

Research Proposal

1. Research area and working title

- **Developing a predictive model to determine the extent of cultural impact on international project management success**

2. Problem Background:

In today's globalised business environment, international projects have become increasingly common. However, cultural differences among team members can significantly impact project outcomes. These differences can lead to misunderstandings, conflicts, and inefficiencies that hinder project success (Yousef, 2024). Muneer (2022) has noted that while quantitative analysis has shown that the success of construction projects is affected by corporate culture, clear project scope, and good communication, quantitative tools cannot predict and mitigate cultural impacts on project management. Hence, there remains an opportunity to create comprehensive tools that help organisations maximise the benefits of cultural diversity in project management.

3. Key benefits of cultural diversity in projects:

3.1. Enhanced innovation and creativity

- Diverse teams bring multiple perspectives to problem-solving
- Different cultural approaches lead to more comprehensive solutions
- Varied experiences foster innovative thinking

3.2. Improved global market understanding

- Better insight into local market needs
- Enhanced ability to serve diverse customer bases
- Stronger international business relationships

3.3. Enriched team capabilities

- Complementary skill sets from different educational backgrounds
- Multiple language capabilities

- Diverse communication styles that can adapt to various situations

Research Opportunity:

Existing research recognises the importance of cultural diversity in project teams; however, there is still a need for quantitative tools to assist organisations, as noted by Osaghae & Olatunji (2023). These tools can help:

- Identify and leverage cultural strengths within teams
- Optimise team composition for maximum effectiveness
- Enhance cross-cultural collaboration
- Support effective knowledge sharing across cultural boundaries

4. Proposed Research Problem and Research Question

• Research Problem

The research aims to understand how cultural diversity affects team outcomes in international projects and proposes to develop a predictive model to understand its mechanisms and implications (Rodríguez et al. 2023). This is important because globalisation has increased the frequency of international projects, leading to cultural misunderstandings that can result in project delays, increased costs, and failure (Daramola et al. 2024). Quantitative tools often fail to assess and predict the cultural impacts on project management (Ashkanani & Franzoi, 2022). Therefore, improving cross-cultural project management can bring significant economic benefits, such as cost savings and increased efficiency, and foster enhanced international cooperation, paving the way for a more harmonious global business environment (Álvarez & Sahija, 2022).

• Primary Research Question

How do cultural differences influence the management and success of international projects, and can we develop a method to predict these influences quantitatively?

- **Hypothesis:**

Hussein (2022) emphasises that globalisation has increased diversity challenges, requiring strategic thinking and problem-solving skills for organisational success. Managing a diverse workforce is challenging due to cultural differences, which significantly impact international project management ability and can be used to predict project success rates.

- **Null Hypothesis:**

Costello (2022) unequivocally underscores the importance of multicultural teams in project management and the need for tools and theories to help project managers address challenges. There is a lack of systematic inquiry into how project managers navigate these challenges, hindering the identification of effective methods for managing projects involving multiple cultures. Significant cultural differences impact international project management, making it challenging to predict project success rates.

4. Proposed Aims and Objectives

- This research aims to identify the factors influencing international project success definitively, rigorously assess the impact of cultural differences on project management and success, and develop a predictive model to accurately evaluate the cultural effects on project outcomes (Dumitraşcu-Băldău et al. 2021).
- As Diogo et al. (2024) note, the objectives of this research include identifying and analysing cultural factors influencing project management, assessing their impact on project outcomes, and developing strategies for managing cultural differences within project teams. Additionally, the research aims to create a mathematical model to predict whether a culture will be vulnerable to project management failure, identify strategies to overcome cultural vulnerabilities and develop a Python-based Cultural Impact Assessment Tool for Project Management.

5. Proposed Research Design

- **Methodology**

The research will employ a mixed-method approach, including quantitative surveys of project managers with international project experience, qualitative in-depth interviews, and case study analysis (Magano et al. 2020; Yang et al. 2022):

- Data preprocessing and feature engineering
- Model selection and training methodology
- Validation approach
- Implementation details using Python and relevant libraries

- **Data Collection**

As per Khan & MacEachen (2022), data will be collected through online surveys and virtual interviews, with subsequent data analysis encompassing statistical analysis for survey data and thematic analysis for interview data (Braun & Clarke, 2022). Additionally, participant information sheets and informed consent forms will be developed and submitted for ethical approval before data collection, and all research materials will comply with GDPR and relevant data protection regulations.

- **Software Development Life Cycle (SDLC)**

The predictive model and Python-based assessment tool will be developed using an Agile SDLC, which allows for iterative development, stakeholder feedback, flexibility to adapt to new insights, and incremental delivery of functional components (Tam et al., 2020).

6. Artifacts to be Created

- A Python program that serves as a Cultural Impact Assessment Tool for Project Management.
- As per Zhang (2022), a mathematical model for predicting cultural impact on project success incorporates critical cultural dimensions and weighted factors

based on research findings, with probability calculations for project risk due to cultural factors.

- A comprehensive report outlining research findings and best practices. Practical guidelines for managing cultural differences in international projects. A training module for international project managers (Ika et al. 2020).

7. Project Risks

Risk	Mitigation Strategy
Data quality and availability	<ul style="list-style-type: none">- Establish minimum data quality criteria upfront- Use multiple data sources for validation- Implement data cleaning and validation protocols
Potential bias in data collection or model development	<ul style="list-style-type: none">- Use diverse data sources- Regular peer review of methodology- Cross-cultural validation of results
Complexity in quantifying cultural factors	<ul style="list-style-type: none">- Use established cultural frameworks as a baseline- Develop clear metrics for each cultural dimension- Validate quantification approach with my tutors- Implement sensitivity analysis
Ethical considerations in cultural categorisation	<ul style="list-style-type: none">- Establish ethical guidelines upfront- Regular ethics review consultation- Implement privacy-preserving techniques- Ensure transparent categorisation criteria
Challenges in validating the predictive model	<ul style="list-style-type: none">- Use cross-validation techniques- Implement A/B testing- Regular model performance monitoring- Establish clear validation metrics

8. Similar Products

1. Hofstede's Cultural Dimensions framework (Jan et al. 2022).
2. Cultural Intelligence Scale (CQS) (Jurásek & Wawrosz, 2021).
3. Trompenaars' and Hampden-Turner's Seven Dimensions of Culture (Rodolaki et al. 2023).

Unlike these general cultural assessment tools, my tool will focus on project management outcomes and provide actionable strategies.

9. Validation and Verification

- User testing of the Python program, involving testing with international project managers and usability studies with feedback collection.
- Peer review of the comprehensive report and guidelines, including review by academic experts and industry professionals.
- Pilot testing of the training module, including small-scale implementation with select project teams and pre-and post-training assessments.

10. Tools to be Used

1. Python with NumPy, Pandas, and Scikit-learn for data processing and modelling. Flask or Django for web application framework.
2. Git and GitHub for version control.
3. Matplotlib and Seaborn for data visualisation in Python and Tableau for creating interactive dashboards.

11. Project Timeline

Phase	Duration	Key Deliverables
Research & Data Collection	3 months	Survey data, Interview transcripts
Model Development	2 months	Initial predictive model
Tool Development	4 months	Python application, Dashboards
Testing & Validation	2 months	Validation report, User Feedback
Documentation	1 month	Complete documentation package
Final Implementation	1 month	Production-ready tool

References:

- Alvarez, S. C. & Sahija, D. (2022) A Review of Cross Cultural Leadership and Management in International Projects, *Technoarete Transactions on Economics and Business Systems*, 1 (2). DOI: <https://doi.org/10.36647/ttebs/01.02.art004>.
- Ashkanani, S. & Franzoi, R. (2022) An overview on megaproject management systems, *Management Matters*, 19 (2), pp. 129–148. DOI: <https://doi.org/10.1108/MANM-01-2022-0006>.
- Braun, V. & Clarke, V. (2022) Conceptual and design thinking for thematic analysis. *Qualitative Psychology*, 9(1), pp.3–26. DOI: <https://doi.org/10.1037/qup0000196>.
- Costello, S. (2022) *How do Project Managers address cross-cultural challenges in multicultural projects? Perspectives from the healthcare industry*. [online] Available from: <https://esource.dbs.ie/server/api/core/bitstreams/40699f7a-3437-4c27-9856-aa7fe98df790/content> [Accessed 03 Oct 2024].
- Daramola, N. G. O., Adewunmi, N. A., Jacks, N. B. S. & Ajala, N. O. A. (2024) NAVIGATING COMPLEXITIES: A REVIEW OF COMMUNICATION BARRIERS IN MULTINATIONAL ENERGY PROJECTS, *International Journal of Applied Research in Social Sciences*, 6 (4), pp. 685–697. DOI: <https://doi.org/10.51594/ijarss.v6i4.1062>.
- Diogo, B. B., Carlos, A. P. S., Najjar, M., Da Costa, B. B. F., Tam, V. W. Y. & Haddad, A. N. (2024) Project success and critical success factors of construction projects from the perspective of a multicultural team: a case study in Guyana, *International Journal of Construction Management*, pp. 1–15. DOI: <https://doi.org/10.1080/15623599.2024.2397626>.
- Dumitraşcu-Băldău, I., Dumitraşcu, D.-D. & Dobrotă, G. (2021) Predictive Model for the Factors Influencing International Project Success: A Data Mining Approach, *Sustainability*, 13 (7), pp. 3819. DOI: <https://doi.org/10.3390/su13073819>.
- Hussein, A. B. F. (2022) *The impact of cultural diversity on project management communication An empirical analysis of the information technology industry in the United Arab .* [online] Available from: https://bspace.buid.ac.ae/buid_server/api/core/bitstreams/c7522152-a7e7-4f5f-ae1a-0f2e61c3af1c/content [Accessed 03 Oct 2024].
- Ika, L.A., Söderlund, J., Munro, L.T. & Landoni, P. (2020) Cross-learning between project management and international development: Analysis and research agenda. *International Journal of Project Management*, 38(8). Doi: <https://doi.org/10.1016/j.ijproman.2020.10.005>.
- Jan, J., Alshare, K.A. & Lane, P.L. (2022) Hofstede's cultural dimensions in technology acceptance models: a meta-analysis. *Universal Access in the Information Society*, [online] 23, pp.1–25. DOI: <https://doi.org/10.1007/s10209-022-00930-7>.

Jurásek, M. & Wawrosz, P. (2021) Cultural intelligence and adjustment in the cultural diverse contexts: The role of satisfaction with life and intercultural competence. *Economics & Sociology*, 14(4), pp.204–227. DOI: <https://doi.org/10.14254/2071-789x.2021/14-4/12>.

Khan, T.H. & MacEachen, E. (2022) An Alternative Method of Interviewing: Critical Reflections on Videoconference Interviews for Qualitative Data Collection. *International Journal of Qualitative Methods*, 21(1). DOI: <https://doi.org/10.1177/16094069221090063>.

Magano, J., Silva, C., Figueiredo, C., Vitória, A., Nogueira, T. & Pimenta Dinis, M.A. (2020) Generation Z: Fitting Project Management Soft Skills Competencies—A Mixed-Method Approach. *Education Sciences*, 10(7), p.187. DOI: <https://doi.org/10.3390/educsci10070187>.

Muneer, M., Khan, N., Hussain, M. A., Shuai, Z., Khan, A. A., Farooq, R., Moawwez, M. A. & Tariq, M. A. U. R. (2022) A Quantitative Study of the Impact of Organizational Culture, Communication Management, and Clarity in Project Scope on Constructions' Project Success with Moderating Role of Project Manager's Competencies to Enhance Constructions Management Practices, *Buildings*, 12 (11), pp. 1856. DOI: <https://doi.org/10.3390/buildings12111856>.

Osaghae, O. & Olatunji, O. A. (2023) Key drivers of value amongst multicultural teams in construction projects. *International Journal of Construction Management*, pp.1–8. DOI: <https://doi.org/10.1080/15623599.2023.2221059>.

Rodolaki, C., Barakos, G. & Hitch, M. (2023) The Role of Intercultural Differences and Challenges Faced in Negotiating Active Mine sites'rehabilitation Objectives from Africa to Europe. *The Extractive Industries and Society*, 16, pp.101362–101362. DOI: <https://doi.org/10.1016/j.exis.2023.101362>.

Rodríguez, L.E.G., Eleta, A.A., Agarwala, T. & Barrachina, M.B. (2023) Individual characteristics on multicultural team performance: does the role played by leaders and team members matter? *Frontiers in Psychology*, 14. DOI: <https://doi.org/10.3389/fpsyg.2023.1281422>.

Tam, C., Moura, E.J. da C., Oliveira, T. & Varajão, J. (2020) The factors influencing the success of on-going agile software development projects, *International Journal of Project Management*, 38 (3), pp. 165–176. DOI: <https://doi.org/10.1016/j.ijproman.2020.02.001>.

Yang, Y., Xia, X., Lo, D., Bi, T., Grundy, J. & Yang, X. (2022) Predictive Models in Software Engineering: Challenges and Opportunities. *ACM Transactions on Software Engineering and Methodology*, 31(3), pp.1–72. DOI: <https://doi.org/10.1145/3503509>.

Yousef, K. (2024) Exploring the impact of cultural diversity in global projects: A comparative analysis of virtual and face-to-face teamwork, *International Journal of Cross Cultural Management*, 24 (2), pp. 411–430. DOI: <https://doi.org/10.1177/14705958241253754>.

Zhang, Q., Oo, B.L. & Lim, B.T.H. (2022) Validating and Applying the Mathematical Models for Predicting Corporate Social Responsibility Behavior in Construction Firms: A Roadmap. *Buildings*, 12(10), p.1666. DOI: <https://doi.org/10.3390/buildings12101666>.