assessed participants’ perceptions regarding the significance of

technical skills (e.g., material development, design concept formulation) and creative competencies (e.g., problem-solving, invention).

(b) Cultural and Social Competencies

The inquiries evaluated cultural awareness, respect for diversity, and the capacity to incorporate cultural elements into design work.

(c) Communication and Leadership

The assessment focused on critical interpersonal and leadership competencies necessary for managing cross-cultural and cross-functional teams.

(d) Ethical and HR-Related Considerations

Inquiries centered on principles including integrity, openness, ecological stewardship, and social justice in design methodologies.

Furthermore, we used two open-ended questions to elicit qualitative insights into perceived deficiencies and supplementary competencies required for future global design contexts.

A five-point Likert scale (1 = Not important, 5 = Extremely important) was used to measure the relative importance of each competency and skill.

The integration of focus groups and surveys facilitated data triangulation, thereby augmenting the validity and dependability of the results. The application of qualitative and quantitative tools offered comprehensive insights into the abilities essential for effective cross-cultural product design and guided recommendations for educational and organizational advancement.

3.3. Data analysis

The analysis integrated qualitative insights from focus groups with quantitative data obtained from NLP-driven surveys. Key themes included:

- The importance of adaptation and continuous learning for workforce sustainability.
- Cultural awareness plays a crucial role in boosting employee engagement and fostering corporate inclusivity.
- Collaborative leadership approaches play a significant role in improving labor relations and performance metrics.
- Ethics and social responsibility play a crucial role in enhancing brand credibility and promoting employee welfare.

3.4. Reliability and validity checks

3.4.1. Reliability checks

To ensure the consistency and dependability of the data collected, multiple strategies were implemented:

(a) Internal Consistency

Reliability was established by Cronbach's alpha (0.77) and pilot testing, while validity was affirmed through expert evaluations, factor analysis, and measures of ecological validity.

(b) Pilot Testing

Prior comprehensive implementation, the survey was pilot tested with a cohort of 20 participants representative of the study's target demographic (graduate design students, executives, academic administrators, and faculty). The feedback from this pilot enhanced question clarity, ensured suitable length, and improved overall instrument usefulness.

(c) Inter-Coder Reliability for Focus Groups

Transcripts from the focus group conversations were separately analyzed by two researchers. The agreement between the two researchers was measured using Cohen's kappa coefficient ($\kappa = 0.82$), showing strong consistency and minimizing personal bias in the analysis of themes.

(d) Test-Retest Reliability

A group of survey participants ($n = 30$) completed the survey on two occasions within a two-week period. The correlation between the two response sets was robust ($r > 0.80$), indicating the consistency of replies across time.

3.4.2. Validity checks

A cohort of thirty survey participants completed the survey on two separate occasions within a two-week timeframe. The correlation between the two response sets was strong ($r > 0.80$), demonstrating the constancy of responses across time.

(a) Content Validity

We ensured content validity by developing survey and interview questions based on an extensive literature review and insights from initial focus group discussions. Additionally, experts in the field, including experienced design professors and HR specialists, reviewed the measures to make sure they were complete and relevant to cross-cultural product design and organizational settings.

(b) Construct Validity

We performed exploratory factor analysis (EFA) on the survey data to investigate the underlying factor structure and validate that the items clustered as planned. The findings affirmed the uniqueness of the four primary competency dimensions.

(c) Face Validity

The instruments were tested beforehand with a small group of potential respondents to ensure that the questions were clear and accurately measured what they were supposed to. Feedback affirmed that the questions were lucid, pertinent, and contextually suitable.

(d) Criterion-Related Validity

The instruments were pretested with a small cohort of possible respondents to verify that the questions were straightforward and effectively measured the intended constructs. Feedback confirmed that the questions were clear, relevant, and contextually appropriate.

(e) Ecological Validity

Focus group discussions were held in actual or simulated design environments to gather contextually pertinent experiences. This method guaranteed that the data gathered accurately represented the genuine issues and practices faced in cross-cultural design endeavors.

The stringent implementation of these reliability and validity assessments guaranteed that the instruments employed in this investigation were robust and credible. By using both numbers and personal insights along with careful checking, the results are considered trustworthy and useful for shaping educational programs, human resource practices, and leadership efforts in global design settings.

4. Results

This section delineates the principal findings from the study, synthesizing ideas from focus group talks and survey responses to identify the essential talents and attributes necessary for product designers to thrive in global, cross-cultural markets. The findings are categorized into five primary theme categories; each aligned with the study's research inquiries and emphasizing the multifaceted competences required in modern design practice:

Section 3.1 examines the fundamental technical and creative skills required for product designers to adjust to swiftly evolving global market conditions and technology progress.

Section 3.2 emphasizes the competences necessary for the efficient integration of cultural knowledge into product design, highlighting cultural sensitivity, social responsibility, and market relevance.

Section 3.3 analyzes the essential communication and collaboration attributes considered crucial for designers operating in cross-functional, multicultural teams, emphasizing the promotion of inclusivity and teamwork.

Section 3.4 delineates the ethical requirements for global product designers, emphasizing values such as integrity, transparency, adherence to cultural norms, and environmental stewardship.

Section 3.5 addresses the leadership and management attributes essential for directing cross-cultural teams and overseeing intricate global design projects, highlighting strategic, interpersonal, and ethical competencies.

Section 3.6 ultimately consolidates these findings into a comprehensive competency framework, amalgamating the results into a unified model that facilitates human resource planning, professional development, and organizational strategy within the design sector.

Below are the details of each category.

4.1. Key competencies for global market adaptation

The survey results yield significant insights into the competencies prioritized by design professionals, organizational leaders, and academic administrators, as illustrated below.

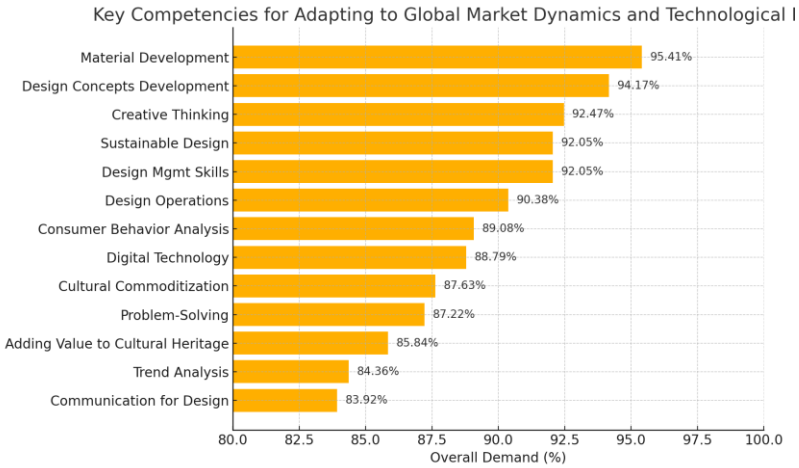

Figure 1. Bar chart depicting the aggregate demand for each competency area as indicated by survey participants.

The bar chart above illustrates the survey results about the abilities necessary for adjusting to global market dynamics and technical advancements in product design. The most sought-after competencies are material development (95.41%), development of design concepts (94.17%), and creative thinking (92.47%). These fundamental skills underscore the significance of technical proficiency and creativity in responding to changing technological and commercial demands. Additional competencies, like Design for Sustainable Development (92.05%) and Product Design Management Skills (92.05%), underscore the significance of sustainability and proficient project management in enhancing organizational performance and worker resilience. Additional talents such as consumer behavior analysis (89.08%), digital technology (88.79%), and problem-solving in design (87.22%) underscore the necessity for user-centered design and technology adaptation. Cultural Commoditization (87.63%), Adding Value to Cultural Heritage (85.84%), Trend Analysis for Design (84.36%), and Communication for Design (83.92%) point out the importance of cultural sensitivity and proficient communication in international, cross-functional teams.

Although technical and creative skills are vital for designers to adjust to swiftly changing global markets, the integration of cultural understanding into design processes is equally important for ensuring that products have significant resonance across varied cultural settings.

4.2. Key competencies for integrating cultural knowledge into global product design

The subsequent image displays a bar chart that delineates the total demand for cultural integration competencies as indicated by survey respondents. This visual depiction highlights the cultural knowledge domains that practitioners and stakeholders in global product design rank most highly.

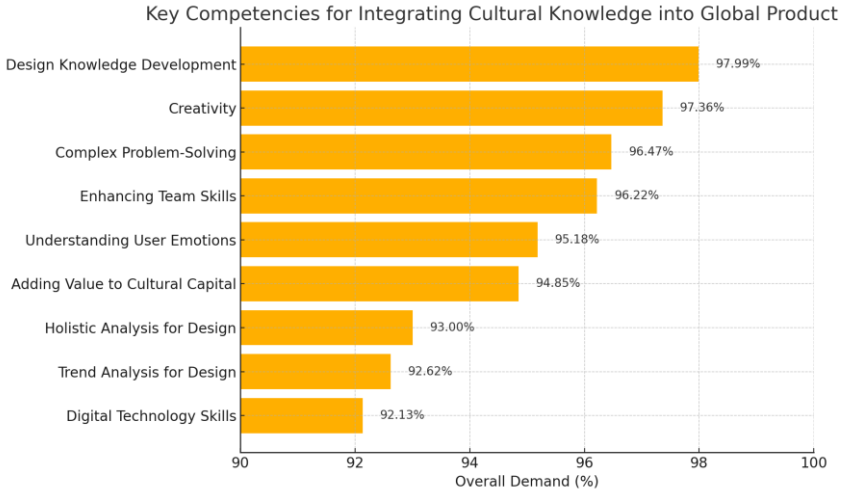

Figure 2: Bar chart illustrating the aggregate demand for cultural integration competencies as reported by survey participants.

The bar chart above depicts the survey results regarding competences essential for incorporating cultural knowledge into global product design. The top-ranked competencies are development of design knowledge (97.99%) and creativity (97.36%),

highlighting the significance of a robust understanding of design principles and adaptive creativity for integrating cultural subtleties. Elevated results in complex problem-solving (96.47%), enhancing team skills (96.22%), and understanding user emotions and sentiments (95.18%) underscore the necessity of tackling cultural challenges and fostering emotional connections with users. Furthermore, Enhancing Cultural Capital (94.85%) and Comprehensive Design Analysis (93.00%) emphasize the importance of utilizing local cultural components and employing a systems-thinking methodology. Ultimately, competences such as Trend Analysis for Design (92.62%) and Digital Technology Skills (92.13%) underscore the necessity of maintaining technological advancement while being attuned to cultural dynamics and market trends.

The findings suggest that both the theoretical and practical aspects of product design should integrate cultural capital. By incorporating cultural understanding, designers can create globally competitive products that are socially inclusive, thereby enhancing the company's reputation and strengthening human capital initiatives focused on diversity, equity, and inclusion.

Effectively incorporating cultural knowledge into product design necessitates both technical and creative skills, as well as a profound comprehension of interpersonal relationships and team dynamics. In this setting, robust communication and collaboration skills are essential for designers to convert cultural insights into powerful, globally resonant design solutions within heterogeneous teams.

4.3. Key communication and collaboration traits for global design teams

Effective communication and cooperation skills are essential for turning culturally aware design insights into successful solutions across cross-functional and multicultural design teams, emphasizing the significance of cultural integration.

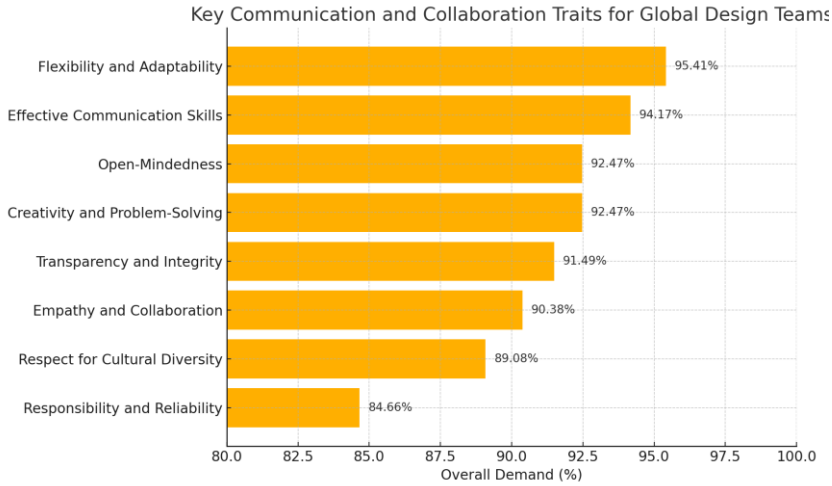

Figure 3: Bar chart illustrating the aggregate need for communication and collaboration attributes as reported by survey participants.

The bar chart above depicts the survey results for critical communication and collaboration attributes vital for product designers engaged in global, cross-functional teams. Flexibility and Adaptability (95.41%) got the highest ranking, emphasizing the value of maneuvering through cultural variety and reacting to rapid changes. Proficient

Communication Skills (94.17%) and Open-Mindedness (92.47%) highlight the necessity of expressing ideas effectively and welcoming varied viewpoints. Creativity and Problem-Solving (92.47%), Transparency and Integrity (91.49%), and Empathy and Collaboration (90.38%) emphasize the value of fostering trust-based, innovative workplaces. Attributes like respect for cultural diversity (89.08%) and responsibility and reliability (84.66%) are essential, indicating the importance of ethical behavior and trustworthy collaboration in global design environments.

The findings highlight that cultivating interpersonal skills promotes employee engagement, fortifies labor relations, and improves team performance—essential objectives within HRMS frameworks. Organizations ought to allocate resources to training programs that enhance cross-cultural communication, active listening, and conflict resolution competencies, thereby fostering inclusive and resilient global design teams.

Effective communication and good teamwork skills are important for building strong, creative, and diverse design teams; however, these personal qualities need to be based on strong ethical values. Thus, comprehending the fundamental ethical standards for global product designers is essential for aligning team interactions and design results with overarching social and cultural duties.

4.4. Key ethical expectations for global product designers

The subsequent graphic elucidates the overall demand for essential ethical principles as defined by survey participants. This visual depiction underscores the ethical demands most prominently prioritized by design professionals and organizational leaders in international settings.

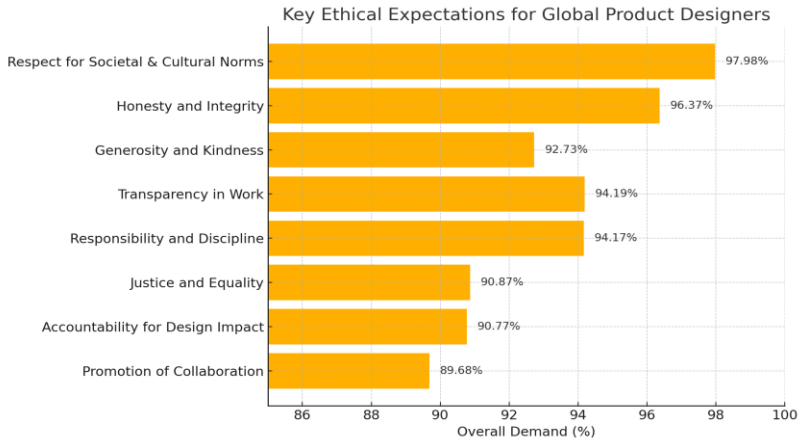

Figure 4. Bar chart illustrating the aggregate demand for ethical principles as reported by survey participants.

The bar chart above encapsulates the survey results about the fundamental ethical requirements for product designers in international contexts. Respect for Societal and Cultural Norms (97.98%) and Honesty and Integrity (96.37%) were the most highly rated values, underscoring the necessity for cultural sensitivity and ethical transparency in design approaches. Transparency in Work (94.19%) and Responsibility and Discipline (94.17%) underscore accountability and the steadfast maintenance of ethical norms. Justice and Equality (90.87%) and Accountability for

the Impact of Design Work (90.77%) demonstrate a robust dedication to fairness, inclusion, and environmental stewardship. Finally, Generosity and Kindness (92.73%) and Promotion of Collaboration (89.68%) emphasize the significance of cultivating a helpful, cooperative, and ethically principled workplace culture.

These findings highlight the necessity for firms to include ethics-oriented training in professional development programs, integrating personal beliefs with corporate social responsibility objectives and enhancing fairness and transparency throughout worldwide operations. The HRMS facilitates compliance and bolsters reputational trust while simultaneously improving employee well-being and fostering corporate togetherness.

Ethical expectations delineate the moral and social duties that direct individual designers and establish the basis for effective leadership in global design environments. Consequently, robust leadership and management qualities are crucial for directing cross-cultural teams, promoting ethical practices, and guaranteeing good project results globally.

4.5. Key leadership and management traits for global product designers

The subsequent figure delineates the requisite leadership and management attributes necessary for directing cross-cultural design teams, as stated by survey respondents. This visual representation highlights the essential attributes deemed most vital for successful global design leadership and organizational achievement.

Figure 5. Bar chart depicting the overall demand for leadership and management traits as identified by survey respondents.

The bar chart above summarizes the survey results on essential leadership and management qualities for global product designers. Creative problem-solving (93.75%) and decisiveness (92.47%) were recognized as crucial, underscoring the importance of strategic decision-making and the management of complex situations. Effective Communication (92.41%), Delegation and Trust in Team Members (91.72%), and Innovation (91.66%) highlight the importance of fostering team cohesion and enhancing innovation. Attributes such as accountability (90.54%), good attitude (87.86%), and active listening (87.48%) exemplify emotional intelligence and promote inclusive team dynamics. Flexibility (87.47%), eagerness to learn and

develop (85.84%), and preparedness for teamwork (85.78%) highlight adaptability and continuous improvement. The leadership traits are underpinned by strong ethical values, including respect for societal and cultural norms (97.98%), honesty and integrity (97.37%), and justice and equality (95.37%), indicating the importance of ethical governance and inclusive leadership practices.

These findings align closely with HRMS objectives, emphasizing leadership development as a strategic priority for fostering resilient, inclusive, and high-performing global teams. The human resources policy and executive training programs should focus on developing both technical leadership skills and ethical, people-focused management practices to support long-term growth in the organization.

The acknowledgment of vital leadership and management qualities highlights the extensive skill set required for efficiently guiding diverse teams and managing complex global design projects. The insights, along with the previously mentioned skills, are combined into a complete framework that offers a clear way to encourage global design success and develop human resources strategically.

4.6. Integrated competency framework

This image displays a conceptual radar chart that consolidates and visually represents the comprehensive abilities identified in this study, summarizing the major areas for global product designers. This integrated visualization emphasizes the harmonious interaction of technical, cultural, interpersonal, ethical, and leadership abilities crucial for success in global design environments.

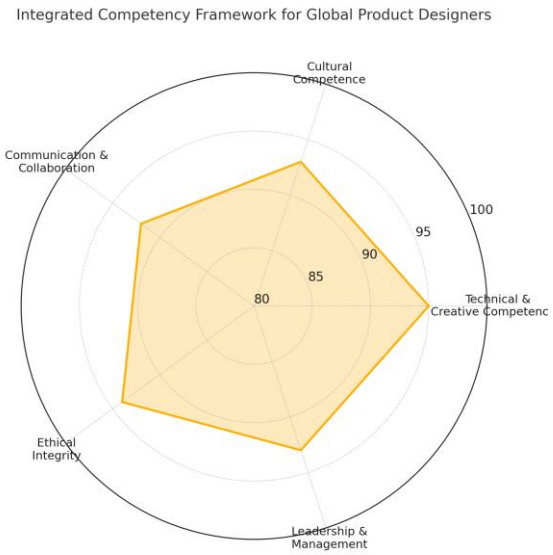

Figure 5. Conceptual radar chart summarizing key competency areas for global product designers as identified in the study.

The radar chart above offers a conceptual overview of the integrated competencies revealed in this study. It emphasizes the equal significance of technical and creative talents, cultural awareness, communication and teamwork, ethical integrity, and leadership and management abilities. Collectively, these fundamental domains establish a comprehensive framework to assist product designers and leaders

in maneuvering the intricacies of global marketplaces while providing culturally pertinent, sustainable, and inventive design solutions.

Collectively, these findings underscore a comprehensive competency framework essential for international product designers. This approach incorporates technological innovation, cultural proficiency, ethical integrity, and adaptable leadership. For HRMS, it emphasizes the necessity to synchronize recruitment, training, and leadership development initiatives with these competencies to produce a future-ready workforce adept at managing global challenges while maintaining organizational values and social responsibility.

5. Discussion

This study's findings highlight the intricate and multifaceted aspects of cross-cultural product design in the contemporary global market. Both the literature review and this research demonstrate that effectively incorporating cultural capital into design processes requires a harmonious combination of technical skills, creative thought, and interpersonal abilities (Plocher et al., 2021; Tower et al., 2021; Alexiou et al., 2022). These integrated abilities ensure that product designs are technologically sophisticated, culturally pertinent, socially accountable, and adaptable to varied consumer requirements.

5.1. The role of cultural capital in global product design

A key finding of this study is the crucial importance of cultural capital in global product design. Cultural capital—encompassing knowledge, social competencies, and symbolic resources—empowers designers to develop products that resonate deeply with diverse international markets (Pidduck et al., 2024; Voulvoulis et al., 2022). This aligns with prior studies emphasizing cultural sensitivity and inclusivity as critical factors for success in globalized contexts (Moro et al., 2020; Alexiou et al., 2022).

Incorporating cultural information enables designers to harmonize products with local preferences while maintaining global appeal, thus enhancing market acceptance and brand loyalty (Plocher et al., 2021; Tower et al., 2021). Furthermore, integrating cultural perspectives contributes to organizational social responsibility and supports broader corporate ethical initiatives (Sastre & Yela Aránega, 2023; Herrera & de las Heras-Rosas, 2020). By prioritizing cultural awareness, designers can create more inclusive, meaningful, and market-relevant products, reinforcing both commercial objectives and societal contributions.

5.2. Technological competencies and adaptability

This research underscores the increasing necessity for robust technological competencies and adaptability among designers (Cabrilo et al., 2024; Cox et al., 2025). As global markets digitize and consumer demands shift rapidly, expertise in emerging technologies, data analytics, and digital platforms becomes indispensable (Wu et al., 2024; Wang et al., 2024).

Designers' capacity to incorporate new technologies, such as AI and advanced digital tools, directly supports continuous innovation and responsiveness (Nasir et al., 2022; Pasolong & Setini, 2021). The Huawei case illustrates how technological

integration and cross-functional collaboration enhance product development and global competitiveness (Wang et al., 2024). Additionally, adaptability—emphasized in the literature as a core skill for navigating complex environments (Pasolong & Setini, 2021; O'Donnell et al., 2025)—reinforces designers' ability to maintain relevance and drive sustainable growth.

5.3. Communication, collaboration, and interpersonal skills

Strong communication and collaboration skills are critical for fostering innovative, inclusive design environments (Choubey, 2025; Huang, 2023). This study supports findings that highlight the importance of interpersonal skills—including empathy, cultural awareness, and open-mindedness—in strengthening team dynamics and creating psychologically safe workspaces (Markey et al., 2021; Gafni et al., 2024; Agrawal & Sybol, 2025).

As organizations continue to globalize, investing in these competencies becomes vital for promoting equitable participation and enhancing organizational resilience (Sharma & Kohli, 2024; Karneli et al., 2024; Garrido-Moreno et al., 2024). Effective communication fosters trust and transparency, empowering teams to co-create contextually relevant and innovative solutions (Husieva et al., 2025; Erfan, 2024).

5.4. Ethical considerations and transparency

The discussion of ethics and transparency in design is particularly relevant given the increasing integration of technology and global supply chains (Voegtlin & Greenwood, 2016; Onyekwelu et al., 2024). As noted in the literature, ethical leadership and CSR frameworks are essential for fostering trust and organizational sustainability (Herrera & de las Heras-Rosas, 2020; Alizadeh et al., 2023; Alshukri et al., 2024).

Designers face new ethical dilemmas involving data privacy, algorithmic fairness, and environmental impact (Alzaydi, 2024; Hernández-Ramírez & Ferreira, 2024). Emphasizing human-centered approaches that prioritize inclusivity and social responsibility mitigates these challenges (Sastre & Yela Aránega, 2023; Awad & Martín-Rojas, 2024). Ethical design practices ultimately reinforce employee engagement and public trust, aligning with broader corporate social responsibility goals (Ahsan & Khawaja, 2024; Ispiryan et al., 2024).

5.5. Sustainability and holistic design thinking

Sustainability emerged as a major theme, reinforcing the need for a holistic and systems-thinking approach to design (Stein, 2019; Voulvoulis et al., 2022). Designers are now expected to balance economic viability with social justice and environmental stewardship (Nogueira, Ashton, & Teixeira, 2019; Sharma & Kohli, 2024).

Design thinking approaches that integrate diverse capitals—cultural, natural, and social—promote resilience and market relevance (Alexiou et al., 2022; Garrido-Moreno et al., 2024). Such strategies not only meet consumer demands but also align with global sustainability initiatives and stakeholder expectations (Awad & Martín-Rojas, 2024; Alshukri et al., 2024).

5.6. Leadership and management skills in cross-cultural teams

Leadership in cross-cultural design contexts requires a nuanced blend of transformational and digital leadership competencies (Pasolong & Setini, 2021; Nasir et al., 2022). Transformational leaders inspire innovation and adaptability, creating inclusive environments that value diverse perspectives (Kelly, 2019; Yücebalkan et al., 2018).

The emphasis on soft skills such as empathy, active listening, and cultural sensitivity aligns with literature highlighting the importance of psychological safety and collaboration (Agrawal & Sybol, 2025; Markey et al., 2021). Ethical leadership frameworks that prioritize social responsibility and community well-being are essential for sustaining trust and driving global success (Onyekwelu et al., 2024; Voegtlin & Greenwood, 2016).

5.7. Contribution and future implications

This study enhances the literature by presenting an integrated competency framework that blends cultural, technological, interpersonal, and ethical dimensions. By nurturing these competencies, organizations can develop design leaders who produce innovative, market-relevant, and socially responsible products (Pidduck et al., 2024; Alexiou et al., 2022).

As global design challenges evolve, future research should explore the interactions between these competencies and emerging global dynamics, including digital transformation and environmental imperatives. Such insights will support HR strategies and organizational policies aimed at cultivating inclusive, adaptive, and innovative design teams capable of sustaining long-term competitive advantage (Ahsan & Khawaja, 2024; Ispiryan et al., 2024).

6. Conclusion

This study offers an in-depth examination of the abilities required for product designers to thrive in the global market, highlighting the interaction between technical proficiency, cultural awareness, and ethical leadership. Each study issue is sequentially constructed, establishing a cohesive framework: from technological adaptation to cultural integration, communication and collaboration, ethical conduct, and ultimately, leadership and management in cross-cultural environments. Collectively, these factors underscore the multifaceted skill set necessary for contemporary design professionals and executives.

Essential findings indicate that product designers must emphasize creativity, innovation, and technology proficiency to maintain competitiveness. Skills including material development, design conceptualization, and innovative thinking are essential. In addition to technical expertise, sustainable design techniques and cultural awareness have become essential, highlighting the increasing need for ecologically responsible and socially pertinent goods.

Organizational and academic leaders underscore the importance of critical thinking, adaptation, and innovation management. Proficient design executives must predict trends, incorporate sophisticated technologies, and oversee intricate multinational teams while cultivating inclusive and supportive cultures. Ethical

integrity and social responsibility are essential, directing designers to maintain honesty, honor cultural standards, and emphasize environmental sustainability.

Communication and cooperation skills—specifically adaptability, receptiveness, empathy, and respect for diversity—are crucial for working in international, cross-functional design teams. Leaders must develop these interpersonal skills to promote innovation and sustain cohesion.

The study indicates that ongoing improvement in technical, creative, interpersonal, and ethical competencies is vital for global success. Designers and executives that incorporate these competencies will be more adept at addressing changing market demands and producing culturally relevant, socially responsible goods.

The results present significant implications for educational institutions, human resources experts, and corporate leaders. Curriculum design must incorporate sophisticated technical and artistic training in conjunction with cultural knowledge and ethical considerations. Organizations are urged to promote ongoing professional development in communication, intercultural proficiency, and sustainable practices. This underscores the significance of comprehensive talent management strategies that integrate technical and creative competencies with business values and social responsibilities.

7. Limitations of the study and suggestions for future research

This study, however meritorious, has drawbacks. Self-reported data may add biases, and the viewpoints of other essential stakeholders, such as consumers or engineers, are not thoroughly examined. Moreover, the practical implementation across diverse cultural contexts and sectors necessitates additional scrutiny. The sample may inadequately reflect smaller enterprises or underdeveloped areas, hence constraining generalizability.

Future studies may investigate practical applications via real-world case studies, concentrating on how designers adapt across various industries and cultural situations. Subsequent research might explore the cultivation of cross-cultural competences via mentorship and training, as well as analyze team dynamics in cross-functional, multicultural environments. Ultimately, examining the influence of emerging technologies on global design will aid in formulating strategies that reconcile innovation with cultural significance and user-centered principles.

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