

The Illusion of Readiness: Deconstructing Performative Compliance in Supply Chain Digital Transformation

Daniel Eka Putra*, Rizqi Fathur Rahman, Sara Marsha Eunicque, Darjat Sudrajat

Bina Nusantara University, Indonesia

Email : daniel.putra007@binus.ac.id*, rizqi.rahman@binus.ac.id,

sara.eunicque001@binus.ac.id, sudrajatd@binus.ac.id

Keywords:

Digital Transformation
Implementation, Change
Management, Performative
Compliance, Technology
Acceptance, Operational
Utility, Supply Chain
Management.

Abstract

Digital transformation has become a critical strategy for improving supply chain resilience, operational efficiency, and organizational competitiveness. However, significant investments in digital technologies do not always produce proportional improvements in operational outcomes, creating a productivity paradox in which technological adoption exceeds actual utilization. This study aims to examine the behavioral mechanisms underlying Digital Transformation Implementation (DTI) by investigating the roles of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Employees' Intentional Digital Readiness (EIDR) among supply chain personnel. This study employed a quantitative cross-sectional research design using a structured questionnaire distributed to employees involved in supply chain and logistics functions within Indonesian manufacturing firms and logistics service providers. Data from 247 valid respondents were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. The findings reveal that Perceived Usefulness and Perceived Ease of Use significantly influence Digital Transformation Implementation, indicating that employees primarily adopt digital systems when they provide practical benefits and operational convenience. Conversely, Employees' Intentional Digital Readiness does not significantly affect implementation, suggesting a gap between employees' expressed readiness and actual digital adoption behavior. The study concludes that successful supply chain digital transformation depends more on technological utility and usability than psychological readiness alone. These findings contribute to digital transformation literature by highlighting the importance of evaluating actual operational integration rather than relying solely on self-reported readiness indicators.



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INTRODUCTION

Global supply chains currently operate in an environment defined by unprecedented volatility from geopolitical tensions to climate-driven disruptions. In this landscape, organizations are under immense pressure to achieve greater visibility, agility, and responsiveness. Consequently, digital transformation has become the primary strategic response, with 55% of supply chain leaders accelerating technology investments in the past year alone (I & Deloitte, 2025). However, despite these record expenditures, many organizations struggle to convert investments into meaningful operational gains. This phenomenon, known as the Supply Chain Productivity Paradox, describes a reality where technology spending consistently outpaces actual operational outcomes (Prologis, 2023). This persistence raises a fundamental question: if organizations are investing heavily, why do

transformation (Akhtar et al., 2025) results remain inconsistent?.

While existing literature often points to technological infrastructure and strategic readiness as key determinants (Chwiłkowska-Kubala et al., 2023), this perspective overlooks a critical reality: technology does not create value in isolation. As (Kane et al., 2019) argues, the primary barriers to transformation are human and organizational, not merely technological. When firms prioritize software deployment over the actual integration of human workflows, they create an "illusion of progress" that masks underlying operational stagnation. This challenge is particularly acute in emerging economies like Indonesia, where digital adoption often lags due to insufficient workforce digital competencies (OECD, 2024), preventing firms from capturing the full benefits of their digital initiatives (Hussain, 2025; Sudaryanto et al., 2023; Tahar et al., 2020).

This study addresses these gaps by shifting the focus from organization-level strategy to individual-level behavioral mechanics. Digital transformation research remains dominated by organization-level explanations, often overlooking the individual-level mechanisms through which transformation outcomes emerge (Felin et al., 2015). Drawing on Socio-Technical Systems (STS) theory, we argue that success depends on the alignment of technical infrastructure with employee behavioral routines (Vink & Walzl, 2025). To investigate how this alignment develops, we integrate the Technology Acceptance Model (TAM) (Venkatesh & Davis, 2000). and the Employee Digitalization Acceptance Model (EDAM) (Höyng & Lau, 2023) to conceptualize Employees' Intentional Digital Readiness (EIDR). By examining whether psychological readiness acts as a genuine driver of success or merely a byproduct of performative compliance, this study offers a new behavioral pathway to resolve the productivity paradox within Indonesian logistics and manufacturing firms (Michelotto & Joia, 2024; Sekaran & Bougie, 2016; Virmani et al., 2025).

Existing research has extensively examined digital transformation from organizational and technological perspectives, emphasizing factors such as digital infrastructure, strategic capability, organizational readiness, and technological resources. For instance, (Chwiłkowska-Kubala et al., 2023) demonstrated that organizational resources and readiness significantly influence digital transformation outcomes, while (Kane et al., 2019) argued that transformation failures often originate from organizational and human barriers rather than technological limitations (Xiong et al., 2025). Similarly, recent studies have emphasized the importance of socio-technical alignment, where technology implementation must be integrated with human behavior, organizational processes, and operational practices (Malik et al., 2024). These findings indicate that digital transformation success depends not only on whether technology is available but also on whether employees genuinely adopt and utilize technology in their work processes (J. F. Hair et al., 2019; Kaufmann & Gaeckler, 2015; Schmid et al., 2017).

Despite these developments, many studies still predominantly analyze digital transformation at the organizational level and provide limited explanation regarding individual behavioral mechanisms underlying successful technology adoption (Bouckennooghe et al., 2009) . Digital transformation outcomes ultimately depend on employees who interact directly with technological systems, modify operational routines, and determine whether digital tools generate practical value. Research on microfoundations of organizational strategy highlights that individual-level actions and behaviors are essential components in explaining organizational outcomes. However, within supply chain contexts, particularly in emerging economies, limited empirical attention has been given to understanding whether employees' psychological readiness genuinely drives digital transformation implementation or whether reported readiness merely represents compliance with organizational expectations (Seppänen et al., 2025).

In the context of Indonesia, this issue becomes increasingly relevant because digital transformation adoption is accompanied by challenges related to workforce digital

competencies, organizational adaptation, and operational integration. Although Indonesian manufacturing and logistics industries have increasingly adopted digital technologies to improve efficiency and competitiveness, differences in employee capabilities and organizational support mechanisms may influence the effectiveness of these initiatives. Previous research has identified digital competency limitations as one of the barriers preventing organizations from maximizing the benefits of digital transformation. Consequently, understanding how employees perceive, accept, and operationalize digital technologies within supply chain environments is essential for explaining why some transformation initiatives achieve meaningful outcomes while others fail to deliver expected improvements.

Several previous studies have investigated technology acceptance factors in relation to digital transformation. The Technology Acceptance Model (TAM) developed by (Venkatesh & Davis, 2000) established that perceived usefulness and perceived ease of use significantly influence technology acceptance behavior. Recent studies have further confirmed that employees are more likely to adopt technological systems when those systems provide practical benefits and reduce operational complexity. Meanwhile, (Höyng & Lau, 2023) introduced the concept of Employees' Intentional Digital Readiness (EIDR), emphasizing the role of psychological preparedness in supporting digital transformation. However, these studies have produced varying conclusions regarding whether psychological readiness directly contributes to successful technology implementation, particularly in highly operational environments such as logistics and supply chain management.

The inconsistency among previous findings reveals an important research gap. Existing literature often assumes that employees' readiness and positive attitudes toward digital transformation automatically translate into successful implementation. However, there remains limited empirical evidence examining whether self-reported digital readiness reflects actual behavioral change or merely represents symbolic agreement with organizational transformation agendas. In operational environments characterized by strict performance targets and efficiency demands, employees may express readiness because of organizational expectations while continuing to rely on existing work practices. This phenomenon, referred to in this study as performative compliance, represents a critical theoretical gap because it challenges the assumption that psychological readiness is always a fundamental driver of digital transformation success.

Addressing this gap is urgent because inaccurate assessment of digital readiness may lead organizations to allocate resources inefficiently. Companies may invest heavily in motivational programs, change management initiatives, and readiness assessments while overlooking more fundamental factors such as system usability, operational relevance, and practical technology benefits. Understanding the actual mechanisms influencing digital transformation implementation is therefore essential for supply chain leaders seeking to design more effective transformation strategies. By identifying whether employees adopt digital systems because of genuine psychological readiness or because the technology provides direct operational value, organizations can develop more evidence-based approaches to digital transformation management.

This study introduces a novel perspective by integrating the Technology Acceptance Model (TAM), Employee Digitalization Acceptance Model (EDAM), and Socio-Technical Systems (STS) theory to examine the relationship between technological perceptions, employee readiness, and digital transformation implementation. Unlike previous studies that primarily emphasize organizational readiness or technological capability, this research investigates individual-level behavioral mechanisms among supply chain personnel. Specifically, this study examines whether Employees' Intentional Digital Readiness functions as an actual mechanism that facilitates transformation or whether its influence disappears when operational utility factors are considered. This approach provides a deeper understanding of

the behavioral complexity underlying digital transformation implementation in supply chain environments.

Therefore, this research aims to examine the determinants of Digital Transformation Implementation (DTI) by analyzing the roles of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Employees' Intentional Digital Readiness (EIDR) among supply chain employees in Indonesian manufacturing firms and logistics service providers. The study contributes theoretically by extending digital transformation literature through a behavioral perspective that questions the assumed relationship between psychological readiness and implementation outcomes. Practically, this research provides insights for managers and supply chain leaders regarding the importance of prioritizing operational utility, technology usability, and measurable adoption behavior when evaluating digital transformation success. The findings are expected to support organizations in developing more effective digital transformation strategies that move beyond symbolic compliance toward genuine operational integration.

METHOD

Research Design

This study employed a quantitative cross-sectional research design to examine the relationships between Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Employees' Intentional Digital Readiness (EIDR), and Digital Transformation Implementation (DTI). A cross-sectional approach is highly appropriate for behavioral supply chain research aiming to capture employee perceptions at a specific point during technological transition. Data were collected through a structured questionnaire administered to employees involved in supply chain management functions within manufacturing firms and logistics service providers in Indonesia. Given the objective of examining both direct and mediating relationships among latent constructs, Partial Least Squares Structural Equation Modeling (PLS-SEM) was selected as the primary analytical approach, as it is particularly robust for evaluating complex structural models in supply chain management.

Sample and Data Collection

Purposive sampling was employed to target employees involved in supply chain and logistics functions. This non-probability sampling technique is strictly required when respondents must possess specific, localized knowledge to provide valid data. To ensure respondent relevance, participants were required to have active experience using digital technologies or participating in digital transformation initiatives within their respective organizations. Prior to the main survey, a pilot study involving 30 respondents was conducted to evaluate item clarity and contextual relevance, adhering to established statistical guidelines for initial survey validation. Following minor revisions, the final survey generated 247 usable responses for subsequent analysis.

Measurement Development

All constructs were measured using previously validated scales adapted from established literature. Responses were assessed using a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were adapted from the Technology Acceptance Model [8]. Employees' Intentional Digital Readiness (EIDR) was conceptually grounded in the Employee Digitalization Acceptance Model, with measurement items adapted from the readiness for change scale and contextualized for digital logistics initiatives. Digital Transformation Implementation (DTI) was adapted from the framework proposed by [3].

In this study, DTI is measured as the operational-level manifestation of digital

transformation. Rather than relying on top-down IT deployment metrics, we measure DTI through the lived operational realities of supply chain personnel. Assessing digital transformation from the operator's perspective is crucial, as top-down structural transformations frequently fail if they are not adopted into the day-to-day practices and routines of the workforce. Therefore, measuring the extent to which supply chain personnel experience active organizational support and real-world technology application provides the most accurate indicator of system integration (Chaudhry, 2018; J. F. J. Hair, 2022; Xames & Topcu, 2025).

Data Analysis

Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. PLS-SEM was selected because the study focuses on prediction-oriented relationships and mediation analysis while accommodating latent constructs measured through perceptual indicators and data that may not fully satisfy multivariate normality assumptions. Following established PLS-SEM procedures, the analysis was conducted in two stages. First, the measurement model was evaluated to assess construct reliability and validity. Reliability was assessed using Cronbach's Alpha and Composite Reliability (CR), with threshold values exceeding 0.70. Convergent validity was assessed through indicator loadings and Average Variance Extracted (AVE), requiring loading values above 0.70 and AVE values above 0.50. Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait Ratio (HTMT) (Sarstedt et al., 2021).

Second, the structural model was evaluated by examining collinearity, path coefficients, coefficients of determination (R^2), effect sizes (f^2), predictive relevance (Q^2), and hypothesis significance through bootstrapping procedures. Variance Inflation Factor (VIF) values below 5 were used to confirm the absence of multicollinearity issues. Hypothesis testing was conducted using a two-tailed bootstrapping procedure at a 5% significance level to assess both direct and indirect effects within the proposed research model.

RESULTS AND DISCUSSION

Measurement Model Evaluation

The measurement model was evaluated to ensure the reliability and validity of the constructs. The analysis focused on internal consistency reliability, convergent validity, and discriminant validity. The final structural model, including outer loadings for all surviving indicators and the variance explained (R^2) for endogenous variables, is visually presented in Figure 1.

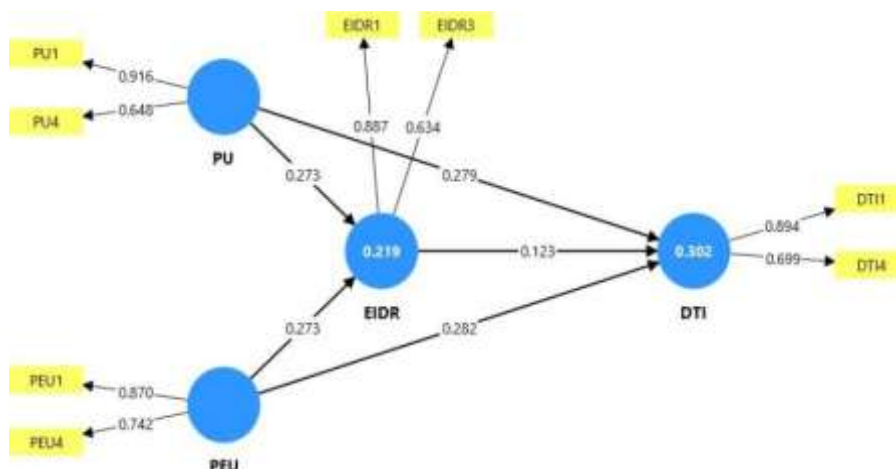


Fig. 1. PLS-SEM Algorithm Results (Path Model and Outer Loadings)

Internal consistency was assessed using Composite Reliability. While Cronbach's Alpha values were predictably low due to the construct scales being refined to two indicators each to maximize convergent validity, Composite Reliability provides a more accurate estimation in PLS-SEM. As shown in Table 1, all rho_c values exceeded the recommended threshold of 0.70, ranging from 0.741 to 0.789, confirming strong internal consistency. Convergent validity was established by examining the outer loadings (Figure 1) and the Average Variance Extracted (AVE). All remaining indicator loadings met acceptable thresholds, and the AVE for all constructs exceeded the 0.50 minimum requirement, confirming that each construct explains more than half of the variance of its indicators.

Table I. Construct Reliability And Convergent Validity

Construct	Composite Reliability	AVE
DTI	0.781	0.644
EIDR	0.741	0.595
PEU	0.789	0.654
PU	0.767	0.629

Discriminant validity was verified primarily through the Fornell-Larcker criterion and cross-loading analysis. The result shows that the square root of the AVE for each construct (diagonal values) is strictly greater than its highest correlation with any other construct, fulfilling the Fornell-Larcker requirement. Furthermore, cross-loading analysis confirmed that all indicators loaded highest on their respective primary constructs. While the Heterotrait-Monotrait Ratio (HTMT) values were elevated, this is theoretically consistent and acceptable (Antonakis et al., 2010; Henseler et al., 2015) given the high conceptual similarity among the latent variables measuring technology perception.

Following the validation of the measurement model, the structural model was evaluated to assess predictive capabilities and test the proposed relationships. Prior to hypothesis testing, the model was assessed for multicollinearity using the Variance Inflation Factor (VIF). The inner VIF values for all predictive paths ranged from 1.280 to 1.377. Because all values fall well below the strict threshold of 3.0, it is confirmed that collinearity does not bias the regression results.

Structural Model Evaluation

The predictive power of the model was evaluated using the coefficient of determination (R^2). As illustrated in Figure 1, the model explains 30.2 percent of the variance in Digital Transformation Implementation ($R^2 = 0.302$) and 21.9 percent of the variance in Employees' Intentional Digital Readiness ($R^2 = 0.219$). According to PLS-SEM standards, these values represent moderate predictive accuracy for behavioral supply chain models. Additionally, the blindfolding procedure yielded Q^2 predict values greater than zero for both DTI (0.267) and EIDR (0.200), confirming the structural model possesses adequate out-of-sample predictive relevance.

To evaluate the proposed hypotheses, a bootstrapping procedure with 5,000 subsamples was executed to generate t-statistics and p-values. Furthermore, effect sizes (f^2) were assessed to determine the actual strength of each relationship. According to Cohen's guidelines, f^2 values of 0.02, 0.15, and 0.35 represent small, medium, and large effects, respectively. As detailed in Table 3, hypotheses H1, H2, H4, and H5 were supported, demonstrating significant direct effects. Crucially, the f^2 analysis reveals the relative strength of these drivers: Perceived Usefulness ($f^2 = 0.081$) and Perceived Ease of Use ($f^2 = 0.083$) exert meaningful operational effects on implementation. Conversely, hypotheses H3, H6, and H7 were rejected. The direct effect of EIDR on DTI failed to achieve significance ($p = 0.227$), and its effect size ($f^2 = 0.017$)

fell below the minimum 0.02 threshold, indicating a negligible, non-existent operational impact. Consequently, no mediation effects were observed.

Table II. Construct Reliability And Convergent Validity

Hypotheses	β	T-Value	P-Value	f ²	Decision
H1	0.244	3.428	0.001	0.074	Supported
H2	0.232	2.817	0.005	0.075	Supported
H3	0.079	1.208	0.227	0.017	Rejected
H4	0.286	3.995	0.000	0.081	Supported
H5	0.261	3.460	0.001	0.083	Supported
H6	0.019	1.119	0.263	-	Rejected
H7	0.018	0.974	0.330	-	Rejected

The structural model evaluation reveals a sharp, uncompromising reality about how digital transformation actually happens on the supply chain floor. First, the data proves that Perceived Usefulness ($\beta = 0.286$, $p = 0.000$) and Perceived Ease of Use ($\beta = 0.261$, $p = 0.001$) are the ultimate drivers of implementation. Supervisors evaluate new technology strictly through a lens of survival and pragmatism. As shown by the surviving indicators, if a system eliminates data entry bottlenecks (PEU4) and delivers faster KPI results (PU1, PU4), supervisors will immediately overhaul their operational procedures to use it. This confirms classic technology acceptance principles and recent logistics studies. In the high pressure world of logistics, there is no time to ponder technology; if a tool is easy to use and makes the job faster, it gets integrated instantly.

Second, and most critically, the data completely shatters the idea that employees need to be mentally ready for digital change. Employees' Intentional Digital Readiness (EIDR) failed to drive actual implementation ($\beta = 0.079$, $p = 0.227$). This finding exposes a major boundary condition in recent theories like the Employee Digitalization Acceptance Model. While intentional readiness might matter for administrative office workers, it appears mathematically irrelevant on the logistics floor, where decisions are driven by strict operational targets.

The data points toward a fascinating phenomenon of performative compliance. Even though supervisors overwhelmingly checked the box claiming they were highly mentally ready for digital change (scoring a massive 4.530 out of 5 on EIDR1), this readiness produced zero actual implementation impact ($f^2 = 0.017$). This discrepancy provides a behavioral explanation for the Supply Chain Productivity Paradox and perfectly illustrates the structural barriers warned by , who argued that digital initiatives fail when organizations fall for the technology fallacy, mistaking superficial technological deployment for genuine human behavioral adaptation. Based on these empirical contradictions, it can be theorized that supervisors may be providing bureaucratic lip service to corporate management. They project an image of digital readiness because it is politically safe and aligns with top down corporate strategy, but this performative sentiment does nothing to actually integrate the software into daily operations.

To mathematically isolate this performative compliance, a post hoc alternative model was tested. The direct utility paths (PU and PEU to DTI) were deliberately removed to observe the behavioral shift. In this restricted model, EIDR suddenly emerged as a statistically significant mediator. This represents a classic methodological trap known as omitted variable bias (Antonakis et al., 2010). When researchers or executives completely ignore the actual usefulness of a software tool, the variance is mathematically forced onto the remaining psychological variable. As established in structural modeling literature failing to include critical direct predictors causes the algorithm to artificially inflate the significance of the paths that are left behind. This creates a dangerous illusion that mindset alignment is driving the transformation. However, as the fully specified model proves, the moment real operational

utility is put back into the equation, the importance of psychological readiness vanishes completely. Utility overrides emotion.

These findings deliver a wake up call to executive leadership and supply chain directors. Because self-reported readiness metrics appear highly susceptible to performative compliance, organizations are strongly advised to pivot away from sentiment-based surveys when measuring digital maturity. Instead, transformation audits should prioritize objective operational indicators, such as actual system utilization rates and tangible procedural modifications. Furthermore, the data suggests that heavy investments in psychological change management workshops that are designed to make supervisors "comfortable" with new systems, may yield diminishing returns in fast-paced logistics environments. Organizations would likely achieve higher adoption rates by reallocating those resources directly into optimizing the software's user interface for frictionless data entry. Finally, internal communication strategies regarding digital rollouts should be reframed. Rather than promoting abstract corporate visions, new systems are best positioned to middle management strictly as high-utility, tactical tools designed to achieve departmental KPIs. When operational utility is definitively proven, the data indicates that supervisors will drive the implementation proactively, rendering extensive psychological interventions largely unnecessary.

CONCLUSION

This study investigated the behavioral mechanics of Digital Transformation Implementation (DTI) among supply chain supervisors, specifically challenging the theoretical necessity of Employees Intentional Digital Readiness (EIDR). The empirical results decisively reject the assumption that psychological readiness acts as a prerequisite for technological integration at the operational level. Instead, the execution of digital transformation on the logistics floor is dictated exclusively by pragmatic operational utility. Supply chain supervisors alter their daily procedures solely when a system demonstrates frictionless data input and guarantees immediate efficiency gains, entirely bypassing the need for deliberate psychological alignment.

Furthermore, this research exposes a critical discrepancy between stated attitude and actual organizational behavior, identified here as performative compliance. While supervisors overwhelmingly self report high levels of mental readiness to align with corporate mandates, the structural model proves this sentiment functions merely as a bureaucratic illusion with negligible impact on actual implementation. A post hoc analysis confirmed that failing to account for direct technological utility creates an omitted variable bias, producing a statistical illusion that artificially inflates the importance of mindset alignment.

Consequently, executive leadership must radically recalibrate their digital transformation strategies to overcome the supply chain productivity paradox. Organizations are strongly advised to abandon sentiment based readiness surveys and critically evaluate the budget allocated to psychological change management initiatives. Resources must instead be redirected toward aggressive user interface optimization. Software rollouts should be positioned strictly as tactical tools designed to achieve departmental KPIs, relying on proven operational utility rather than forced psychological preparation.

Despite these robust findings, this study acknowledges certain limitations that provide avenues for future research. First, the cross sectional design restricts the ability to observe the longitudinal evolution of digital adoption. Future studies should employ longitudinal tracking of actual system usage logs to measure behavioral adaptation over time. Second, while the model specification heavily guards against theoretical bias, relying on self reported survey data introduces the potential for Common Method Bias. Although the study design actively mitigated this risk, future research should integrate objective organizational performance

metrics, such as automated transaction speeds or measurable error reduction rates, to validate the operational impact of new technology beyond subjective managerial perceptions.

FUNDING

This study did not receive any specific funding from governmental institutions, private organizations, or other funding agencies.

CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest related to the conduct of the research, preparation, or publication of this article.

AUTHOR CONTRIBUTIONS

All authors contributed to the preparation of this article. Daniel Eka Putra, Rizqi Fathur Rahman, Sara Marsha Eunicque and Darjat Sudrajat, was responsible for the conceptualization of the study, data collection and analysis, interpretation of the results, and manuscript preparation. The other authors contributed to the review, editing, and final approval of the manuscript.

GENERATIVE AI STATEMENT

The authors declare that no generative artificial intelligence was used in the preparation of this article.

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