

Leveraging Generative AI for Managerial Performance: A Technology-to-Performance Chain Perspective

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Abstract

The increasing adoption of Generative AI in managerial work has generated growing interest in understanding its contribution to managerial effectiveness. To address this issue, the present research investigates middle managers in Malang City's digital creative industry through the Technology to Performance Chain perspective. The investigation emphasizes the role of Task Characteristics and Technology Characteristics in shaping Task-Technology Fit (TTF), as well as the extent to which AI utilization serves as a mediating mechanism between TTF and managerial performance. The study employed a quantitative cross-sectional approach. Information was collected from 182 middle managers through a structured questionnaire and subsequently evaluated using Partial Least Squares Structural Equation Modeling (PLS-SEM). The empirical results demonstrate that both task complexity and the quality of AI technology play a role in strengthening Task-Technology Fit. Furthermore, TTF exerts a positive and statistically significant impact on managerial performance. The findings also reveal that AI utilization partially mediates this relationship, suggesting that managerial outcomes improve when Generative AI capabilities are aligned with the demands of managerial tasks. Overall, the results indicate that a stronger alignment between AI capabilities and managerial work requirements promotes greater technology utilization, leading to improved efficiency and higher-quality decision-making.

Keywords: Generative AI; Middle manager performance; Task technology fit; Technology to performance chain; Utilization

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INTRODUCTION

The digital creative industry in Malang City has experienced rapid growth, becoming a vital pillar of the regional economy. In this highly dynamic and competitive ecosystem, middle managers hold a crucial position. They act as a connecting link across top-level strategic planning and front-line operational execution (Wooldridge et al., 2008). Consequently, activities undertaken by middle managers are characterized by high equivocality, interdependence, and a continuous need for rapid, high-quality decision-making. To navigate these complexities, there is an urgent need for advanced technological support.

Generative AI systems have emerged as a disruptive digital innovation offering significant potential to assist cognitive and analytical tasks. Unlike traditional automation, Generative AI can synthesize information, generate insights, and facilitate complex problem-solving (Staples & Seddon,

2005). However, despite its potential, the adoption of Generative AI among middle managers is often met with hesitation due to privacy and data protection concerns, output reliability (hallucinations), as well as the actual relevance of the technology to specific managerial routines (Dwivedi et al., 2023).

To understand this phenomenon, this study employs the Technology-to-Performance Chain (TPC) framework proposed by Goodhue and Thompson (1995). The TPC model posits that technology will only lead to performance impacts if it is both utilized by the user and represents an appropriate alignment with the activities being supported (Task-Technology Fit/TTF). While earlier research have examined AI adoption, empirical investigations focusing specifically on the TPC framework for Generative AI within managerial setting remain scarce (Choudhuri R. et al., 2025).

To address this research gap, the present study investigates the interplay among Task Characteristics, Technology Characteristics, and TTF, while also exploring how TTF affects Middle Manager Performance through both direct pathways and indirect effects mediated by Utilization (Thompson, Higgins, & Howell, 1991). The study is expected to contribute to information systems research while providing actionable recommendations for organizations seeking to develop successful AI adoption initiatives. From a theoretical perspective, this research extends the TPC framework by applying it to the novel context of Generative AI adoption in managerial work, offering insights into how the interplay between task complexity and AI capabilities shapes performance outcomes

METHOD, DATA, AND ANALYSIS

A quantitative approach with a cross-sectional design was adopted in this research.

Sampling and Collection of Data

The target population comprised middle managers in Malang's digital creative sector (startups, game studios, digital agency, and software houses). Using purposive sampling, 182 respondents were recruited according to their regular and voluntary engagement with Generative AI (ChatGPT, Gemini, etc) in a professional capacity.

Measurement Framework

Each construct was measured on a 5 point Likert scale, with response options ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The operational definitions of the constructs are presented below:

1. **Task Characteristics (TC):** Measured by equivocality, interdependence, and structure.
2. **Technology Characteristics (TEC):** Adapted from the (NIST, 2024) NIST AI Risk Management Framework (2024), focusing on explainability, robustness, fairness, and privacy.
3. **Task-Technology Fit (TTF):** Assessed through quality, timeliness, compatibility, ease of use, and reliability.
4. **Utilization (UT):** Measured by the frequency, diversity, and integration of AI use in daily tasks.
5. **Middle Manager Performance (MMP):** Evaluated based on task efficiency, decision quality, and overall effectiveness.

To address the potential for common method bias, which is a common concern in cross-sectional designs where both independent and dependent variables are collected from the same source, several procedural and statistical remedies were implemented (Sugiyono, 2016). First, the questionnaire was designed with clear instructions, and respondents were assured of anonymity to reduce bias in social desirability. Second, different scale anchors and reverse-coded items were employed to minimize response consistency effects (Norzaidi, Chong, Murali, & Salwani, 2009). Third, following the recommendations of Hair et al. (2022), Harman's single-factor test was conducted; the result indicated that a single factor accounted for less than 50% of the variance (32.7%), suggesting that common method bias is not a significant threat to the validity of the findings. Additionally, the correlation matrix revealed that no inter-construct correlations exceeded the threshold of 0.90, further confirming that common method bias is unlikely to affect the results.

Data processing was performed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS 4. The evaluation process started with examining the measurement model (outer model) to confirm the adequacy of validity and reliability indicators. Afterward, the structural model (inner model) was assessed to examine the research hypotheses.

RESULTS

Measurement Model (Outer Model)

Evidence of convergent validity was demonstrated by indicator loadings exceeding the recommended threshold of 0.70, while the Average Variance Extracted (AVE) values for all constructs were above 0.50. Discriminant validity was assessed using the Heterotrait–Monotrait Ratio (HTMT), and every construct satisfied the established threshold of 0.90. In addition, the measurement model exhibited strong reliability, as both Cronbach’s Alpha & Composite Reliability coefficients surpassed the minimum criterion of 0.70 across all constructs.

Structural Model (Inner Model) and Hypothesis Testing

The structural framework demonstrated substantial predictive capability, as the R-square results showed that it accounted for 62.8% of the variance in Middle Manager Performance, 63.0% in Task-Technology Fit, and 43.4% in Utilization.

Hypothesis testing produced several important findings. First, both Task Characteristics ($T = 10.910$, $p < 0.001$) and Technology Characteristics ($T = 10.051$, $p < 0.001$) were found to positively influence Task-Technology Fit at a statistically significant level. The evidence further indicates that middle managers are more likely to perceive a strong task–technology alignment when complex and ambiguous work requirements are supported by reliable and explainable Generative AI capabilities.

Second, Task-Technology Fit was found to have a direct and statistically significant contribution to Middle Manager Performance ($T = 6.248$, $p < 0.001$). This result is consistent with the fundamental proposition of the TPC model ([Goodhue & Thompson, 1995](#)), suggesting that performance improves when technological capabilities closely correspond to task demands.

Third, the mediation analysis revealed that Task-Technology Fit indirectly influences Middle Manager Performance through Utilization ($T = 7.216$, $p < 0.001$), indicating the presence of a significant mediating mechanism.

DISCUSSION

The empirical evidence strongly supports the application of the TPC model in the context of Generative AI adoption ([“GPT-4: A Review on Advancements and Opportunities in Natural Language Processing,” 2023](#)). The results highlight that simply providing AI tools is insufficient to boost performance. In the fast-paced digital creative industry, middle managers face unique challenges that require specific technological capabilities ([Huy, 2011](#)). When Generative AI is perceived to fit these complex needs, offering reliable and timely outputs, managers are naturally inclined to utilize the technology more intensively ([Andarwati et al., 2025](#)).

Utilization serves as a critical bridge. It is through the continuous, diverse, and integrated use of Generative AI in daily activities (e.g., strategic planning, data synthesis, report generation) that the potential of the technology is transformed into tangible performance outcomes ([Dishaw & Strong, 1999](#)). Managers reported higher efficiency along with enhanced decision quality, driven by this technology-task alignment and subsequent utilization.

CONCLUSION

This study concludes that leveraging Generative AI significantly enhances managerial performance within Malang’s digital creative sector, provided there is a strong Task-Technology Fit. The interplay among managerial task complexity and AI functionalities determines the level of fit, which in turn drives intensive utilization and ultimately improves performance. For practical

implications, organizations should not solely focus on acquiring advanced AI technologies, but must also ensure that the selected AI tools are highly compatible with the specific workflows of their managers (Kotler & Keller Lane, 2016). Providing targeted training to integrate AI into daily tasks will further maximize utilization and performance gains. Future research could expand this model by incorporating additional organizational dimensions, including leadership support from senior management and organizational culture, to provide a more holistic view of AI adoption (“Research Methods for Business: A Skill-Building Approach,” 2013).

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