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Human Factors Before Digital HR: A Case from the Furniture Industry

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Abstract

The This study investigates the influence of key human factors—namely work motivation, work discipline, work environment, job satisfaction, and work stress—on employee performance at CV Dijawa Abadi, a furniture manufacturing company. Using a quantitative approach, data were collected from 141 employees through a structured Likert-scale questionnaire and analyzed using multiple linear regression. The findings reveal that all five independent variables have a positive and significant effect on employee performance. These results highlight the importance of understanding traditional human resource dynamics in organizations that have not yet transitioned to digital HR systems. The study provides valuable insights for companies in the furniture industry and similar labor-intensive sectors, offering a foundational understanding to support future implementation of digitally integrated HR strategies.

Keywords: Human Factors, Work Motivation, Employee Performance, Work Discipline, Digital HR, Furniture Industry

1. Introduction

The In the era of rapid industrialization, employee performance remains a critical determinant of organizational success, particularly in labor-intensive sectors such as furniture manufacturing. Companies that rely heavily on human labor, like CV Dijawa Abadi, face persistent challenges in maintaining productivity and achieving performance targets consistently. Located in Jepara, Central Java, this company specializes in producing and exporting furniture from recycled wood, and has grown from a small-scale business into an international exporter. However, despite its growth, the company has struggled in recent years to meet performance benchmarks. This condition necessitates a closer look at the internal human factors that influence workforce performance in pre-digital work environments.

A strategic approach to recruiting, developing, managing, and using human resources in accordance with the organization's vision, mission, and goals with the aim of improving performance and competitiveness [14].

Performance is the result of the work of individuals or groups in an organization over a certain period of time, which shows how well they fulfill job requirements to achieve organizational goals [15]. Numerous studies have highlighted the importance of psychological and organizational variables such as motivation, discipline, work environment, and job satisfaction as predictors of employee performance [1], [2], [3]. Motivation serves as the internal drive that compels employees to complete tasks effectively, while discipline reflects their commitment to comply with workplace standards. A conducive work environment enhances comfort and focus, whereas job satisfaction can improve morale and reduce stress levels. Conversely, unmanaged stress can diminish employee engagement and reduce output [4], [5]. While these variables have been extensively explored in various industrial sectors, limited research has focused on how these factors operate collectively within traditional, non-digitized manufacturing firms particularly in the Indonesian context.

Existing literature tends to concentrate on organizations already integrating digital human resource (HR) systems or operating within formal corporate structures that benefit from advanced HR analytics tools [6], [7]. These studies offer insights into optimizing performance using predictive algorithms and artificial intelligence; however, they often overlook organizations that remain fully dependent on manual systems. As a result, there is a noticeable gap in understanding how traditional human factors continue to play a dominant role in environments not yet transformed by digital technologies. Moreover, most previous studies focus on isolated variables such as motivation or stress without simultaneously analyzing the interplay of multiple human factors on performance within a single empirical model [8], [9].

This study seeks to address that gap by examining how work motivation, discipline, work environment, job satisfaction, and work stress simultaneously affect employee performance in a pre-digital industrial setting. Using CV Dijawa Abadi as a case study, this research captures the realities faced by SMEs that operate without digital HR support systems. These companies still rely on conventional HR practices such as attendance logs, supervisor-based evaluations, and paper-based feedback mechanisms. By understanding the dynamics of these factors in a traditional context, the study provides a foundation for later integration into digitally enhanced HR solutions. This approach is especially relevant as many manufacturing firms in Southeast Asia are beginning to consider but have not yet fully adopted digital HR transformation strategies.

The purpose of this research is twofold. First, it aims to empirically test the influence of five key human factors work motivation, discipline, environment, satisfaction, and stress on employee performance in a traditional work setting. Second, it intends to provide insights that can guide the digital transition of human resource systems in manufacturing SMEs. By establishing the baseline impact of human-centered variables on performance, this study contributes to both academic theory and managerial practice. It also offers practical recommendations for companies preparing to adopt digital performance monitoring systems, ensuring that core human elements are not overlooked in the digitization process. Thus, this study not only fills a critical research gap but also aligns with the strategic needs of companies on the cusp of Industry 4.0.

2. Research Methods

This study employed a quantitative approach with a descriptive-explanatory design to examine the relationship between five independent variables work motivation, work discipline, work environment, job satisfaction, and work stress and the dependent variable, employee performance. The research was conducted at CV Dijawa Abadi, a furniture manufacturing and export company based in Jepara, Central Java. The population consisted of all production employees in the company, totaling 141 individuals. Given the manageable size of the population, the study used a saturated sampling technique, meaning that every member of the population was included as a respondent without sampling restrictions.

Primary data were collected using a structured questionnaire distributed directly to the respondents. The instrument was developed based on validated measurement indicators from prior studies [4], [5], and consisted of closed-ended statements rated using a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The questionnaire was divided into six sections, each representing one research variable. For example, work motivation was measured using six indicators adapted from Robbins and Judge [6], while job satisfaction followed the scale from Badriyah [5]. The instrument was tested for both validity and reliability before being fully deployed. The validity test involved a Pearson correlation analysis for each item, while reliability was measured using Cronbach's Alpha, where a coefficient above 0.60 was considered acceptable [4].

Data processing and analysis were carried out using IBM SPSS version 26. Prior to hypothesis testing, classical assumption tests were performed, including the normality test (Kolmogorov-Smirnov), multicollinearity test (Variance Inflation Factor and Tolerance), and heteroscedasticity test (Glejser method). The main analytical technique used was multiple linear regression analysis, which allowed the researcher to assess the simultaneous and partial effects of the independent variables on employee performance. Partial significance was tested using the t-test, while simultaneous influence was assessed through the F-test. Additionally, the coefficient of determination (R^2) was calculated to determine how much variance in the dependent variable could be explained by the model.

This methodological approach was selected to ensure the objectivity, precision, and reproducibility of the findings. While the analytical techniques used were standard in behavioral and management research, the contribution of this study lies in its empirical application to a labor-intensive, non-digital industry context. All measurement procedures, assumptions, and analytical steps were documented to ensure transparency and enable replication by future researchers. Moreover, by utilizing a complete population rather than a sample, this study minimized sampling error and increased the robustness of its conclusions.

3. Result and Discussion

Respondent Characteristics

The population in this study consisted of all production employees at CV Dijawa Abadi, totaling 141 individuals. Due to the manageable size of the population, the saturated sampling technique was applied, in which the entire population was selected as respondents. To understand the demographic profile of the respondents, four main

characteristics were identified: gender, age, education level, and length of employment. These characteristics are summarized in Table 1.

Table 1. Respondent Demographic Profile

No.	Category	Subcategory	Frequency	Percentage
1	Gender	Male	112	79.4%
		Female	29	20.6%
2	Age	< 25 years	18	12.8%
		25–30 years	15	10.6%
		31–35 years	18	12.8%
		> 35 years	90	63.8%
3	Education Level	Elementary School (SD)	45	31.9%
		Junior High School	44	31.2%
		Senior High School	39	27.7%
		Diploma (D1/D2/D3)	3	2.1%
		Bachelor (S1/S2/S3)	10	7.1%
4	Length of Employment	1–2 years	92	65.2%
		3–5 years	28	19.9%
		> 5 years	21	14.9%
Total			141	100%

As shown in Table 1, the majority of respondents were male (79.4%), which reflects the physical demands typically associated with furniture manufacturing jobs. Female workers constituted only 20.6% of the workforce. This gender distribution aligns with the operational nature of the industry, where manual labor remains a significant component of production.

Regarding age, most respondents (63.8%) were over 35 years old, indicating that the production workforce is predominantly composed of mature individuals with potentially higher levels of emotional and professional stability. This demographic trend may contribute positively to discipline, responsibility, and performance consistency in daily operational tasks. Meanwhile, respondents under the age of 35 made up a smaller portion, suggesting a lower presence of early-career workers.

In terms of educational background, over 90% of respondents had educational attainment at the primary to secondary school level (elementary, junior high, and high school). Only a small fraction held a diploma (2.1%) or a bachelor's degree (7.1%). This pattern reflects the general qualification standards for production roles in manufacturing firms, where higher education is not always a prerequisite.

Lastly, the length of employment showed that the majority of employees (65.2%) had been working at the company for only 1–2 years, indicating a relatively new workforce. This may imply ongoing adaptation and skill development among the majority of workers. However, the presence of a significant group with more than three years of service (34.8%) suggests the existence of an experienced core team, potentially serving as informal mentors or role models for newer employees.

To provide a clearer and more comprehensive overview of the respondent demographics, Figure 1 through Figure 4 present visual representations of the gender, age group, education level, and length of employment of the production employees at CV Dijawa Abadi.

Figure 1. Respondent Distribution by Gender

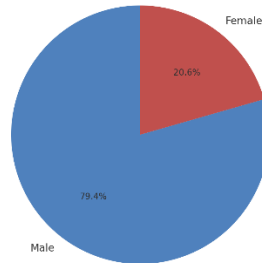


Figure 1. Respondent Distribution by Gender

As illustrated in Figure 1, male employees dominate the production workforce, accounting for 79.4% of total respondents, while female employees make up only 20.6%. This gender disparity reflects the physically demanding nature of furniture production work, which is generally performed by male laborers.

Figure 2. Respondent Distribution by Age Group

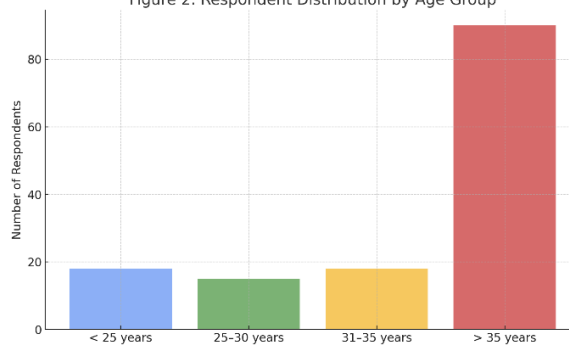


Figure 2. Respondent Distribution by Age Group

Figure 2 shows that 63.8% of respondents are over 35 years old, indicating a mature and potentially more experienced workforce. Younger age groups (under 35 years) represent a smaller portion of the workforce, suggesting that the company relies heavily on more seasoned employees for production consistency.

Figure 3. Respondent Distribution by Education Level

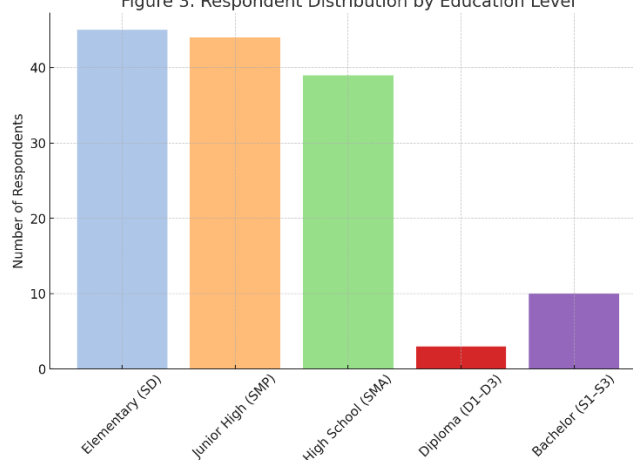


Figure 3. Respondent Distribution by Education Level

As shown in Figure 3, the majority of respondents have primary to secondary school education—31.9% from elementary school, 31.2% from junior high, and 27.7% from senior high school. Only a small number of respondents have attained higher education (diploma or bachelor's degree). This indicates that the educational background of employees aligns with the qualifications typically required for production line roles in manufacturing.

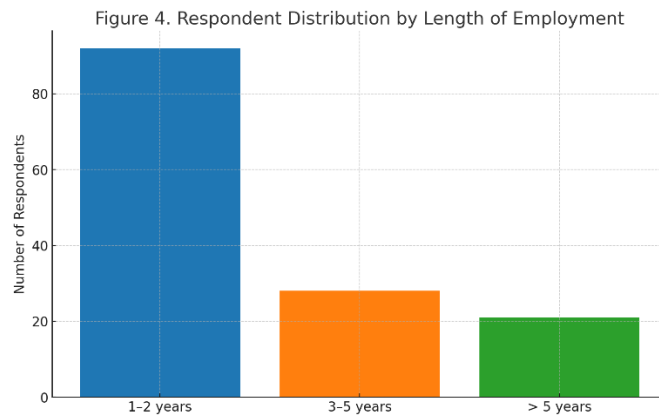


Figure 4. Respondent Distribution by Length of Employment

According to Figure 4, most employees (65.2%) have worked for 1–2 years, indicating that the workforce is relatively new and still undergoing adaptation and training. However, a significant portion (34.8%) have been employed for more than three years, which suggests the presence of experienced workers who can serve as mentors or role models to newer employees.

Classical Assumption Test

The validity test ensures that each questionnaire item accurately reflects the concept being measured. Item validity was assessed by comparing the Pearson correlation coefficient (r count) against the r table value. An item is considered valid if r count $>$ r table. All indicators across variables—including work motivation, discipline, environment, job satisfaction, stress, and employee performance—showed r values exceeding the critical threshold, indicating that each item is valid and suitable for use in this study.

a. Reliability Test

Tabel 2. Reliability Test

Variabel	Item	Cronbach's Alpha	Information
Work Motivation (X1)	6	0,946	Reliable
Work Discipline (X2)	8	0,968	Reliable
Work Environment (X3)	5	0,949	Reliable
Job Satisfaction (x4)	5	0,950	Reliable
Work Stress (X5)	5	0,959	Reliable
Employee Performance (Y)	5	0,951	Reliable

Data source: SPSS processed data, 2025

Reliability was tested using Cronbach's Alpha. A variable is considered reliable if the Alpha value is above 0.60 [4]. As shown in Table 6, all six variables met this criterion:

Work Motivation (X1): $\alpha = 0.946$

Work Discipline (X2): $\alpha = 0.968$

Work Environment (X3): $\alpha = 0.949$

Job Satisfaction (X4): $\alpha = 0.950$

Work Stress (X5): $\alpha = 0.959$

Employee Performance (Y): $\alpha = 0.951$

These results confirm that the questionnaire is reliable for all variables.

b. Normality Test

Tabel 3. Normality Test

One-Sample Kolmogorov-Smirnov Test		
		<i>Unstandardized Residual</i>
N		141
Normal Parameters	Mean	0,0000000
	Hours of deviation	1,25692159
Most Extreme Differences	Absolute	0,068
	Positive	0,061
	Negative	-0,068
Test Statistic		0,068
Asymp. Sig. (2-tailed)		0,200

Data source: SPSS processed data, 2025

Normality was assessed using the Kolmogorov–Smirnov method. The Asymp. Sig. value obtained was 0.200, which is greater than 0.05. This indicates that the residuals of the regression model are normally distributed and meet the normality assumption.

c. Multicollinearity Test

Table 4. Multicollinearity Test

Coefficients		<i>Collinearity Statistics</i>	
Model		Tolerance	BRIGHT
1	Work Motivation	0,398	2,514
	Work Discipline	0,663	1,508
	Work Environment	0,633	1,579
	Job Satisfaction	0,622	1,608
	Work Stress	0,464	2,157

Data source: SPSS processed data, 2025

Multicollinearity was tested by evaluating tolerance and Variance Inflation Factor (VIF) values. Tolerance values ranged from 0.398 to 0.663 (all > 0.10), while VIF values ranged from 1.508 to 2.514 (all < 10.00). These results confirm that no multicollinearity was found among the independent variables.

d. Heteroscedasticity Test

Table 5. Multicollinearity Test

	Coefficients				
	<i>Unstandardized B</i>	<i>Coefficients Std. Error</i>	<i>Standardized Coefficients Beta</i>	<i>t</i>	<i>Itself.</i>
(Constant)	1,825	0,386		4,728	0,000
Work Motivation	-0,023	0,022	-0,138	-1,035	0,302
Work Discipline	0,002	0,012	0,022	0,211	0,833
Work Environment	-0,004	0,019	-0,023	-0,219	0,827
Job Satisfaction	0,008	0,019	0,045	0,425	0,671
Work Stress	-0,022	0,020	-0,133	-1,078	0,283

Source: SPSS data processing, 2025

The Glejser test was applied to detect heteroscedasticity. All independent variables had significance (Sig.) values above 0.05, ranging from 0.283 to 0.833. Therefore, the model is free from heteroscedasticity and meets the assumption of homoscedasticity.

Regression Analysis and Hypothesis Testing

To evaluate the influence of independent variables—work motivation, work discipline, work environment, job satisfaction, and work stress—on employee performance, a multiple linear regression analysis was conducted using SPSS. The regression model, along with simultaneous (F-test) and partial (t-test) results, is summarized in Table 10 below.

Table 6. Summary of Regression, F-Test, and t-Test Results

Variable	B Coefficient	Std. Error	Beta	t-Value	Sig. (p-value)	Significance
Constant	-3.538	0.670	–	-5.280	0.000	Significant
Work Motivation (X1)	0.474	0.038	0.520	12.323	0.000	Significant
Work Discipline (X2)	0.100	0.020	0.160	4.895	0.000	Significant
Work Environment (X3)	0.138	0.033	0.139	4.174	0.000	Significant
Job Satisfaction (X4)	0.141	0.033	0.145	4.302	0.000	Significant
Work Stress (X5)	0.175	0.035	0.194	4.970	0.000	Significant

Regression Equation:

$$Y = -3.538 + 0.474(X1) + 0.100(X2) + 0.138(X3) + 0.141(X4) + 0.175(X5) + \epsilon$$

The regression analysis confirms that all independent variables have a positive and statistically significant effect on employee performance, both simultaneously and partially. Work motivation has the strongest individual influence, as reflected by the highest standardized beta ($\beta = 0.520$). These findings support the proposed hypothesis and highlight the importance of both psychological and environmental factors in enhancing workforce productivity.

Discussion

The Influence of Work Motivation on Employee Performance

The regression results show that work motivation has the strongest influence on employee performance, with a coefficient value of 0.474 and a significance level of 0.000. This indicates that the higher the level of motivation

employees feel, the better their performance. This finding aligns with Afandi [1] and Hasibuan [15], who state that motivation is a key driver that affects work spirit and behavior. Motivated employees tend to show greater initiative and commitment in achieving work targets. In the furniture industry context, motivation often stems from tangible rewards, job security, and opportunities for personal growth. Hustia [10] found that motivation significantly influences employees working under in-office (WFO) systems, especially in physically demanding routines. Therefore, enhancing employee motivation through incentives, recognition, and supportive work environments is essential to strengthening overall productivity and organizational performance.

The Influence of Work Discipline on Employee Performance

Work discipline positively and significantly influences employee performance, with a regression coefficient of 0.100 and a significance level of 0.000. Although its contribution is smaller than motivation, discipline remains a fundamental aspect in shaping consistent and responsible work behavior. According to Chusminah [6] and Kantohe & Sutarmim [13], discipline refers to adherence to company rules and work ethics, which promotes order and efficiency. In the furniture manufacturing setting, discipline in following production schedules, safety procedures, and operational standards is crucial for workflow continuity. Ningsih et al. [21] also found that strong discipline correlates with increased work achievement, especially in roles requiring precision and timeliness. Building a culture of discipline through supervision, training, and clear reward-punishment systems can significantly enhance organizational effectiveness and accountability.

The Influence of Work Environment on Employee Performance

The work environment variable has a regression coefficient of 0.138 and a significance level of 0.000, indicating a significant effect on employee performance. A conducive work environment—physically, socially, and psychologically—promotes employee comfort and focus. Dwi & Sonny [8] state that a supportive workplace atmosphere reduces errors and increases efficiency. In manufacturing, factors such as lighting, ventilation, noise control, and interpersonal relations are key to comfort and performance. Aniversari & Sanjaya [4] emphasize that employees working in a positive environment are more motivated and productive. Wibowo [33] also argues that the work environment is an important performance driver as it fosters a sense of belonging. Therefore, improving facilities, layout, and internal communication is essential to enhancing workforce performance across all departments.

The Influence of Job Satisfaction on Employee Performance

Job satisfaction has a significant impact on employee performance, with a regression coefficient of 0.141 and a significance value of 0.000. Satisfied employees tend to be more loyal, productive, and results-oriented. Afandi [1] defines job satisfaction as a positive emotional state resulting from job appraisal, salary, promotion opportunities, and interpersonal relationships. Islamiyati & Al Banin [11] found that job satisfaction plays a critical mediating role between organizational communication and productivity. Jufrizen [12] also highlights that satisfied employees are more emotionally stable and loyal in the long run. In the context of routine tasks in furniture manufacturing, job satisfaction helps maintain morale and reduce turnover. Thus, companies must continuously assess and improve satisfaction through fair policies, a supportive environment, and open communication to strengthen human resource performance in the long term.

The Influence of Work Stress on Employee Performance

Interestingly, the regression analysis shows that work stress has a positive and significant effect on performance, with a coefficient of 0.175 and a p-value of 0.000. This suggests that the type of stress experienced by employees tends to be eustress—constructive stress that motivates and sharpens focus. According to Partika et al. [7], not all stress is detrimental; in moderate levels, it can push employees to work more effectively. Badriyah [18] supports this by explaining that healthy stress can enhance responsibility and decision-making in the workplace. In a fast-paced production environment, mild stress may encourage employees to be more proactive and result-driven. However, excessive stress (distress) must still be prevented, as it can lower performance. Managing stress through workload balance, break schedules, and supportive communication is vital to ensure stress remains a performance enhancer rather than a hindrance.

4. Conclusion

In The findings of this study confirm that work motivation, discipline, environment, job satisfaction, and stress each have a significant and positive influence on employee performance at CV Dijawa Abadi. Among these factors, work motivation shows the strongest influence, suggesting that motivated employees are more likely to perform at optimal levels. Discipline and work environment also play an essential role in shaping structured behavior and creating supportive conditions that foster productivity. Job satisfaction contributes to increased morale and engagement, while manageable levels of work stress appear to function as a motivator that enhances performance rather than hinders it. These results highlight the importance for organizations—especially in labor-intensive industries like furniture manufacturing—to pay closer attention to the psychological and environmental aspects of work. Strategic human resource management that prioritizes motivation-building, work-life balance, and a healthy workplace atmosphere can serve as a strong foundation for performance improvement. The implications of this research can support organizational policy development, particularly in designing performance-based incentives, improving communication systems, and implementing stress management strategies. For future research, it is recommended to expand the scope to other sectors or regions and to consider additional variables such as leadership style, organizational culture, or compensation systems to enrich the understanding of employee performance drivers.

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