*IDENTIFYING CORE COMPETENCIES NEEDED BY TRANSDISCIPLINARY EVALUATORS TO EVALUATE THE TRANSDISCIPLINARY RESEARCH PROJECTS**

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*This study is a part of my doctoral research conducted at the Pennsylvania State University

Study context

Transdisciplinary Research

- Goes beyond the boundaries of disciplines, encompassing elements between, across, and beyond all disciplines.
- aims is to achieve a more unified understanding of the world and the integration of knowledge across various domains.

- Conducted with **evaluation experts** from the Agriculture and Food Research Initiative's Sustainable Agricultural Systems (SAS) program, funded by USDA NIFA.
- **Focus areas:** water quality, environmental quality, rural prosperity, climate resilience, etc.
- SAS projects represent diversity in **context, expertise, stakeholders, research areas, and team dynamics**.
- Evaluators were selected for their expertise in **evaluating complex**, **transdisciplinary research programs**.
- Identified **41** SAS projects (funded between **2019-2024**).
- A representative panel of **26** experts was formed from **diverse geographical regions**.
- *Excluded program evaluators responsible for traditional interdisciplinary or multidisciplinary programs to ensure transdisciplinary specific insights.*

Three-round modified Delphi approach

Round I

- Open ended question asked along with three closed ended questions
- *Please list all the core Evaluation skills or competencies that are needed to conduct meaningful evaluations of the TDR projects.*
- Thematic analysis was conducted to analyze open ended questions while descriptive were used to analyze closed ended questions.
- Number of participants = 19 (73.1%)

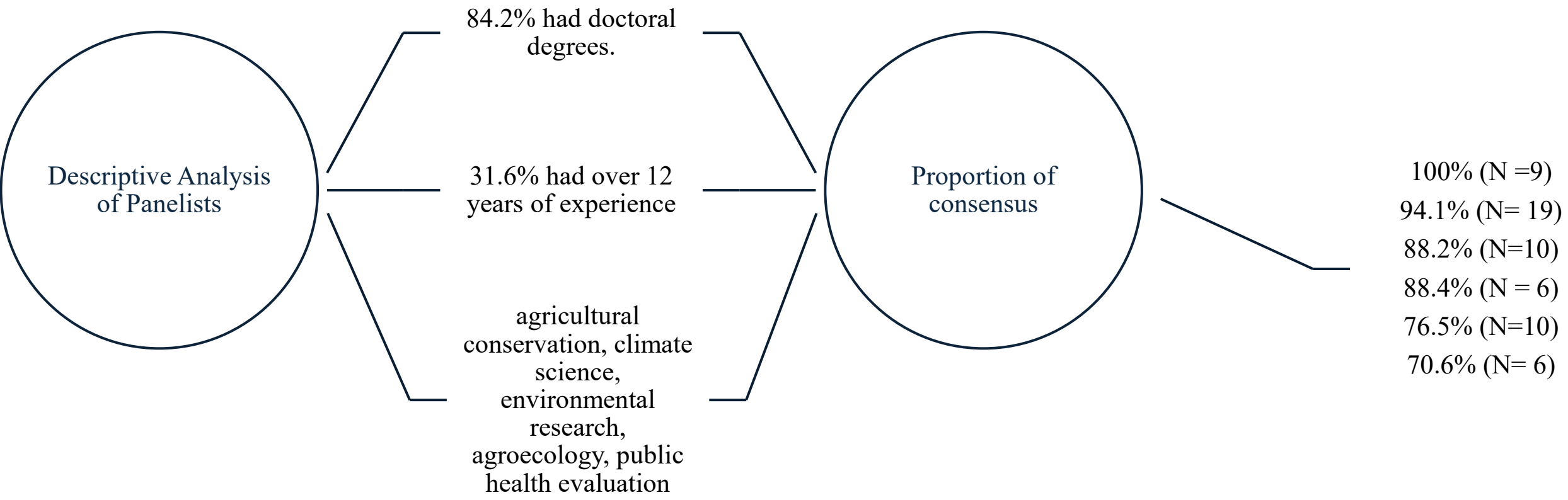
Round II

- 83 competencies were presented
- A Likert scale from 'Strongly Agree' to 'Strongly Disagree' was employed to rate competencies
- Feedback was incorporated
- Competencies agreed by 2/3rd of responses were retained using a priori consensus
- Double barreled statements were corrected
- Number of participants = 19 (73.1%)

Round III

- 71 competencies were presented in the third round
- 60 were retained
- 12 competencies were specific to transdisciplinary research evaluation only
- Number of participants = 17 (65.4%)

Results


Descriptive Analysis of Panelists
84.2% had doctoral degrees.
31.6% had over 12 years of experience
agricultural conservation, climate science, environmental research, agroecology, public health evaluation
Proportion of consensus
100% (N =9)
94.1% (N= 19)
88.2% (N=10)
88.4% (N = 6)
76.5% (N=10)
70.6% (N= 6)

Statements	Two-Third 'participants' agreement
• Conducts the responsible evaluations (i.e., ethical conduct, fairness, stakeholder engagement, and accountability) • Conducts credible evaluations (i.e., methodological rigor, objectivity, and reliability of results) • Links objectives, activities, measurements and outcomes • Communicates clearly (e.g., jargon free) • Applies professional evaluation standards to evaluations • Respects evaluation stakeholders (e.g., clients, respondents, and program participants) • Conducts culturally responsive evaluation • Ensures the relevancy of the findings to both academic and non-academic audiences • Ensures the usefulness of the findings to both academic and non-academic audiences	100 %

Statements	2/3 'participants' agreement
• Opens to learn new skills • Collaborates effectively in diverse teams • Includes the participants belonging to diverse backgrounds (e.g., educational, cultural, social, historical) • Functions effectively in diverse teams • Respects the participants belonging to diverse backgrounds (e.g., educational, cultural, social, historical) • Understands the programming cycle • Follows best evaluation practices • Understands and integrates diverse disciplinary perspectives • Follows research ethics (e.g., protection of human subjects) • Develops evaluation processes during the uncertain conditions • Practices appropriate interpersonal skills (e.g., listening, relationship building) • Knows how to solve problems • Knows theory and practice of quantitative methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis) • Applies context appropriate data collection methods • Designs robust evaluations that can handle the complexity and variety of data • Interprets and makes informed judgements • Promotes use of evaluation results • Knows the difference between short-term, medium-term, and long-term outcomes • Practices systems thinking (i.e., ability to understand how does the small pieces of the research fits into larger context and their impacts)	94.12%

Statements	2/3 'participants' agreement
• Practices effective personal skills (empathy, judgement, patience, and persistence) • Able to meet various deadlines of the project • Builds rapport with diverse project teams and partners • Formulates actionable recommendations based on the evaluation results • Knows the theory and practice of evaluation • Implements appropriate evaluation strategies to engage diverse stakeholders, such as using participatory approaches • Understands terminology used by the funders • Demonstrates strong flexibility and adaptability in the dynamic nature of transdisciplinary research projects • Knows theory and practice of qualitative methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis) • Applies evaluative thinking	88.24

Statements	2/3 'participants' agreement
• Handles interdependent activities effectively • Connects with project partners located at diverse geographical locations if needed • Knows funding requirements • Uses contextually appropriate data storage methods • Ascertains the validity and reliability of data collection methods • Adapts to work across disciplines	82.35

Statements	2/3 'participants' agreement
• Understands theory and practice of transdisciplinary research • Resolves the challenges related to evaluation of the transdisciplinary research projects (if any) • Translates research findings for both academic and non-academic audiences • Assesses implementation fidelity as appropriate • Articulates theory of change • Comprehends developmental evaluation methods • Develops quality surveys for data collection • Plans strategic evaluations • Knows theory and practice of mixed methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis) • Conducts quality surveys for data collection	76.47%

Statements	2/3 'participants' agreement
• Remains unbiased towards project team and audiences • Conducts outcome assessment • Undertakes stakeholder analysis for identifying who are affected or will be affected by the research findings • Identifies underlying values and motivations of project team members • Provides rapid feedback during the changing contexts of the project • Prioritizes and groups data evaluation requests to ensure efficient data collection while considering the	70.59%

Results

Professional Practice	Planning and Management	Unique To TDR*	Context	Interpersonal
1.Opens to learn new skills 2.Respects the participants belonging to diverse backgrounds (e.g., educational, cultural, social, historical) 3.Conducts the responsible evaluations (i.e., ethical conduct, fairness, stakeholder engagement, and accountability) 4.Follows best evaluation practices 5.Applies professional evaluation standards to evaluations 6.Follows research ethics (e.g., protection of human subjects) 7.Knows the theory and practice of evaluation 8.Knows how to solve problems 9.Applies evaluative thinking	1. Able to meet various deadlines of the project 2. Connects with project partners located at diverse geographical locations if needed 3. Collaborates effectively in diverse team 4. Understands the programming cycle 5. Develops evaluation processes during the uncertain conditions 6. Knows funding requirements	1. Understands theory and practice of transdisciplinary research 2. Practices effective personal skills (empathy, judgement, patience, and persistence) 3. Resolves the challenges related to evaluation of the transdisciplinary research projects (if any) 4. Translates research findings for both academic and non-academic audiences 5. Remains unbiased towards project team and audiences 6. Understands and integrates diverse disciplinary perspectives 7. Ensures the relevancy of the findings to both academic and non-academic audiences 8. Ensures the usefulness of the findings to both academic and non-academic audiences 9. Demonstrates strong flexibility and adaptability in the dynamic nature of transdisciplinary research projects 10. Designs robust evaluations that can handle the complexity and variety of data 11. Adapts to work across disciplines 12. Practices systems thinking (i.e., ability to understand how does the small pieces of the research fits into larger context and their impacts)	1.Includes the participants belonging to diverse backgrounds (e.g., educational, cultural, social, historical) 2.Respects evaluation stakeholders (e.g., clients, respondents, and program participants) 3.Implements appropriate evaluation strategies to engage diverse stakeholders, such as using participatory approaches 4.Undertakes stakeholder analysis for identifying who are affected or will be affected by the research findings 5.Understands terminology used by the funders 6.Provides rapid feedback during the changing contexts of the project 7.Prioritizes and groups data evaluation requests to ensure efficient data collection while considering the impacts on participants 8. Promotes use of evaluation results	1.Builds rapport with diverse project teams and partners 2.Functions effectively in diverse teams 3.Communicates clearly (e.g., jargon free) 4.Practices appropriate interpersonal skills (e.g., listening, relationship building) 5. Handles interdependent activities effectively 6. Identifies underlying values and motivations of project team members
Methodology				
1. Formulates actionable recommendations based on the evaluation results 2. Conducts credible evaluations (i.e., methodological rigor, objectivity, and reliability of results) 3. Knows theory and practice of mixed methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis)	4. Comprehends developmental evaluation methods 5. Develops quality surveys for data collection 6. Plans strategic evaluations 7. Knows theory and practice of quantitative methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis)	8. Conducts outcome assessment 9. Knows theory and practice of qualitative methods (e.g., epistemology, contextually relevant instrument design, data collection, data analysis) 10. Interprets and makes informed judgements 11. Ascertains validity and reliability of data collection methods	12. Knows the difference between short-term, medium-term, and long-term outcomes 13. Links objectives, activities, measurements and outcomes 14. Assesses implementation fidelity as appropriate 15. Conducts culturally responsive evaluation	16.Applies context appropriate data collection methods 17. Conducts quality surveys for data collection 18. Uses contextually appropriate data storage methods 19. Articulates theory of change

**These competencies don't align with existing framework of American Evaluation Association (2018) and are distinct for Transdisciplinary research evaluation*

Advantages of using the Delphi Method

- Systematically gather expert opinions on a particular subject
- Facilitates iterative feedback and consensus building
- Diversity of educational backgrounds, experiences and expertise
- Anonymity offers less peer pressure, more individuality and comfort to express their opinions
- Suitable to include participants from diverse geographic locations
- Easy and asynchronous facilitation through online platforms – Qualtrics
- Financially effective compared to face-to-face panels; budget friendly

Challenges and Ways to address

- **Earlier Attempt: Broader global outreach had low/no response rate**
  - *Selected participants from the existing SAS projects and reached out personally at workshop - proved effective.*
- **Engagement Strategy:**
  - *Building rapport helped; a semi-formal tone may be more effective.*
  - *Participants often need clarity and have specific questions before committing.*
  - *Be mindful of obvious research fatigue in multiple rounds of data collection, and a long list of competencies can be time consuming – therefore, share the participants that their participation is valuable and appreciated.*

Thank you very much!

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