

## Peer Review

# Review of: "Unlocking Proficiency: Experts' Views on the Use of Generative AI"

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This manuscript presents an interesting and relevant study on the proficiency of using Generative AI (GenAI) tools. The authors explore the competencies, proficiency, and benefits of GenAI use through semi-structured interviews with 25 expert users. While the study has several strengths, including its exploratory nature and the development of a comprehensive framework, it also has some notable weaknesses.

**Strengths:**

The study addresses a critical knowledge gap by providing empirical evidence on GenAI proficiency, a timely topic as these tools become increasingly widespread in professional environments. The researchers have developed a valuable conceptual framework that effectively categorizes competencies, proficiency dimensions, and advantages associated with GenAI implementation. Through detailed, semi-structured interviews, the study captures nuanced perspectives from experienced GenAI practitioners, yielding substantive insights into real-world applications. The manuscript presents a logical progression from the introduction through the methodology to the findings and conclusions, enhancing readability and comprehension.

**Weaknesses:**

The study on GenAI proficiency exhibits several significant methodological and conceptual flaws that ultimately undermine its scientific validity and contribution to the field. Foremost among these concerns is the problematic approach to identifying and recruiting "expert users." By relying on subjective criteria such as peer nominations and social media prominence, the researchers introduced a substantial

selection bias into their sample. While the authors acknowledge this limitation, this fundamental methodological weakness calls into question the validity of all subsequent findings and interpretations.

The exclusive reliance on self-reported perceptions represents another critical weakness. Without incorporating any objective performance measures or outcome metrics, there is no way to validate participants' claims regarding increased productivity, improved quality, or other purported benefits of GenAI proficiency. This absence of objective assessment is particularly problematic in a field where measurable outcomes should be prioritized over subjective impressions.

Although the qualitative approach yielded detailed insights from 25 participants, this modest sample size restricts the generalizability of the findings. The purposive sampling strategy, while potentially appropriate for an exploratory investigation, precludes statistical generalization to broader populations. This limitation is especially problematic given the study's ambitious claims about universal competencies and proficiency dimensions.

The researchers failed to adequately control for potentially confounding variables that could significantly influence the results. Factors such as domain expertise, technological background, and individual cognitive differences were not systematically accounted for in the analysis. This oversight introduces substantial uncertainty about whether the observed patterns truly reflect GenAI proficiency or simply mirror pre-existing differences among participants.

Theoretical foundations appear insufficient throughout the manuscript. While the authors describe relationships between competencies, proficiency aspects, and benefits, these connections lack grounding in established theoretical frameworks. Without this conceptual anchoring, the study's findings remain descriptive rather than explanatory, limiting their scientific value and practical utility.

Finally, the authors' claim of novelty and significance appears overstated. Despite assertions that this represents the first comprehensive empirical examination of GenAI proficiency, similar research already exists in the literature. The authors have not clearly articulated how their work meaningfully advances understanding beyond existing studies or contributes unique insights to the field. This inability to position the work within the broader research landscape further diminishes its potential contribution.

#### **Recommendations for Improvement:**

- **Strengthen Expertise Assessment:** Implement a more rigorous and objective approach to identify expert GenAI users. This could involve a combination of self-assessment, peer review, and performance-based measures (e.g., standardized tests, evaluations of GenAI outputs).

- **Include Objective Performance Measures:** Incorporate objective measures of performance and outcomes. For example, quantify productivity gains (e.g., time taken to complete tasks), assess the quality of GenAI outputs (e.g., using expert ratings or error rates), or measure the impact of GenAI use on specific outcomes (e.g., sales, customer satisfaction).
- **Increase Sample Size and Diversity:** Expand the sample size to enhance the generalizability of the findings. Ensure greater diversity in the sample, including participants from different industries, job levels, and demographic backgrounds.
- **Control for Confounding Variables:** Employ statistical techniques (e.g., regression analysis) to control for potential confounding variables. Measure and include variables such as domain expertise, prior technology experience, cognitive abilities, and personality traits in the analysis. This means you may want to conduct a mixed-methods research.
- **Develop a Stronger Theoretical Framework:** Ground the study in relevant theories from cognitive psychology, human-computer interaction, or organizational behavior. Use theory to explain the relationships between competencies, proficiency, and benefits, and to generate testable hypotheses.
- **Clarify Contribution:** Provide a more detailed and nuanced explanation of the study's unique contribution. Clearly articulate how the study builds upon existing research, addresses gaps in the literature, and offers new insights into GenAI proficiency.
- **Refine the Discussion:** The discussion section should be more critical and reflective. The authors should acknowledge the limitations of their study more explicitly and discuss the implications of these limitations for the interpretation of their findings. They should also provide a more in-depth discussion of the theoretical and practical implications of their work.

**Specific areas and examples of literature the authors should consider to better position their study:**

#### **1. Competency Modeling and Frameworks:**

- Generic Competency Frameworks:
  - Boyatzis, R. E. (1982). *The competent manager: A model for effective performance*. John Wiley & Sons.
    - This classic work provides a foundation for understanding competencies in the workplace, which the authors can use to compare and contrast with the GenAI-specific competencies they identified.
  - Spencer, L. M., & Spencer, S. M. (2008). *Competence at work: Models for superior performance*. John Wiley & Sons.

- This book offers various models and approaches to defining and measuring competence, which can inform the authors' methodology and analysis.
- **Technology-Specific Competency Research:**
  - While GenAI is novel, research on IT skills, digital literacy, and information literacy provides relevant parallels. Search for literature on:
    - Digital literacy frameworks: UNESCO, European Digital Competence Framework (DigComp).
    - IT professional competencies: Studies on software developer skills, data science competencies, etc.
    - These areas can help the authors show how GenAI competencies are similar to or different from established technology-related skills.

## 2. Human-Computer Interaction (HCI):

- Prompt Engineering/Interaction Design:
  - Find studies in HCI that examine how users interact with AI systems, especially natural language interfaces.
  - Look for papers on:
    - Usability of AI tools
    - User experience (UX) of conversational AI
    - Mental models of AI (how users understand how AI works)
- AI as a Collaborative Tool:
  - Jarrahi, M. H. (2018). Artificial intelligence and the future of work: Human-AI symbiosis in organizational decision making. *Business Horizons*, 61(4), 577-586.
    - This article, already cited, can be used more deeply to theorize the "AI as teammate" concept that emerges in their findings.
  - Explore HCI research on:
    - Computer-supported cooperative work (CSCW)
    - Teamwork with robots or other AI agents

## 3. Cognitive Science and Learning:

- Metacognition:
  - Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American psychologist*, 34(10), 906.

- This is a foundational work on metacognition, which is a key competency in their findings.
- Search for more recent research on metacognition in technology-rich environments.
- Skill Acquisition:
  - Anderson, J. R. (1982). Acquisition of cognitive skill. *Psychological review*, 89(4), 369.
    - Theories of skill acquisition can help frame their discussion of how GenAI proficiency develops over time and with practice.
- Mindset:
  - Dweck, C. S. (2006). *Mindset: The new psychology of success*. Random House.
    - This book, already cited, is crucial for elaborating on the "growth mindset" they discuss.

#### 4. Organizational Behavior and Management:

- Technology Adoption:
  - Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 27(3), 425-478.
    - Technology adoption models (like the Technology Acceptance Model) can provide a theoretical lens for understanding the factors that influence GenAI use.
- Task Delegation and Automation:
  - Research on how humans delegate tasks to technology and the impact of automation on work processes.
- The Future of Work:
  - Reports and studies from organizations like the World Economic Forum, McKinsey, and Deloitte on the changing nature of work due to AI.

#### How to Use This Literature:

- Theoretical Framework: Use the literature to build a stronger theoretical framework for the study. Explain *why* certain competencies are important based on established theories.
- Literature Review: Expand the literature review to include these relevant areas. Show how the current study fits within the broader context of research on skills, technology use, and AI.
- Discussion: Use the literature to support and explain the findings. Compare and contrast the study's results with existing theories and empirical evidence.
- Contribution: Clearly articulate the study's unique contribution in light of this existing literature. What new insights does it offer that go beyond what is already known?

Integrating these areas of literature, the authors can significantly enhance the theoretical rigor and contextualization of their research, making it more compelling for publication.

In conclusion, while the manuscript has the potential to make a valuable contribution to the field, it requires significant revisions to address the identified weaknesses.

## **Declarations**

**Potential competing interests:** No potential competing interests to declare.