Digital Transformation as a Driver of Innovative Behavior: the Mediating Roles of HR Analytics and Psychological Well-being at the Library and Archives Office of Bantul Regency

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Abstract

Purpose - This study aims to examine the influence of digital transformation as a driver of innovative behavior, with HR analytics and psychological well-being serving as mediating variables within the Bantul Regency Library and Archives Office. The study involved all 48 employees aged 20–50 years through direct questionnaire distribution. Data analysis was conducted using AMOS version 22 with Structural Equation Modeling (SEM), including outer model testing (validity and reliability), inner model testing (goodness-of-fit indices), and hypothesis testing. The findings indicate that digital transformation significantly influences both HR analytics and psychological well-being but does not directly affect innovative behavior. HR analytics shows no significant relationship with innovative behavior and does not mediate the effect of digital transformation. Psychological well-being, however, has a significant and positive impact on innovative behavior and serves as a partial mediator in the relationship between digital transformation and innovation. These results suggest that while technological advancement is important, its effectiveness in promoting innovation is enhanced when employee psychological well-being is also supported. This highlights the need for public institutions to integrate digital transformation strategies with initiatives that foster employee well-being, thereby cultivating a work environment that encourages innovation.

Design/methodology/approach - This research uses a quantitative approach with a survey method. The population consists of all employees at the Library and Archives Office in Bantul Regency, and the study employed a saturated sampling technique, where the entire population was used as the research sample. Data were collected using Likert-scale questionnaires and analyzed using Structural Equation Modeling (SEM) with AMOS software. Validity and reliability tests were conducted to ensure the quality of the instrument, and the mediation effects were examined through bootstrapping procedures.

Originality - This study provides novel insights into how digital transformation, often discussed in private sector contexts, operates in a local public government institution. It extends the literature by testing the dual mediating roles of HR analytics and psychological well-being, offering a more holistic view of innovation enablement in bureaucratic settings.

Findings and Discussion - The study examined seven hypotheses to understand how digital transformation influences innovative behavior through HR analytics and psychological well-being. The results revealed that digital transformation significantly improves HR analytics and psychological well-being, but does not directly affect innovative behavior. HR analytics was not found to have a significant effect on innovative behavior, nor did it mediate the relationship between digital transformation and innovation. In contrast, psychological well-being showed a strong positive influence on innovative behavior and partially mediated the impact of digital transformation, highlighting its critical role. These findings suggest that while digital tools are essential for operational enhancement, it is the psychological state of employees that ultimately drives innovation within public institutions.

Conclusion - This study concludes that digital transformation in public institutions does not directly promote innovative behavior but exerts its influence through the psychological well-being of employees. While HR analytics reflects a technological advancement in human resource management, it does not significantly contribute to fostering innovation in the observed context. In contrast, psychological well-being emerges as a key mediating factor, enabling civil servants to engage more confidently in innovative actions. These findings underscore the importance of integrating employee-centered strategies particularly those enhancing mental and emotional resilience into digital transformation initiatives. For public sector innovation to thrive, digital tools must be complemented by supportive work environments that nurture psychological health and motivation.

Introduction

In the age of Industry 4.0, digital transformation has revolutionized how organizations operate across all sectors, including public institutions. The integration of advanced technologies such as artificial intelligence (AI), cloud computing, big data, and automation has not only enhanced operational efficiency but also reshaped job structures, work processes, and employee roles. Public organizations, traditionally characterized by rigid bureaucracies, are now under increasing pressure to adopt more agile, data-driven approaches in order to remain relevant and responsive to the evolving needs of society. These changes require significant shifts in employee competencies, mindsets, and behaviors. Innovation has therefore become a crucial aspect of workforce performance. However, despite growing investments in digital tools and systems, the mechanisms by which digital transformation fosters innovative behavior remain insufficiently explored, particularly in public sector settings. This study addresses that gap by examining both the direct and indirect effects of digital transformation on innovative behavior. Conducted at the Library and Archives Office of Bantul Regency in Indonesia, the research focuses on the mediating roles of HR analytics and psychological well-being. HR analytics enables evidence-based decision-making and supports talent development, while psychological well-being reflects employees' mental preparedness, motivation, and capacity to adapt to change. These two mediators illustrate the importance of aligning technological infrastructure with human-centered strategies. By providing empirical insights into this dynamic, the study aims to help public institutions design digital transformation initiatives that not only modernize operations but also cultivate a supportive environment for sustainable innovation.

Literature Review

Digital transformation has emerged as a strategic imperative for organizations aiming to remain competitive in an increasingly digital environment. Vial (2019) defines it as a process that leverages digital technologies to enhance organizational performance through fundamental change. This transformation includes a spectrum of technologies such as artificial intelligence (AI), cloud computing, big data, and the Internet of Things (IoT), which have significantly altered work structures and skill requirements (Verhoef et al., 2020). Matt et al. (2015) emphasize that the focus has shifted from questioning whether to transform to understanding how to do so effectively, underscoring the importance of strategic alignment and organizational readiness. In the domain of human resource management, digital transformation has redefined HR's role from administrative execution to strategic partnership. This shift is facilitated by technological tools such as Human Resource Information Systems (HRIS), automation platforms, and data-driven practices. One notable outcome of this shift is the rise of HR analytics, a discipline that supports evidence-based HR decision-making through data integration, statistical modeling, and visualization (Marler & Boudreau, 2017). Lawler, Levenson, and Boudreau (2004) were among the first to distinguish traditional HR metrics from advanced HR analytics, which aim to inform strategy through predictive insights and business impact analysis. More recently, Falletta and Combs (2021) have conceptualized HR analytics as a proactive, systematic, and ethical use of HR data to support organizational goals, making it a critical component of digital HR transformations. Parallel to the growth of digital tools is the increasing recognition of psychological well-being as a core determinant of employee engagement and innovation. Nunes et al. (2024) highlight that autonomy, competence, and relatedness key pillars of Self-Determination Theory are essential to sustain positive mental health in digital work environments. Studies by Khoreva and Wechtler (2018) show that psychological well-being mediates the link between HR practices and job performance, suggesting that well-being is not simply an outcome but a prerequisite for innovation and productivity. Innovative behavior itself is defined by Bos-Nehles et al. (2017) as a purposeful and proactive effort to generate, promote, and implement novel ideas that improve organizational outcomes. Empirical evidence supports the notion that effective HR practices can stimulate such behavior, especially when aligned with supportive work environments and well-being initiatives. This connection is particularly relevant in public sector organizations, where resistance to change and bureaucratic inertia can stifle innovation. As Trenerry et al. (2021) argue, fostering innovation in such contexts requires a combined focus on digital capability and human-centered strategies. In summary, the integration of digital transformation, HR analytics, and psychological well-being provides a comprehensive theoretical framework for understanding how innovative behavior emerges within modern organizations. This literature underpins the present study's aim to investigate these dynamics within a public sector context, contributing to both academic understanding and practical policy development.

Methods, Data, and Analysis

This study employed a quantitative research design using a survey method to examine the causal relationships among digital transformation, HR analytics, psychological well-being, and innovative behavior. The quantitative approach was selected for its ability to test hypotheses and explain variable relationships across an entire population using structured statistical analysis (Creswell, 2014). Through the use of standardized instruments and numerical data, this design supports objectivity, replicability, and scientific rigor (Perry et al., 2003).

3.1 Sampling

The study targeted all civil servants employed at the Library and Archives Office of Bantul Regency an Indonesian public institution actively engaged in digital transformation initiatives. Given the relatively small and well-defined population, a saturated sampling technique also referred to as census sampling was applied (Sugiyono, 2023). This approach enabled the inclusion of the entire target population, minimizing sampling bias and ensuring comprehensive data coverage.

A total of 48 employees participated in the study, representing various job functions and hierarchical levels. This full participation provided a robust foundation for examining intra-organizational dynamics and enhanced the internal validity of the findings within the institutional context.

3.2 Data Collection

Primary data were collected through a structured, self-administered questionnaire distributed directly to participants. The instrument consisted of closed-ended items measured on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Data collection was conducted over one week in 2025, with administrative approval from the institution to ensure ethical compliance.

Prior to full deployment, the questionnaire underwent a pilot test involving 20 employees to assess item clarity and readability. Based on feedback, minor revisions were made to improve comprehension. The final version of the questionnaire was administered in person to optimize response rates and minimize incomplete data. Ethical protocols, including informed consent, participant anonymity, and voluntary participation, were strictly observed throughout the research process.

3.3 Measures

Each construct in the study was measured using validated instruments adapted from prior empirical research: Digital Transformation (DT) was assessed through 11 items based on the model proposed by Mutambik and Almuqrin (2024), including indicators of managerial support, direct benefits (e.g., efficiency), and indirect benefits (e.g., improved collaboration).

HR Analytics (HRA) was measured with 12 items capturing four dimensions: descriptive, diagnostic, predictive, and prescriptive analytics. The instrument was adapted from frameworks by Tursunbayeva et al. (2018)

and Falletta and Combs (2021).

Psychological Well-being (PWB) was operationalized using 5 items derived from Ma and Latif (2022), focusing on aspects such as job satisfaction, autonomy, and purpose. Innovative Behavior (IB) was measured using a 9-item scale from Rehman (2019), encompassing three stages of innovation: idea generation, idea promotion, and idea realization.

Construct validity and reliability were assessed through Confirmatory Factor Analysis (CFA) and Cronbach's Alpha. All constructs demonstrated acceptable reliability, with α values exceeding the threshold of 0.70. The overall measurement model also showed good fit, with Comparative Fit Index (CFI) values above 0.90 and Root Mean Square Error of Approximation (RMSEA) values below 0.08, indicating satisfactory model adequacy.

Results

This section presents both the descriptive and inferential statistics derived from the data collected. The study aimed to examine the influence of digital transformation on innovative behavior, with HR analytics and psychological well-being as mediating variables. Data analysis was conducted using Structural Equation Modeling (SEM) with AMOS 22, which enables simultaneous testing of multiple dependent relationships and mediation effects.

4.1 Descriptive Statistics

A total of 48 valid responses were collected from employees at the Library and Archives Office of Bantul Regency. Descriptive statistics were computed for each construct using a 5-point Likert scale. The results are as follows:
· Digital Transformation (DT): Mean = 4.12, SD = 0.45
· HR Analytics (HRA): Mean = 3.98, SD = 0.50
· Psychological Well-being (PWB): Mean = 4.07, SD = 0.47
· Innovative Behavior (IB): Mean = 4.15, SD = 0.42

These averages suggest that participants perceived a generally high level of digital integration, HR analytical capabilities, psychological well-being, and innovative behavior in their organization.

4.2 Model Fit and Structural Model

Confirmatory Factor Analysis (CFA) using AMOS 22 showed a good fit for the measurement model:
· Chi-square/df: 1.88
· CFI (Comparative Fit Index): 0.941
· TLI (Tucker-Lewis Index): 0.932
· RMSEA (Root Mean Square Error of Approximation): 0.071

These indices indicate an acceptable model fit, validating the underlying structure for hypothesis testing.

4.3 Hypothesis Testing and Path Analysis

The SEM path analysis results are presented below:
Path   Estimate (ß) CR   p-value   Result

DT → HRA	0.564	5.992	< 0.001	Supported
DT → PWB	0.681	6.275	< 0.001	Supported
HRA → IB	0.084	0.197	0.844	Not Supported
PWB → IB	0.830	2.581	0.010	Supported
DT → IB	-0.027	-0.076	0.940	Not Supported

These results demonstrate that while digital transformation significantly improves HR analytics and psychological well-being, it does not directly influence innovative behavior. Psychological well-being has a strong and significant impact on innovative behavior, whereas HR analytics does not. Thus, the role of PWB as a partial mediator is supported.

4.4 Mediation Analysis

• HR Analytics (HRA): Despite the significant impact of digital transformation on HRA, the path from HRA to IB is non-significant, and the indirect effect (DT → HRA → IB) is negligible and statistically unsupported (Baron & Kenny, 1986). Therefore, HRA does not mediate the relationship between DT and IB.

• Psychological Well-being (PWB): PWB plays a partial mediating role. DT significantly affects PWB, which in turn significantly affects IB. The direct path from DT to IB remains non-significant, fulfilling the conditions for partial mediation.

Discussion

• DT → HRA: The significant relationship aligns with Sari Saka et al. (2022), affirming that digital transformation boosts strategic HR capabilities.

• DT → IB: The non-significant path contrasts with Ausat et al. (2023), suggesting contextual limitations in public institutions.

• DT → PWB: Consistent with Adisaksana (2022), showing that well-managed digital processes enhance employee well-being.

• HRA → IB: The lack of significance diverges from Zhang & Li (2024), indicating that analytics tools alone may be insufficient for fostering innovation.

• PWB → IB: This significant result confirms Rehman (2019), underscoring the need to prioritize psychological health in change initiatives.

Mediation Summary

• HRA: Not a mediator. Suggests reevaluation of its role as moderator or enabler.

• PWB: Confirmed partial mediator. Supports the integration of psychological well-being in digital innovation frameworks.

These findings provide evidence that digital transformation strategies in public institutions must be aligned not only with technological infrastructure but also with psychological support mechanisms to effectively promote innovative behavior.

4.4 Unexpected Findings

Contrary to initial expectations and prior literature, the path from HR analytics to innovative behavior did not demonstrate a statistically significant relationship ($\beta = 0.084$, $p = 0.844$). This finding suggests that the

implementation of HR analytics tools alone may be insufficient to drive innovation within public sector organizations. Cultural, structural, or leadership factors may moderate the effectiveness of analytics initiatives. In contrast, psychological well-being showed a strong and significant positive effect on innovative behavior ($\beta = 0.830$, $p = 0.010$), underscoring the critical role of emotional and motivational factors. These findings highlight the importance of human-centered strategies in digital transformation efforts and suggest that fostering employee well-being may be more impactful than technical interventions in promoting innovation.
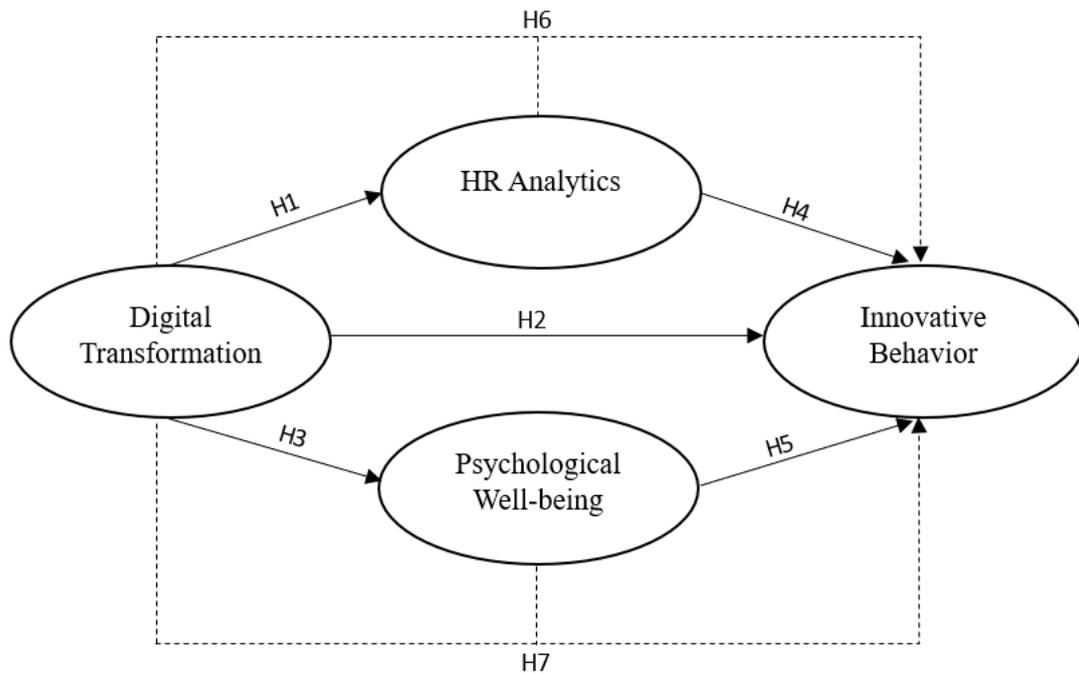
Figure 4.1 Theoritical Framework

Discussion

The primary purpose of this study was to examine the influence of digital transformation on innovative behavior among civil servants at the Library and Archives Office of Bantul Regency, with HR analytics and psychological well-being as mediating variables. Grounded in the context of public sector adaptation to Industry 4.0, this research aimed to shed light on how both technological and human-centered factors contribute to the development of innovative behavior in bureaucratic environments. The findings reaffirm the importance of integrating digital initiatives with strategic human resource practices. While digital transformation had a significant effect on both HR analytics and psychological well-being, it did not have a direct impact on innovative behavior. Instead, psychological well-being was found to be a significant partial mediator, whereas HR analytics did not play a mediating role. This highlights that the psychological dimension may be more influential than analytical tools in stimulating innovation.

Specifically, H1 confirmed that digital transformation significantly enhances HR analytics capabilities, aligning with previous findings by Marler

and Boudreau (2017). H3 established that digital transformation positively impacts psychological well-being, consistent with Adisaksana (2022), who noted improvements in autonomy and engagement through digital integration. However, H2 and H4 revealed unexpected outcomes. The path from digital transformation to innovative behavior was not significant, and HR analytics also failed to significantly influence innovation, diverging from the expectations set by studies such as Falletta and Combs (2021).

On the other hand, H5 validated that psychological well-being partially mediates the relationship between digital transformation and innovative behavior, consistent with prior research by Muneer et al. (2025). This emphasizes the critical role of mental health and emotional readiness in enabling employees to engage in creative behaviors amid organizational change. From a practical standpoint, these findings suggest that public sector leaders should not view digital transformation as solely a technological initiative. Instead, emphasis should also be placed on employee well-being, empowerment, and adaptability. Interventions could include well-being assessments, participatory innovation programs, and professional development focused on digital competencies and psychological support.

This study does have limitations. The sample size was relatively small and limited to a single agency, potentially constraining generalizability. Its cross-sectional nature limits causal inference, and reliance on self-reported measures introduces potential response bias. Future research should consider longitudinal designs and expand sampling across different public agencies to capture broader trends. Qualitative methods could also explore deeper dynamics behind the relationships observed, including the roles of leadership and organizational culture. In conclusion, successful digital transformation in the public sector requires attention not only to technology but also to the human factors that enable its adoption and effectiveness. Psychological well-being stands out as a key enabler of innovation, underscoring the need for balanced strategies that integrate digital infrastructure with supportive and empowering work environments.

Conclusion

This study has provided empirical evidence on the role of digital transformation as a driver of innovative behavior among civil servants at the Library and Archives Office of Bantul Regency, with HR analytics and psychological well-being acting as significant mediators. The research highlights that innovation in the public sector is not solely dependent on technological advancement, but also on the strategic use of HR data and the psychological conditions of employees. These findings affirm the necessity for public institutions to adopt a more integrated approach that combines digital tools, analytical capability, and employee well-being to foster a sustainable culture of innovation. While the study offers meaningful contributions to both theory and practice, it is not without limitations. First, the small sample size (n = 48) limits the external validity of the findings and restricts their generalizability beyond the case institution. Second, the cross-sectional design prevents us from drawing strong causal inferences, as it captures perceptions and behaviors at a single point in time. Additionally, the

exclusive use of self-reported measures introduces the possibility of common method variance and social desirability bias, which may have inflated relationships between variables. These limitations should be interpreted with critical judgment. They do not suggest methodological failure, but rather reflect typical constraints encountered in organizational field studies especially within government institutions where access and time are often restricted. Nevertheless, their presence indicates that the results should be interpreted with caution and contextual sensitivity. Future researchers are encouraged to expand this study using longitudinal or mixed-method approaches to better capture the dynamics of digital adaptation and innovation over time. Comparative studies across institutions or sectors could also help in understanding contextual variations, while qualitative exploration might uncover nuanced mechanisms behind employee-driven innovation. Furthermore, the impact of leadership style, organizational trust, and digital literacy could be integrated to enrich the existing model. Writing this study has underscored the complexity of producing academically sound research, especially in addressing multidimensional issues like innovation in public institutions. It also serves as a reminder that writing an academic article demands critical thinking, sustained effort, and sufficient time for refinement. For students and early researchers, this experience highlights the importance of allocating adequate time for planning, revising, and validating each stage of the research process. Only through such discipline can research evolve into meaningful academic and practical contributions.

Limitation

Like all empirical research, this study is subject to several limitations, which are important to acknowledge to ensure the transparency and credibility of the findings. While every effort was made to minimize the scope and severity of these limitations during the research process, some constraints remained unavoidable. First and foremost, the study employed a cross-sectional design, which limits the ability to infer causal relationships between variables. Since the data were collected at a single point in time, it is possible that certain dynamics such as changes in behavior due to long-term digital exposure were not captured. A longitudinal approach could have provided deeper insights into how digital transformation impacts innovative behavior over time. Secondly, the use of self-reported questionnaires may introduce bias, particularly common method variance and social desirability bias. Respondents may have provided answers that they perceived as socially or professionally acceptable, rather than fully accurate. While steps were taken to ensure anonymity and confidentiality, this risk may still have influenced the strength of observed relationships, potentially inflating positive correlations. Another limitation is the relatively small sample size (n = 48) and narrow organizational scope focusing on one public office in Bantul Regency. While a census sampling approach was used, the small population limits the external validity of the study. The findings, while relevant to the case institution, may not be fully generalizable to other public sector agencies with different structural, cultural, or technological contexts. Finally, contextual factors such as leadership style, digital literacy, or institutional

readiness were not included in the model, although they may play significant roles in mediating or moderating the relationships studied. Their exclusion might have led to omitted variable bias, limiting the comprehensiveness of the analysis. Despite these limitations, the study provides a meaningful contribution by offering empirical evidence of how digital transformation, HR analytics, and psychological well-being interact to influence innovative behavior in a public sector setting. Future research can build upon these findings by adopting broader samples, using mixed-methods approaches, and including additional contextual variables to enhance explanatory power and generalizability.

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