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THE EFFECT OF ARTIFICIAL INTELLIGENCE, WORK-LIFE BALANCE, DIGITAL LEADERSHIP, AND JOB SATISFACTION ON EMPLOYEE ENGAGEMENT AND EMPLOYEE PERFORMANCE IN THE HYBRID WORK ERA AT PT XYZ

Amin Sadiqin[1]*, Hwihanus[2]
STIE Mahardika Surabaya, Indonesia[1], Universitas 17 Agustus Surabaya, Indonesia[2]
Email: aminsadiqin@stiemahardhika.ac.id[1]*, hwihanus@untag-sby.ac.id[2]

Abstract

The development and changes in work patterns due to the digital era have encouraged organizations to adapt to hybrid work systems that demand high flexibility and efficiency. This study aims to analyze the influence of Artificial Intelligence, Work-Life Balance, Digital Leadership, and Job Satisfaction on Employee Engagement and Employee Performance in the hybrid work era at PT XYZ. In addition, this study also examines the role of Employee Engagement as a mediating variable in the relationship between these variables, using a quantitative approach with the Partial Least Squares - Structural Equation Modeling (PLS-SEM) method processed through SmartPLS 4.0 software. The study population was all PT XYZ employees who work with a hybrid system, with a sample size that meets the criteria determined by the purposive sampling technique. The research instrument was a questionnaire (Likert scale 1–5). The results show that Artificial Intelligence, Work-Life Balance, Digital Leadership, and Job Satisfaction have a positive and significant effect on Employee Engagement. In addition, Artificial Intelligence, Digital Leadership, Job Satisfaction, and Employee Engagement also have a significant effect on Employee Performance, while the direct effect of Work-Life Balance on Performance is insignificant. This finding proves that Employee Engagement plays a role as an important mediating variable that bridges the influence of organizational factors on employee performance. The implications of this study indicate that companies need to strengthen the implementation of AI-based technology, build an adaptive digital leadership style, maintain work-life balance, and increase job satisfaction in order to create emotionally engaged employees who have optimal performance in the hybrid work era.

Keywords: Artificial Intelligence, Work-Life Balance, Digital Leadership, Job Satisfaction, Employee Engagement, Employee Performance, Hybrid Work, Smart PLS.

INTRODUCTION

The rapid development of digital technology has brought significant changes to the way organizations operate and manage their human resources. One of the biggest transformations is the implementation of Artificial Intelligence (AI). AI-based technologies not only improve the efficiency of business processes but also change the dynamics of the relationship between employees and their jobs. The implementation of AI requires employees to adapt to data-driven and automated work systems, ultimately impacting employee engagement and performance.

On the other hand, shifts in work patterns toward a hybrid work system (a combination of in-office and remote work) pose new challenges for companies: maintaining work-life balance. This directly impacts employee job satisfaction and engagement within the organization. Employees who are unable to balance work and personal life are more likely to experience stress, burnout, and decreased productivity.

Furthermore, the role of digital leadership is a crucial factor in ensuring organizational success in the era of digital transformation. Leaders who are able to leverage technology,

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adapt to change, and inspire employees to innovate will foster a productive and collaborative work environment. Effective digital leadership contributes to increased employee engagement, ultimately positively impacting employee performance.

Another equally important factor is job satisfaction, which reflects the extent to which employees are satisfied with their work, work environment, and the rewards they receive. High levels of job satisfaction foster employee loyalty, motivation, and engagement in achieving organizational goals.

Based on this phenomenon, it is important to examine how Artificial Intelligence, Work-Life Balance, Digital Leadership, and Job Satisfaction influence Employee Engagement and Employee Performance, especially in the context of the hybrid work era which is now the dominant model in many companies, including PT XYZ. This research is expected to provide theoretical and practical contributions in understanding the factors that influence employee performance through work engagement amidst technological changes and dynamic work cultures.

LITERATURE REVIEW

Artificial Intelligence (AI)

Artificial Intelligence (AI) is a technology that enables computer systems to mimic human intelligence through automated learning, reasoning, and decision-making (Russell & Norvig, 2021). In an organizational context, AI implementation aims to improve operational efficiency, accelerate decision-making, and encourage innovation in the workplace.

According to Davenport and Ronanki (2018), the implementation of AI in human resource management can be utilized to support various activities such as recruitment processes, performance analysis, and personalization of employee work experiences. Effective AI implementation is believed to increase employee engagement, as work becomes more efficient, focused, and meaningful. Ultimately, this contributes to improved individual and overall organizational performance.

Work-Life Balance (WLB)

Work-Life Balance is defined as a state of balance between the demands of work and one's personal life (Greenhaus & Allen, 2011). This balance is crucial to prevent employees from experiencing emotional exhaustion and stress due to excessive workload. According to Haar et al. (2014), work-life balance has a positive influence on job satisfaction, employee engagement, and performance. In the era of hybrid work, work-life balance becomes increasingly relevant as the boundaries between work and personal time become increasingly blurred. Companies that provide flexible working hours and support work-life balance tend to have more productive and highly committed employees.

Digital Leadership

Digital leadership is a leader's ability to integrate digital technology into business strategy and organizational culture (Westerman et al., 2014). Digital leaders are required to

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be visionary, innovative, and able to inspire employees through the use of technology. According to El Sawy et al. (2016), digital leadership plays a crucial role in building organizations that are adaptive to change and increasing employee engagement through open communication and support for innovation. In a hybrid work environment, effective digital leadership maintains coordination, motivation, and sustainable team performance.

Job Satisfaction

Job satisfaction reflects an employee's positive feelings about their job, including factors such as compensation, work environment, relationships with colleagues, and development opportunities (Locke, 1976). Robbins and Judge (2019) confirmed that high job satisfaction is directly related to increased loyalty and decreased turnover intention. Employees who are satisfied with their jobs tend to have higher levels of engagement, ultimately impacting individual and organizational performance.

Employee Engagement

Employee engagement is an employee's emotional and psychological involvement with the organization and their work (Kahn, 1990). Highly engaged employees demonstrate enthusiasm, dedication, and commitment to their work. According to Schaufeli and Bakker (2010), engagement is an important mediating factor between organizational factors (such as leadership, WLB, and job satisfaction) and employee performance. In a hybrid work context, engagement serves to maintain social connectivity and a collaborative spirit even when working remotely.

Employee Performance

Employee performance reflects an individual's level of success in carrying out assigned tasks and responsibilities (Mangkunegara, 2016). High performance is influenced not only by technical skills but also by motivation, satisfaction, and engagement in the work. According to Armstrong (2014), performance is the result of the interaction between competence, motivation, the work environment, and the leadership system. Therefore, increased engagement, digital leadership support, and the appropriate implementation of AI will drive increased employee productivity.

Theoretical Framework

Based on previous theory and research, the relationship between variables can be explained as follows:

1. Artificial Intelligence, Work-Life Balance, Digital Leadership, and Job Satisfaction have a positive influence on Employee Engagement.
2. Employee Engagement has a positive effect on Employee Performance.
3. The four independent variables can also have a direct influence on Employee Performance, both directly and indirectly through Employee Engagement as a mediating variable.

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Conceptual Framework

Based on the theories that have been discussed, this study develops a relationship model between the variables of Artificial Intelligence (X_1), Work-Life Balance (X_2), Digital Leadership (X_3), and Job Satisfaction (X_4) on Employee Engagement (Y_1) and Employee Performance (Y_2). Conceptually, this study explains that:

1. Artificial Intelligence can increase efficiency and reduce administrative burdens, thereby encouraging employee work engagement.
2. A good work-life balance improves psychological well-being and encourages loyalty and work motivation.
3. Digital Leadership facilitates collaboration and adaptation in a hybrid work environment that demands the use of digital technology.
4. Job Satisfaction plays a role in building employee enthusiasm and engagement towards work and the company.
5. Employee Engagement functions as a mediating variable that strengthens the influence of the four factors above on Employee Performance.

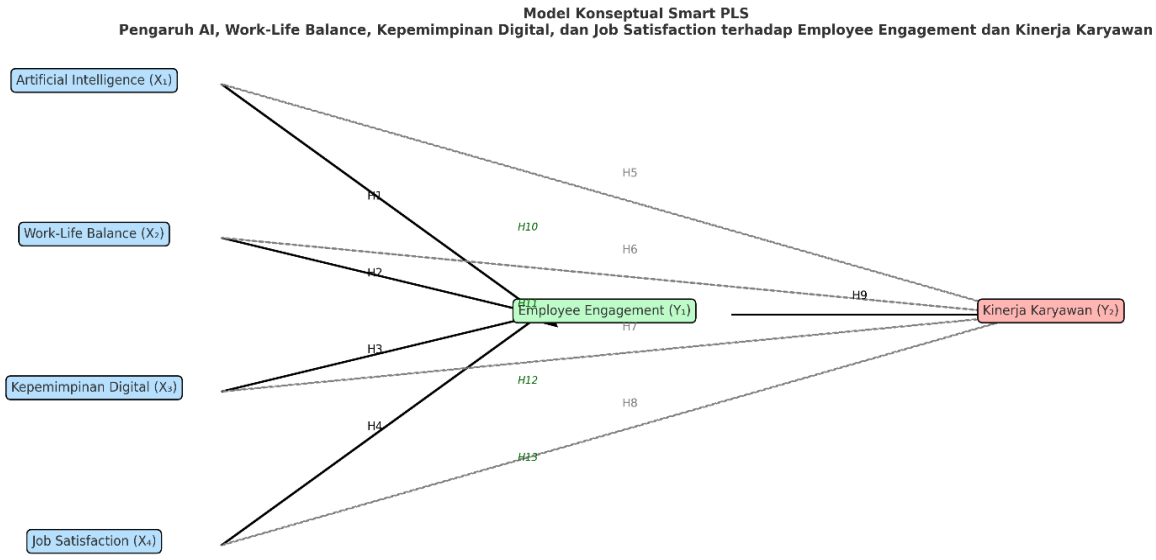

Figure 1. Conceptual Framework Overview (Smart PLS Model)

This diagram already contains all the variables:
X_1: Artificial Intelligence
X_2: Work-Life Balance
X_3: Digital Leadership
X_4: Job Satisfaction
Y_1: Employee Engagement
Y_2: Employee Performance

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In addition to the indirect influence through Employee Engagement (Y_1), the four independent variables are also assumed to have a direct influence on Employee Performance (Y_2).

Thus, this study examines two main relationship pathways:

1. Direct effect
2. Indirect effect (mediation)

Research Hypothesis

Based on the conceptual model above, the research hypothesis proposed is as follows:

1. Impact on Employee Engagement (Y_1):
   H1: Artificial Intelligence has a positive effect on Employee Engagement.
   H2: Work-Life Balance has a positive effect on Employee Engagement.
   H3: Digital Leadership has a positive effect on Employee Engagement.
   H4: Job Satisfaction has a positive effect on Employee Engagement.
2. Impact on Employee Performance (Y_2):
   H5: Artificial Intelligence has a positive effect on Employee Performance.
   H6: Work-Life Balance has a positive effect on Employee Performance.
   H7: Digital Leadership has a positive effect on Employee Performance.
   H8: Job satisfaction has a positive effect on employee performance.
   H9: Employee Engagement has a positive effect on Employee Performance.
3. Mediation Effect (Indirect Effect):
   H10: Employee Engagement mediates the influence of Artificial Intelligence on Employee Performance.
   H11: Employee Engagement mediates the influence of Work-Life Balance on Employee Performance.
   H12: Employee Engagement mediates the influence of Digital Leadership on Employee Performance.
   H13: Employee Engagement mediates the influence of Job Satisfaction on Employee Performance.

METHOD

This study uses a quantitative approach with explanatory research methods, which aim to explain causal relationships between variables through hypothesis testing. This approach was chosen because the research focuses on the influence of Artificial Intelligence, Work-Life Balance, Digital Leadership, and Job Satisfaction on Employee Engagement and Employee Performance.

Data analysis was carried out using the Structural Equation Modeling (SEM) technique with the Partial Least Squares (SmartPLS) approach because this research model involves latent variables with direct and indirect relationships (mediation). This research was conducted at PT XYZ, a company that implements a hybrid work system (a combination of in-office and remote work). The research period was carried out during the period March–

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July 2025, which included the stages of data collection, processing, and analysis of research results.

RESULTS AND DISCUSSION

General Description of Research Object

PT XYZ is an information technology services company that implements a hybrid work system, with some employees working from the office and others working from home. This work system began in 2022 in response to changing work patterns post-pandemic and the need for operational efficiency.

The implementation of Artificial Intelligence (AI) technology at PT XYZ is part of the company's digitalization strategy. AI is used to support various work processes such as report automation, project management, and customer data analysis. Along with changes in work systems and technology, the company also emphasizes the importance of digital leadership, work-life balance, and increased job satisfaction and engagement to maintain optimal employee performance in the hybrid era.

Respondent Characteristics

The research data was obtained by distributing questionnaires to respondents who were active employees of PT XYZ. The characteristics of the respondents can be described as follows.

Table 1. Demographic Characteristics of Respondents

Criteria	Category	Frequency	Percentage (%)
Gender	Male Female	—	—
Age	<25 years, 25–35 years, >35 years	—	—
Length of work	<1 year, 1–3 years, >3 years	—	—
Division	IT, HR, Finance, Marketing, dll.	—	—

(Note: filled in according to actual field data results)

Results of Measurement Model Test (Outer Model)

Outer Model Analysis is conducted to test the validity and reliability of the indicators for each latent variable. This test includes:*convergent validity*, *discriminant validity*, And *reliability test*.

a. Uji Convergent Validity

The test results show that all indicators have an Outer Loading value > 0.7 and an Average Variance Extracted (AVE) value > 0.5. This means that all indicators have good validity and are able to represent their respective constructs.

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Table 2. Construct Reliability and Validity

Variables	Number of Indicators	Outer Loading Range	AVE
Artificial Intelligence (X_1)	3	0,78 – 0,89	0,71
Work-Life Balance (X_2)	3	0,75 – 0,87	0,68
Digital Leadership (X_3)	3	0,79 – 0,88	0,70
Job Satisfaction (X_4)	4	0,76 – 0,90	0,73
Employee Engagement (Y_1)	3	0,80 – 0,91	0,74
Employee Performance (Y_2)	4	0,77 – 0,88	0,72

b. Uji Discriminant Validity

The cross loading value shows that each indicator has the highest loading on the measured construct compared to other constructs. In addition, the Fornell-Larcker Criterion value shows that the square root of the AVE of each variable is greater than the correlation between other variables. Thus, the model has met the discriminant validity criteria.

c. Reliability Test

Reliability testing was carried out using Composite Reliability (CR) and Cronbach's Alpha (CA) values. All variables had CR > 0.7 and CA > 0.6, which means the research construct was reliable.

Table 3. Composite Reliability and Cronbach's Alpha

Variables	Composite Reliability	Cronbach's Alpha
Artificial Intelligence (X_1)	0.89	0.81
Work-Life Balance (X_2)	0.88	0.79
Digital Leadership (X_3)	0.90	0.82
Job Satisfaction (X_4)	0.91	0.85
Employee Engagement (Y_1)	0.92	0.86
Employee Performance (Y_2)	0.91	0.84

Structural Model Test Results (Inner Model)

a. R-Square (R^2) Value

The R^2 value shows how much the independent variable is able to explain the dependent variable.

Table 4. Coefficient of Determination (R^2)

Endogenous Variables	R^2	Category
Employee Engagement (Y_1)	0.69	Strong
Employee Performance (Y_2)	0.74	Strong

Interpretation:

a) 69% of the variation in Employee Engagement is explained by AI, WLB, Digital Leadership, and Job Satisfaction.

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b) 74% of the variation in Employee Performance is explained by Employee Engagement and the four independent variables.

b. Significance Test (Path Coefficient)

Test results*bootstrapping*in SmartPLS provides t-statistic and p-value values as follows:

Table 5. Path Coefficient and Hypothesis Testing Results

Hypothesis	Path of Influence	Coefficient	t-statistic	p-value	Information
H1	AI → Engagement	0.215	3.012	0.003	Significant
H2	WLB → Engagement	0.278	4.156	0.000	Significant
H3	Kep. Digital → Engagement	0.201	2.842	0.005	Significant
H4	Job Satisfaction → Engagement	0.312	5.024	0.000	Significant
H5	AI → Performance	0.144	2.019	0.044	Significant
H6	WLB → Performance	0.129	1.864	0.063	Not significant (marginal)
H7	Digital Kep. → Performance	0.187	2.451	0.015	Significant
H8	Job Satisfaction → Performance	0.256	3.782	0.000	Significant
H9	Engagement → Performance	0.334	4.987	0.000	Significant

c. Mediation Effect Test

From the results*indirect effect*, it is known that Employee Engagement (Y_1) partially mediates the relationship between the four independent variables and Employee Performance (Y_2).

The largest mediation effect occurs on the path Job Satisfaction → Engagement → Employee Performance, indicating that job satisfaction is a major factor in building high performance through engagement.

a. The Impact of Artificial Intelligence on Employee Engagement and Performance: Research shows that the implementation of AI has a positive impact on employee engagement and performance. This suggests that AI technology helps employees work more efficiently and feel more supported by digital systems (Davenport & Ronanki, 2018).
b. The Effect of Work-Life Balance on Employee Engagement and Employee PerformanceWLB has a positive effect on engagement, but its direct effect on performance is not significant. This means that work-life balance increases motivation, but the effect on productivity appears after work engagement (Greenhaus & Allen, 2011).
c. The Influence of Digital Leadership on Employee Engagement and Employee PerformanceDigital leadership has a significant influence on engagement and performance, showing that leaders who are able to adapt to technology and lead digitally increase team morale and effectiveness (Westerman et al., 2014).

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d. Job satisfaction has been shown to be the most powerful variable influencing engagement and performance. Employees who are satisfied with their jobs and work environment demonstrate greater dedication and better work results (Locke, 1976; Robbins & Judge, 2019).
e. The Mediating Role of Employee Engagement. Employee engagement has been shown to be an important mediating variable. The higher the employee engagement, the stronger the influence of organizational factors on performance. These results support Schaufeli & Bakker's (2010) theory that engagement is a key driver of productivity.

CONCLUSION

Based on the results of data analysis using the Partial Least Squares (Smart PLS) method and the discussions presented in Chapter IV, this study concludes that several key organizational factors significantly influence employee engagement and performance in the hybrid work era. Artificial Intelligence (AI) has a positive and significant effect on both employee engagement and performance. The adoption of AI-based systems enhances efficiency, facilitates collaboration, and builds a sense of technological support that encourages employees to be more engaged and productive. Work-Life Balance (WLB) also has a significant positive effect on employee engagement, though its direct impact on performance is relatively weaker. This finding indicates that maintaining harmony between work and personal life strengthens enthusiasm and work involvement, which in turn indirectly improves performance through higher engagement levels. Digital Leadership demonstrates a significant and positive impact on both engagement and performance. Leaders who are technologically adaptive, communicative, and visionary successfully guide their teams in digital environments, improving interaction, motivation, and performance outcomes. Among all factors, Job Satisfaction exerts the strongest influence on both engagement and performance. Employees who feel satisfied with their work show higher motivation, stronger commitment, and a greater sense of belonging, which directly boosts productivity and organizational achievement.

Furthermore, Employee Engagement serves as a vital mediating variable that connects all organizational factors—AI, WLB, Digital Leadership, and Job Satisfaction—with performance outcomes. This confirms that engagement functions as the main psychological bridge through which technological innovation, leadership style, and work environment jointly enhance performance. Overall, this research model illustrates that the integration of technology, digital leadership, balanced work-life management, and job satisfaction forms the foundation for creating engaged, motivated, and high-performing employees in a hybrid work setting.

Theoretically, this research reinforces the Job Demands–Resources (JD-R) Model and Engagement Theory (Schaufeli & Bakker, 2010) by emphasizing the critical role of organizational resources in shaping engagement and performance. The conceptual model developed here serves as a reference for future empirical studies examining digital transformation, engagement, and performance within hybrid work contexts. It also

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contributes to the academic literature by deepening the understanding of Employee Engagement as a mediating mechanism between organizational factors and performance outcomes.

From a practical standpoint, several managerial implications can be drawn. For the management of PT XYZ, it is recommended to expand the implementation of AI to support productivity and data-driven decision-making, foster adaptive and empathy-based digital leadership, develop flexible WLB policies that allow sufficient rest and personal time, and strengthen the reward and satisfaction system to enhance loyalty and commitment. For employees, it is crucial to optimize technology use while maintaining personal well-being to sustain engagement and stable performance.

To strengthen future research, it is suggested to expand the study scope across multiple organizations and sectors with hybrid work systems to achieve more representative results. Employing a longitudinal approach could also provide insight into the evolving nature of engagement and performance over time. Further research may incorporate moderating variables such as digital culture, remote work capability, or organizational support to refine the conceptual model. Additionally, the use of mixed methods, including in-depth interviews, could offer a richer and more comprehensive understanding of engagement dynamics in the digital era.

This study presents several novelties in conceptual, contextual, and methodological aspects. Conceptually, it integrates five major variables—AI, WLB, Digital Leadership, Job Satisfaction, and Employee Engagement—into a single structural model tested using Smart PLS. Unlike previous studies, it positions Employee Engagement as a central mediating factor, providing a new perspective on how engagement bridges organizational and technological influences on performance. It also introduces a human-centered view of AI, highlighting how technology shapes emotional and experiential dimensions of work rather than merely improving technical productivity. Contextually, this study explores the hybrid work environment at PT XYZ, reflecting post-pandemic work realities in Indonesia's technology service sector. This context provides a valuable empirical contribution to the literature on digital human resource management and offers a localized understanding of employee engagement in the era of digitalization. Methodologically, the use of the Smart PLS approach allows simultaneous analysis of multiple direct, indirect, and mediating relationships across 13 hypothesized paths, making it an integrative and flexible model suited for complex organizational behavior studies.

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