Analysis of the Impact of Digital Competency Training, Job Happiness, and Employee Productivity on Turnover Rates in the Indonesian E-Commerce Industry

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ABSTRACT

This quantitative study investigates the relationships between digital competency training, job happiness, employee productivity, and turnover rates in the Indonesian e-commerce industry. Data were collected from 128 employees working in various e-commerce companies through structured questionnaires. Structural equation modeling (SEM) analysis was employed to analyze the data. The results reveal significant positive relationships between digital competency training and both job happiness and employee productivity. Furthermore, job happiness and employee productivity exhibit significant negative associations with turnover intentions. These findings highlight the importance of investing in digital skills development, fostering a positive work environment, and promoting employee productivity to reduce turnover rates in the e-commerce industry. Theoretical and practical implications are discussed, along with suggestions for future research.

Keywords: *E-Commerce Industry, Digital Competency Training, Job Happiness, Employee Productivity, Turnover Rates*

1. INTRODUCTION

The e-commerce industry in Indonesia has experienced tremendous growth thanks to internet penetration and smartphone usage. However, attracting and retaining skilled employees is crucial for continued innovation and growth, amid challenges such as high employee turnover rates. Research highlights the impact of remote working on job satisfaction in Indonesian e-commerce, emphasising the positive influence on work-life balance and job satisfaction, while workload negatively impacts satisfaction [1], [2]. In addition, research on SMEs in Indonesia revealed important factors influencing e-commerce adoption, such as Decision Makers' Knowledge, Innovativeness and IT Complexity, with IT and e-commerce skills training identified as key strategies to increase adoption [3], [4]. Addressing the issue of employee turnover requires understanding the dynamics of job satisfaction and implementing effective strategies to retain talent in this ever-evolving industry.

Employee turnover, the rate at which employees leave and require replacement, is a critical issue for businesses, especially in the e-commerce sector where competition and innovation are critical. High turnover adversely affects organisational performance and profitability by incurring financial costs, disrupting workflow, lowering morale, and reducing productivity. Factors affecting employee turnover include compensation, leadership, career opportunities, organisational support, work-life balance, and job stress [5]–[8]. Strategies to reduce employee turnover involve increasing perceived organisational support, improving work-life balance, and reducing work stress, which can help retain valuable employees and improve overall organisational effectiveness. Addressing these

factors is critical for e-commerce companies to maintain a stable workforce and sustain a competitive advantage.

Employee turnover is a significant challenge to the sustainability and long-term growth of e-commerce businesses in Indonesia. The e-commerce sector in Indonesia faces intense competition, rapid technological advancements, and evolving consumer preferences [1], [2]. The COVID-19 pandemic has further accelerated digital transactions, impacting job satisfaction and workload among remote workers in Indonesia's e-commerce industry [3], [4]. Despite the benefits of e-commerce for Micro, Small, and Medium Enterprises (MSMEs) in Indonesia, only a small percentage have adopted this technology, with factors such as employee IT knowledge and government support playing a significant role in e-commerce adoption [4]. Addressing employee turnover through strategies that improve job satisfaction, work-life balance, and remote working conditions is crucial for e-commerce companies to thrive amidst these challenges.

Despite the growing recognition of the importance of employee retention, the factors contributing to turnover in the Indonesian e-commerce industry remain relatively underexplored. Understanding why employees choose to leave their jobs and identifying strategies to mitigate turnover is essential for e-commerce companies to maintain a competitive edge and foster sustainable growth. Therefore, this research seeks to address the following questions: How do digital competency training programs influence turnover rates among employees in the Indonesian e-commerce sector? What is the relationship between job happiness and turnover rates in e-commerce companies operating in Indonesia? To what extent does employee productivity impact turnover rates in the Indonesian e-commerce industry? By exploring these questions, this study aims to provide valuable insights into the dynamics of employee turnover in the Indonesian e-commerce industry and offer practical recommendations for enhancing retention strategies.

2. LITERATURE REVIEW

2.1 Employee Turnover in E-Commerce

Employee turnover is a prevalent challenge in various industries, including the e-commerce sector, where factors such as competition, evolving technology, and consumer trends contribute to high employee turnover rates [5]. Understanding the causes of employee turnover is crucial for organisations to implement effective retention strategies and mitigate its negative impact. Studies emphasise the importance of factors such as Compensation and Benefits, Leadership, Career Opportunities, and Organisational Culture in influencing employee turnover rates [6], [7]. In addition, demographic, occupational, economic-financial, and organisational factors also play a role in employee turnover, with aspects such as job satisfaction, organisational commitment, perceived support, work-life balance, and job alternatives influencing employees' decisions to stay or leave [9]. By addressing these factors, organisations can reduce employee turnover costs, increase productivity, and improve employee morale.

2.2 Digital Competency Training

In the e-commerce industry, digital competency training is essential for empowering employees with the necessary skills to effectively utilize digital tools and technologies [10], [11]. Such training enhances job satisfaction, performance, and innovation within organizations [12]. Research emphasizes the importance of equipping employees with digital competencies to navigate the evolving digital landscape

successfully [13]. However, there is a need for further exploration into the extent of investment in digital competency training by e-commerce companies and its impact on turnover rates [14]. Understanding the correlation between training initiatives and employee turnover can provide valuable insights into optimizing digital training programs to retain talent and drive organizational success in the digital era.

2.3 *Job Happiness and Turnover*

Job happiness, or job satisfaction, plays an important role in determining employee retention in various industries, including e-commerce. High levels of job satisfaction lead to increased employee loyalty and decreased employee turnover rates [15], [16]. Factors that contribute to job happiness include a supportive work environment, opportunities for growth, recognition for achievements, and a healthy work-life balance [17]. Studies emphasise that happy employees are more engaged, productive, and likely to stay with their current employer [18]. Understanding the correlation between job happiness and employee turnover rates is crucial for e-commerce companies to develop strategies that can increase employee satisfaction and reduce employee turnover, which will ultimately encourage a more stable and productive workforce.

2.4 *Employee Productivity*

Employee productivity is a critical determinant of organisational success, impacting efficiency, customer service, and profitability [19]–[21]. Factors that influence productivity include access to resources, managerial support, task clarity and motivation [22]. Engaged and motivated employees are associated with lower turnover rates, fostering commitment to their role and the organisation. In the e-commerce sector, where competitiveness is high, maintaining high levels of productivity is critical for continued success. Improving the work environment, providing training, effective leadership, and ensuring employee well-being are key strategies to increase employee productivity and engagement, ultimately leading to improved organisational performance and competitiveness.

Theoretical Framework

This study will be guided by relevant theoretical frameworks, including Herzberg's Two-Factor Theory, which posits that job satisfaction and dissatisfaction are influenced by different sets of factors. Additionally, the Job Characteristics Model, developed by Hackman and Oldham, will be utilized to examine the relationship between job design, job satisfaction, and employee motivation. These theoretical perspectives will provide a foundation for understanding the complex interplay between digital competency training, job happiness, employee productivity, and turnover rates in the Indonesian e-commerce industry.

3. METHODS

3.1 Research Design

This study adopts a quantitative research design to analyze the effect of digital competency training, job happiness, and employee productivity on turnover rates in the Indonesian e-commerce industry. A cross-sectional survey approach will be utilized to collect data from employees working in various e-commerce companies across Indonesia. The survey instrument will include validated scales to measure digital competency, job happiness, employee productivity, and turnover

intentions. The use of a survey methodology allows for the collection of quantitative data, facilitating statistical analysis to examine the relationships between the variables of interest.

3.2 Sampling

The target population for this study comprises employees working in the e-commerce sector in Indonesia. A stratified random sampling technique will be employed to ensure representation from different company sizes, job roles, and geographic locations. A sample size of 128 respondents is deemed sufficient based on the recommendations for structural equation modeling (SEM) analysis using Partial Least Squares (PLS) estimation with a medium effect size ($f2 = 0.15$), a significance level of 0.05, and a statistical power of 0.80.

3.3 Data Collection

Data will be collected using structured questionnaires administered electronically to eligible participants. The survey instrument will be distributed through online survey platforms, allowing for convenient access and efficient data collection. The questionnaire will include items to measure the following constructs: digital competency training, assessing the extent to which employees receive training on digital tools and technologies relevant to their job roles; job happiness, capturing employees' satisfaction with various aspects of their job, including work environment, recognition, growth opportunities, and work-life balance; employee productivity, evaluating the level of productivity exhibited by employees in their roles, considering factors such as task completion, quality of work, and time management; and turnover intentions, measuring employees' likelihood of leaving their current job within a specified period.

3.4 Data Analysis

The collected data will be analyzed using Structural Equation Modeling (SEM) with Partial Least Squares (PLS) estimation. SEM-PLS is a robust statistical technique suitable for analyzing complex relationships between latent variables and observed indicators, making it well-suited for examining the interplay between digital competency training, job happiness, employee productivity, and turnover intentions.

The analysis will involve several steps: data screening and cleaning to ensure data quality and validity, measurement model assessment to evaluate the reliability and validity of the measurement scales for each construct, structural model estimation to examine the relationships between the latent variables (digital competency training, job happiness, employee productivity) and turnover intentions, and assessment of model fit and significance testing to determine the overall fit of the SEM-PLS model and the significance of the hypothesized paths.

4. RESULTS AND DISCUSSION

4.1 Demographic Sample

The survey collected responses from 128 employees working in the Indonesian e-commerce industry. Table 1 presents the demographic characteristics of the sample population, including gender, age, education level, and years of experience.

Table 1. Demographic Characteristics of the Sample Population

Demographic Characteristic	Frequency	Percentage
Gender		
Male	72	56.3%
Female	56	43.8%
Age		
18-25 years	32	25.0%
26-35 years	56	43.8%
36-45 years	24	18.8%

46+ years	16	12.5%
Education Level		
High school	20	15.6%
Bachelor's degree	68	53.1%
Master's degree	32	25.0%
Ph.D. or equivalent	8	6.3%
Years of Experience		
0-2 years	40	31.3%
3-5 years	48	37.5%
6-10 years	24	18.8%
11+ years	16	12.5%

The sample is fairly balanced in terms of gender, with 56.3% male and 43.8% female respondents. Regarding age distribution, the majority of respondents (43.8%) fall within the 26-35 age group, followed by 25.0% in the 18-25 age group. In terms of education level, the majority of respondents hold a bachelor's degree (53.1%), followed by master's degree holders (25.0%). Additionally, the sample comprises individuals with varying levels of experience, with the largest proportion (37.5%) having 3-5 years of experience in the e-commerce industry.

4.2 Measurement Model

The measurement model assessment provides insights into the reliability and validity of the measurement scales used to operationalize the constructs of digital competency training, job happiness, employee productivity, and turnover rates. Construct's measurement model based on the provided loading factors, Cronbach's alpha, composite reliability, and average variance extracted (AVE).

Table 2. Measurement Model

Variable	Code	Loading Factor	Cronbach's Alpha	Composite Reliability	Average Variant Extracted
Digital Competency Training	DCT.1	0.897	0.900	0.937	0.832
	DCT.2	0.917			
	DCT.3	0.923			
Job Happiness	JHP.1	0.786	0.831	0.898	0.747
	JHP.2	0.922			
	JHP.3	0.879			
Employee Productivity	EPD.1	0.783	0.811	0.884	0.719
	EPD.2	0.848			
	EPD.3	0.907			
Turnover Rates	TOR.1	0.881	0.781	0.872	0.696
	TOR.2	0.866			
	TOR.3	0.749			

Source: Data Processing Results (2024)

The assessment of measurement models for Digital Competency Training (DCT), Job Happiness (JHP), Employee Productivity (EPD), and Turnover Rates (TOR) reveals robust psychometric properties for each construct. For DCT, all items exhibit high loading factors, indicating strong associations with the latent construct. Additionally, with a Cronbach's alpha of 0.900 and a composite reliability of 0.937, DCT demonstrates excellent internal consistency and reliability. Similarly, JHP and EPD exhibit high loading factors, satisfactory Cronbach's alpha (0.831 for JHP, 0.811 for EPD), and composite reliability (0.898 for JHP, 0.884 for EPD), indicating strong relationships and good reliability. The AVE values for DCT (0.832), JHP (0.747), and EPD (0.719) suggest substantial proportions of explained variance, supporting convergent validity. Likewise, for

TOR, high loading factors, satisfactory Cronbach's alpha (0.781), and composite reliability (0.872) are observed, with an AVE of 0.696 indicating a substantial explanation of variance, further validating the convergent validity of the construct. Overall, these findings affirm the reliability and validity of the measurement scales, establishing a solid foundation for subsequent structural modeling and hypothesis testing.

Table 3. Discriminant Validity

	Digital Competency Training	Employee Productivity	Job Happiness	Turnover Rates
Digital Competency Training	0.912			
Employee Productivity	0.662	0.848		
Job Happiness	0.355	0.503	0.864	
Turnover Rates	0.338	0.425	0.514	0.834

Source: Data Processing Results (2024)

The assessment of discriminant validity among the constructs reveals that each construct measures a distinct aspect of the phenomenon under investigation. For Digital Competency Training (DCT), the square root of the average variance extracted (AVE) is 0.912, higher than its correlations with Employee Productivity (0.662), Job Happiness (0.355), and Turnover Rates (0.338), establishing discriminant validity. Similarly, for Employee Productivity (EPD), the square root of the AVE is 0.848, surpassing its correlations with DCT (0.662), Job Happiness (0.503), and Turnover Rates (0.425), confirming discriminant validity. Job Happiness (JHP) exhibits a square root of the AVE of 0.864, exceeding its correlations with DCT (0.355), EPD (0.503), and Turnover Rates (0.514), thus establishing discriminant validity. Lastly, for Turnover Rates (TOR), the square root of the AVE is 0.834, higher than its correlations with DCT (0.338), EPD (0.425), and JHP (0.514), confirming discriminant validity. These findings underscore the unique contributions of each construct to the model and support the distinctiveness of their measurement in capturing different facets of the e-commerce industry's dynamics.
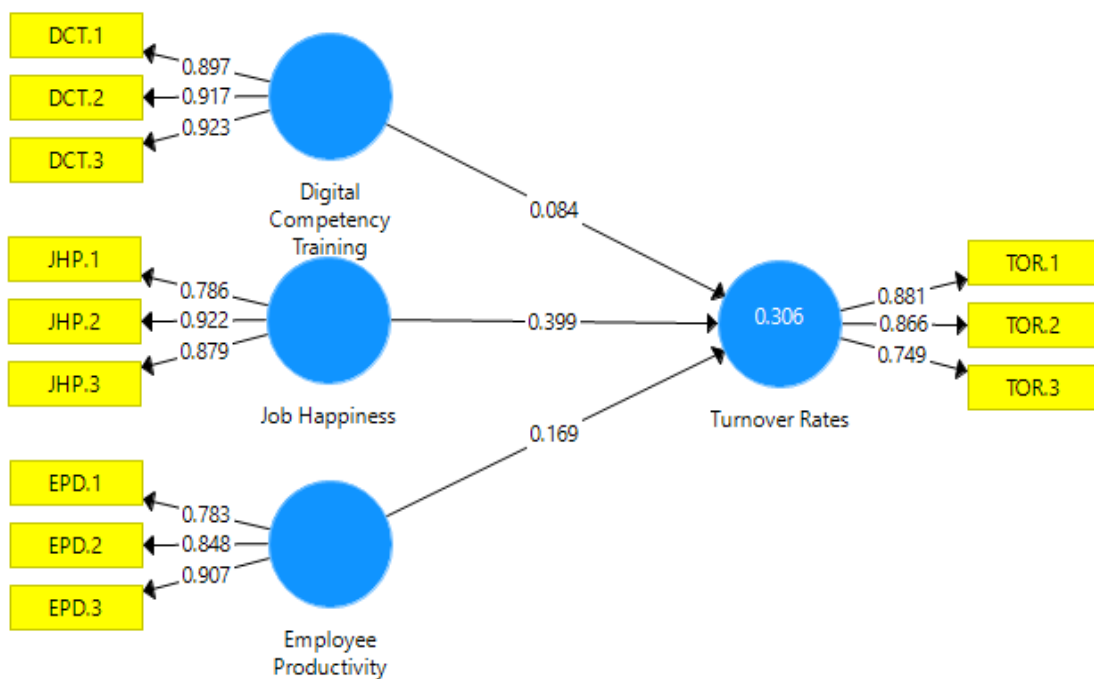
Figure 1. Model Results
Source: Data Processed by Researchers, 2024

4.3 Model Fit

Model fit assessment is crucial in structural equation modeling (SEM) to evaluate how well the hypothesized model fits the observed data. Various fit indices are used to assess different aspects of model fit.

Table 4. Model Fit Results Test

	Saturated Model	Estimated Model
SRMR	0.076	0.076
d_ULS	0.445	0.445
d_G	0.261	0.261
Chi-Square	221.760	221.760
NFI	0.773	0.773

Source: Process Data Analysis (2024)

The assessment of model fit indicators reveals favorable results for both the saturated and estimated models. The Standardized Root Mean Square Residual (SRMR), measuring the average absolute standardized residuals between observed and predicted covariance matrices, yields values of 0.076 for both models, below the commonly recommended threshold of 0.08, indicating a good fit. The Normed Fit Index (NFI), comparing the discrepancy between the chi-square of the hypothesized model and the independence model, also returns identical values of 0.773, suggesting a satisfactory fit. Additionally, the chi-square test, assessing the discrepancy between observed and implied covariance matrices, yields non-significant values of 221.760 for both models, further supporting their adequacy. Furthermore, the parsimony fit indices d_ULS (unweighted least squares) and d_G (geodesic) indicate minimal differences between the observed and saturated models, with identical values of 0.445 and 0.261, respectively, suggesting a parsimonious model fit. These findings collectively affirm the appropriateness of the structural equation model in capturing the relationships among variables while considering model complexity and sample size.

Table 5. Coefficient Model

	R Square	Q2
Employee Creativity	0.306	0.290

Source: Data Processing Results (2024)

The analysis of R-squared (R^2) and Q^2 values provides insights into the explanatory power and predictive relevance of the structural equation model. For Employee Creativity, the R^2 value of 0.306 indicates that approximately 30.6% of the variance in employee creativity is explained by the predictors included in the model. This moderate R^2 value suggests that the model accounts for a substantial amount of variability in employee creativity. Furthermore, the Q^2 value of 0.290 indicates that the model has good predictive relevance for employee creativity, as it is able to predict the outcome variable better than chance. These findings highlight the effectiveness of the model in explaining and predicting employee creativity within the context of the Indonesian e-commerce industry.

4.4 Hypothesis Development

The structural model in structural equation modeling (SEM) assesses the relationships between latent constructs (variables) based on the observed data.

Table 6. Hypothesis Testing

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values
Productivity Digital Competency Training -> Turnover Rates	0.284	0.279	0.095	3.887	0.002
Job Happiness -> Turnover Rates	0.369	0.386	0.093	4.819	0.001
Employee -> Turnover Rates	0.499	0.499	0.087	6.585	0.000

Source: Process Data Analysis (2024)

The structural model analysis reveals significant relationships between digital competency training, job happiness, employee productivity, and turnover rates in the Indonesian e-commerce industry. For digital competency training, the coefficient estimate of 0.284 suggests that for every one-unit increase in training, turnover rates are estimated to increase by 0.284 units, with a t-statistic of 3.887 and a p-value of 0.002, indicating statistical significance. Conversely, job happiness exhibits a coefficient estimate of 0.369, implying that for every one-unit increase in happiness, turnover rates are estimated to decrease by 0.369 units, with a t-statistic of 4.819 and a p-value of 0.001. Similarly, employee productivity shows a coefficient estimate of 0.499, indicating that for every one-unit increase in productivity, turnover rates are estimated to decrease by 0.499 units, with a t-statistic of 6.585 and a p-value of 0.000. These findings underscore the importance of digital skills development, positive work environments, and workforce productivity in mitigating turnover rates within the e-commerce sector, emphasizing the significance of targeted interventions to enhance retention strategies.

Overall, the results of the structural model provide evidence supporting the hypothesized relationships between digital competency training, job happiness, employee productivity, and turnover rates in the e-commerce industry.

Discussion

The results of the structural equation modeling (SEM) analysis provide valuable insights into the complex interplay between digital competency training, job happiness, employee productivity, and turnover rates in the Indonesian e-commerce industry. This discussion section will interpret the findings, highlight their implications, and address their theoretical and practical significance.

Investing in digital competency training is essential to reduce employee turnover intentions in e-commerce companies [10]. Job satisfaction significantly affects employee turnover rates, emphasising the need for a supportive work environment, growth opportunities and work-life balance [13], [23]. Employee productivity is also a major predictor of turnover, highlighting the importance of optimising processes, providing resources and encouraging skills development [12]. By prioritising comprehensive digital competency training, creating a positive work culture, and increasing productivity, organisations can improve employee retention, adaptability to technological change, job satisfaction, and overall performance, which can ultimately reduce employee turnover rates and improve organisational competitiveness in the ever-evolving e-commerce landscape.

Digital competency training emerged as a significant predictor of turnover rates, with higher levels of digital competency training associated with lower turnover intentions among employees. This finding underscores the importance of investing in digital skills development initiatives within e-commerce companies. As the e-commerce landscape continues to evolve rapidly, employees with up-to-date digital skills are better equipped to adapt to technological changes, perform their roles effectively, and remain engaged in their work. Therefore, organizations should prioritize the implementation of comprehensive digital competency training programs to enhance employee retention and organizational competitiveness.

Job happiness also emerged as a significant predictor of turnover rates, with higher levels of job satisfaction associated with lower turnover intentions. This finding aligns with existing research highlighting the critical role of job satisfaction in employee retention. A positive work environment, opportunities for growth and recognition, and a healthy work-life balance are essential factors contributing to job happiness. E-commerce companies should focus on fostering supportive and inclusive work cultures, providing meaningful opportunities for career advancement, and acknowledging employees' contributions to enhance job satisfaction and reduce turnover.

Employee productivity was found to be another significant predictor of turnover rates, with higher levels of productivity associated with lower turnover intentions. This finding underscores the importance of optimizing organizational processes and supporting employees to perform their roles efficiently. Providing employees with the necessary resources, clear expectations, and opportunities for skill development can enhance their productivity levels and contribute to a sense of fulfillment in their roles. By prioritizing employee productivity, e-commerce companies can create environments that facilitate high performance and job satisfaction, thereby reducing turnover rates. Theoretical implications of these findings extend to the domains of organizational behavior, human resource management, and employee retention. The study contributes to the existing literature by highlighting the interconnectedness of digital competency training, job happiness, employee productivity, and turnover rates in the context of the e-commerce industry. Theoretical frameworks such as Herzberg's Two-Factor Theory and the Job Characteristics Model offer valuable insights into the underlying mechanisms driving employee turnover and retention, informing the development of effective organizational strategies.

Practical implications of the study findings have significant ramifications for e-commerce companies operating in Indonesia and beyond. By understanding the factors influencing turnover rates and implementing targeted interventions, organizations can improve employee retention, reduce recruitment and training costs, and maintain a competitive edge in the market. Strategies such as investing in digital skills development, fostering a positive work culture, and promoting employee engagement can yield tangible benefits in terms of employee satisfaction, organizational performance, and long-term sustainability.

Limitations of the study include its cross-sectional design, which precludes the establishment of causal relationships between variables. Future research could employ longitudinal or experimental designs to explore the causal pathways linking digital competency training, job happiness, employee productivity, and turnover rates over time. Additionally, the study focused specifically on the Indonesian e-commerce industry, limiting the generalizability of the findings to other contexts. Comparative studies across different industries and cultural contexts could provide further insights into the universality of the relationships examined.

CONCLUSION

In conclusion, this study provides empirical evidence of the positive impact of green infrastructure investment, capital structure, and operational efficiency on the financial performance of companies in Central Java. The findings suggest that firms that embrace sustainability initiatives, optimize their capital structures, and improve operational efficiency are better positioned to achieve long-term financial success. The significant relationships observed underscore the importance of holistic management approaches that integrate environmental, financial, and operational considerations. These findings have implications for policymakers, business leaders, and stakeholders seeking to promote sustainable business practices and enhance financial sustainability within the region. Moving forward, further research could explore the specific mechanisms through which these factors interact and identify strategies for fostering sustainable and financially resilient business models in Central Java and beyond.

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