

Analysis of On-Time Performance (OTP) Achievement Based on The Role of Human Resources and Communication with Moderation of Work Infrastructure in The Handling & Delivery Department of PT Aerofood Indonesia (Garuda Indonesia Group)

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Abstract

The aviation industry in Indonesia is experiencing rapid growth, but still faces challenges in terms of service timeliness, especially in the provision of catering. This project analyze the factors that affect On Time Performance (OTP) PT Aerofood Indonesia, focusing on the quantity of human resources (HR), communication, and work infrastructure. The purpose of research is to determine the effect of the quantity of human resources, communication, & infrastructure on OTP, as well as to analyze the simultaneous influence and moderation of work infrastructure. The research method employed is a quantitative approach, utilizing a survey. The study population consisted of 276 population the Handling & Delivery Section, with a sample of 165 respondents taken using random sampling techniques. Data were collected through questionnaires and analyzed using multiple regression and moderation regression analysis. The results of the analysis show that the quantity of human resources, communication, and work infrastructure has a positive and significant effect on OTP. Specifically, the quantity of human resources and communication have a significant effect, while work infrastructure serves as a moderating that strengthens the effect of communication to OTP, but has no significant effect on the effect of the quantity of human resources on OTP. This study concludes that increasing the quantity of human resources, enhancing effective communication, and improving work infrastructure can increase OTP at PT Aerofood Indonesia. Management is advised to focus on infrastructure development and communication to support the achievement of better OTP in the future.

Keywords: *Communication, HR Quantity, On Time Performance, Work Infrastructure*

INTRODUCTION

The aviation industry in Indonesia has experienced rapid growth, marked by the increasing number of airlines and the expansion of flight routes. The deregulation of commercial aviation in 2001 facilitated the emergence of low-cost carriers (LCCs), such as Lion Air, Citilink, and Sriwijaya Airlines, providing more affordable travel options for the public. Despite these developments, service quality in some airlines remains suboptimal, as evidenced by frequent flight delays and customer dissatisfaction. Nevertheless, economic growth and increasing mobility of the population continue to drive the expansion of the aviation sector. Government regulations, including Government Regulation No. 77 of 2012 and Law No. 1 of 2009, aim to ensure safe, secure, orderly, and competitive air transport services.

One critical aspect of airline operations is on-time performance (OTP), which relies heavily on the timely delivery of inflight catering services. Experienced catering suppliers, such as PT Aerofood Indonesia, provide comprehensive inflight catering services, including for Garuda Indonesia at Soekarno-Hatta International Airport. PT Aerofood Indonesia seeks to maintain and attract customers by ensuring timely delivery in accordance with agreed schedules.

Picture 1 Presentase Delay 37 PT Aerofood Indonesia (July 2023 – May 2024)



Source : Internal Data QHSE PT Aerofood Indonesia

The achievement of OTP in the Handling & Delivery Department depends on multiple operational and non-operational factors, including the quantity of human resources (HR), availability of raw materials, supporting facilities, communication systems, and well-structured workflow processes. However, delays in catering services remain a challenge, with data from **July 2023 to May 2024** showing delays ranging from **0.44% to 7.84%** (internal data, PT Aerofood Indonesia QHSE Department). Key factors contributing to these delays include equipment and hydraulic constraints, insufficient productive manpower, production and meal preparation delays, poor coordination and communication, external factors, logistical and manual uplift challenges, additional meal requests, and environmental conditions.

Previous studies indicate that HR quantity positively influences OTP. Insufficient manpower can lead to imbalanced workload distribution, as noted by Rahmasari (2021), while Sunarno (2019) emphasized its role in flight delays. Sumantri (2022) further highlighted that increasing HR contributes to operational efficiency and reduces delays. Conversely, Akhmad, (2020) argued that a larger workforce without effective management may create confusion, potentially causing delays. Communication has also been identified as a critical determinant of OTP, with effective information systems enhancing operational performance (Lady Silk Moonlight, 2022; Riyanto, 2018; Wicaksono, 2019).

Infrastructure is another essential factor supporting OTP. Adequate facilities reduce operational risks, including service failures and loading/unloading disruptions (Jufrizen, 2021; Pio, 2022), although some studies report inconclusive effects on service quality (Sunarno, 2019). Given the aforementioned empirical findings and the operational complexities at PT Aerofood Indonesia, this investigation delves into the contributions of human resource quantity and communication, with the moderating influence of operational infrastructure, in the attainment of On-Time Performance (OTP) within the Handling & Delivery Department. By addressing existing research deficiencies identified in prior studies, this inquiry aspires to elucidate critical operational determinants that impact OTP, thereby offering both theoretical advancements and practical ramifications for the airline catering sector.

RESEARCH METHODS

The study looked at the impact of human resource availability and communication on On Time Performance (OTP), with workplace infrastructure serving as the moderator. Inferential statistics utilizing SPSS software were used to analyze data gathered through structured questionnaires. With this method, variable interactions could be examined methodically and in detail. The purpose of the study was to determine how these variables affected on-time

performance. Additionally, it guaranteed the accuracy and dependability of the data used in the study (Solimun, 2017 : 79) adapted from (Thohari, 2021).

The cohort of this research encompassed all operational personnel within the Handling & Delivery Department of PT Aerofood Indonesia located at Soekarno-Hatta International Airport. This cohort was selected due to the direct involvement of these personnel in inflight catering services, which exert a considerable influence on On-Time Performance (OTP). The sample size was ascertained employing the Slovin formula, incorporating a margin of error set at 5%. The sampling methodology implemented was proportionate stratified random sampling, designed to guarantee equitable representation across various work shifts and operational roles (Sugiyono, 2022).

This study involved four main variables. The independent variables were Human Resource Quantity (X_1), measured through indicators such as adequacy of manpower, workload distribution, and skill suitability (adapted from Rahmasari, 2021; Sumantri, 2022), and Communication (X_2), measured through indicators such as clarity of information, timeliness of message delivery, and effectiveness of feedback (adapted from Moonlight, 2022; Wicaksono, 2019). The dependent variable was On Time Performance (Y), measured through punctuality rate, frequency of delays, and duration of delays based on operational OTP data and QHSE standards. The moderating variable was Workplace Infrastructure (Z), measured through availability of facilities, equipment feasibility, and maintenance quality (adapted from Jufrizen, 2021; Pio, 2022). All characteristics were assessed on a five-point Likert scale, with values ranging from 1 (“Strongly Disagree”) to 5 (“Strongly Agree”).

Primary data were procured via the dissemination of questionnaires that were directly administered to respondents during designated working hours, with the requisite official authorization obtained from the management of PT Aerofood Indonesia. Prior to distribution, the questionnaires underwent a pre-test to ensure clarity, comprehensibility, and instrument reliability. Secondary data, encompassing OTP performance reports and records of operational delays, were procured from the QHSE Department to augment and corroborate the primary data. Data analysis was carried out using SPSS through the following steps:

1. Descriptive Statistics – to describe profiles and the distribution of answers Responden.
2. Validity Test – using Pearson Product Moment correlation to ensure that each item accurately measures the intended construct (valid if r calculated $> r$ table).
3. Reliability Test – using Cronbach’s Alpha coefficient, with items considered reliable if $\alpha \geq 0.70$.
4. Classical Assumption Tests – including normality test (Kolmogorov-Smirnov), multicollinearity test (tolerance and VIF), and heteroscedasticity test (Glejser test) to ensure compliance with linear regression assumptions.
5. Multiple Linear Regression Analysis – to test the influence of human resource quantity and communication on OTP.
6. Moderation Test – using interaction test (Moderated Regression Analysis) to determine the role of workplace infrastructure in strengthening or weakening the relationship between independent variables and OTP.
7. Hypothesis Testing – using t-test (partial) and F-test (simultaneous) at a significance level of 5% ($\alpha = 0.05$).

All research procedures were conducted in accordance with ethical standards, including maintaining respondent confidentiality, ensuring voluntary participation, and safeguarding the confidentiality of company data.

RESULT AND DISCUSSION

Findings

Respondent Characteristics

The study involved 165 respondents, all of whom were operational employees in the Handling & Delivery Department at PT Aerofood ACS CGK. The respondent's age, gender, length of service, job title, employment situation, and educational level were all used to analyze their characteristics.

In terms of gender distribution, all respondents (100%) were male, indicating that operational roles in this department are entirely male-dominated. Regarding age, the majority of respondents were over 25 years old (76%), followed by those between 20 and 25 years old (21%), and a small percentage of respondents were under 20 years old (3%). This shows that the workforce is predominantly mature, with a strong presence of experienced employees.

Length of service data revealed that respondents had experience working for more than 3 years (59%), reflecting high employee retention in the department. The remaining respondents had work experience of less than 1 year (19%), between 1–2 years (11%), and between 2–3 years (11%), suggesting a balance between senior and newer employees.

In terms of job position, the largest proportion was Staff Handling Non-GA (27%), followed by Staff Handling GA (21%) and Staff Transport (16%). Managerial positions were relatively rare, with only 1% holding the role of Manager Handling & Delivery. This composition highlights that the workforce is largely comprised of operational staff rather than supervisors or managers.

Regarding employment status, permanent employees formed the largest group (45%), followed by interns (37%) and contract employees (18%). This composition indicates a significant reliance on non-permanent staff to support operational needs.

Educational background analysis showed the predominant number of respondents had completed senior high school (SLTA/SMA) education (70%), followed by bachelor's degree holders (S1) at 18%, and diploma graduates (D3) at 13%. There were no respondents with postgraduate (S2/S3) or elementary/junior high school qualifications, suggesting that the department maintains a minimum educational standard at the high school level.

Overall, the results demonstrate that Handling and Delivery Department is predominantly male, experienced, and operational-level employees with predominantly high school-level education, supported by a combination of permanent and non-permanent employment statuses to meet operational demands.

Descriptive Statistics

Table 2 Descriptive Statistics of Research Variables

	<i>Descriptive Statistics</i>					<i>Mean</i>		<i>Std. Deviation Statistic</i>	<i>Variance Statistic</i>
	<i>N Statistic</i>	<i>Range Statistic</i>	<i>Minimum Statistic</i>	<i>Maximum Statistic</i>	<i>Sum Statistic</i>	<i>Statistic</i>	<i>Std. Error</i>		
Kuantitas SDM (X1)	165	22	18	40	4862	29.47	.324	4.168	17.372
Komunikasi (X2)	165	26	24	50	5780	35.03	.381	4.896	23.969
Infrastruktur Kerja (X3/Z)	165	22	18	40	4623	28.02	.297	3.812	14.530
On Time Performance (Y)	165	27	13	40	4795	29.06	.378	4.856	23.582
Valid N (listwise)	165								

Source: SPSS Data Processing (2025)

The descriptive analysis evaluated four primary factors Human Resource Quantity (X1), Communication (X2), Workplace Infrastructure (X3/Z), and On Time Performance (Y). The quantity of Human Resources varied from 18 to 40, with an average score of 29.47, indicating generally adequate staffing levels and low variability among responses. Communication scored the highest mean (35.03) with a range of 24–50, suggesting strong organizational communication

despite moderate variation. Workplace Infrastructure had the lowest mean (28.02) within a range of 18–40, pointing to potential areas for improvement. On Time Performance averaged 29.06 with a range of 13–40, reflecting generally satisfactory timeliness, although variability indicates inconsistencies in performance. Overall, communication emerged as the strongest dimension, while infrastructure remained the most critical area for managerial attention.

Validity Test

Table 3 Validity Test

Pernyataan	r_{hitung}	$r_{tabel (0,05)}$	Keterangan	Data
X1	0,710	0,1528	$r_{hitung} > r_{tabel}$	Valid
	0,771	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,672	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,690	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,667	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,788	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,779	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,824	0,152	$r_{hitung} > r_{tabel}$	Valid
X2	0,756	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,822	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,775	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,755	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,736	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,754	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,755	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,728	0,152	$r_{hitung} > r_{tabel}$	Valid
X3	0,744	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,572	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,740	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,787	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,783	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,756	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,725	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,692	0,152	$r_{hitung} > r_{tabel}$	Valid
Y	0,633	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,616	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,926	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,663	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,882	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,926	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,718	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,825	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,882	0,152	$r_{hitung} > r_{tabel}$	Valid
	0,926	0,152	$r_{hitung} > r_{tabel}$	Valid

Source: SPSS Data Processing (2025)

The validity test was conducted on a total of 165 respondents, with a degree of freedom (df) of 163 ($n - 2$). Using a 5% significance level, the r-table value was determined as 0.152. Results show that all questionnaire items for the four measured variables—Human Resource Quantity (X1), Communication (X2), Workplace Infrastructure (X3/Z), and On Time Performance (Y)—had r-calculated values exceeding the r-table threshold. Specifically, X1 items ranged from 0.667 to 0.824, X2 from 0.572 to 0.822, X3/Z from 0.616 to 0.787, and Y from 0.663 to 0.926. Since all r-calculated values were greater than the critical r-value, all items were confirmed to be valid, indicating strong construct validity for each measurement instrument.

Reliability Test

Table 4 Reliability Test

X1		X2	
Reliability Statistics		Reliability Statistics	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.881	8	0.905	10
X3		Y	
Reliability Statistics		Reliability Statistics	
Cronbach's Alpha	N of Items	Cronbach's Alpha	N of Items
0.863	8	0.939	8

Source: SPSS Data Processing (2025)

Based on table 4 reliability was assessed using Cronbach's Alpha, with a threshold value of 0.60 indicating acceptable internal consistency. The results show that all variables demonstrated high reliability: Human Resource Quantity (X1) recorded an alpha of 0.881 for 8 items, Communication (X2) scored 0.905 for 10 items, Workplace Infrastructure (X3/Z) obtained 0.863 for 8 items, and On Time Performance (Y) achieved the highest alpha of 0.939 for 8 items. Since all alpha values exceed 0.60, the measurement instruments for all variables are considered reliable and consistent.

Results and Discussion**Classical Assumption Tests**

Including normality test (Kolmogorov-Smirnov), multicollinearity test (tolerance and VIF), and heteroscedasticity test (Glejser test) to ensure compliance with linear regression assumptions

a. Normality Test (Kolmogorov-Smirnov)

Table 5 Normality Test (Kolmogorov-Smirnov)

One-Sample Kolmogorov-Smirnov Test

		Unstandardized Residual
N		165
Normal Parameters ^{a,b}	Mean	.0000000
	Std. Deviation	4.49050118
Most Extreme Differences	Absolute	.069
	Positive	.023
	Negative	-.069
Test Statistic		.069
Asymp. Sig. (2-tailed) ^c		.055
Monte Carlo Sig. (2-tailed) ^d	Sig.	.055
	99% Confidence Interval	Lower Bound .049
		Upper Bound .061

a. Test distribution is Normal.

b. Calculated from data.

c. Lilliefors Significance Correction.

d. Lilliefors' method based on 10000 Monte Carlo samples with starting seed 2000000.

Source: SPSS Data Processing (2025)

Based on table 5 normality assessment using the One-Sample Kolmogorov–Smirnov test indicated that the data were normally distributed. The test yielded an Asymp. Sig. (2-tailed) value of 0.055, which exceeds the 0.05 significance threshold, confirming that the data in this study follow a normal distribution pattern.

b. Multicollinearity Test (Tolerance and VIF)

Table 6 Multicollinearity Test (tolerance and VIF)

Table 3 Multicollinearity Test (Tolerance and VIF)								
		Coefficients ^a				Collinearity Statistics		
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Tolerance	VIF
		B	Std. Error	Beta				
1	(Constant)	10.400	3.709		2.804	.006		

Kuantitas_SDM_X1	.196	.093	.168	2.114	.036	.837	1.195
Komunikasi_X2	.217	.081	.219	2.688	.008	.802	1.247
Infrastruktur_Kerja_X3_Z	.188	.095	.148	1.983	.049	.954	1.048

a. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

Based on table 6 multicollinearity analysis (Table 4.46) shows that the Human Resource Quantity variable (X1) recorded a Tolerance value of 0.837 and a VIF of 1.195, Communication (X2) had a Tolerance of 0.802 and a VIF of 1.247, while Workplace Infrastructure (X3/Z) obtained a Tolerance of 0.954 and a VIF of 1.048. All Tolerance values exceeded 0.10 and VIF values were below 10, indicating the absence of multicollinearity among the independent variables.

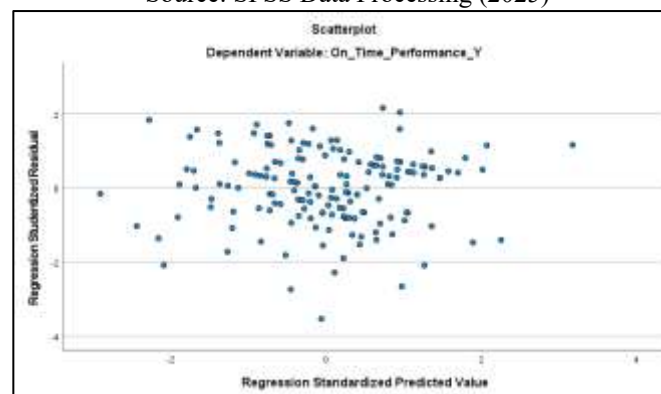
c. Heteroscedasticity Test (Glejser Test)

Table 7 Heteroscedasticity Test (Glejser Test)

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
1 (Constant)	2.913	2.225		1.309	0.19
Kuantitas_SDM_X1	0.049	0.056	0.075	0.878	0.38
Komunikasi_X2	-0.06	0.048	-0.106	-1.22	0.23
Infrastruktur_Kerja_X3_Z	0.046	0.057	0.064	0.801	0.42

a. Dependent Variable: Abs_Res1

Source: SPSS Data Processing (2025)



Source: SPSS Data Processing (2025)

Based on table 7 Human Resource Quantity variable (X1) shows a significance (Sig.) value of 0.381, Communication (X2) records 0.225, and Workplace Infrastructure (X3/Z) records 0.424. These values indicate the absence of heteroskedasticity in all three variables. Furthermore, based on the scatter plot in image point 4.6, the data points are dispersed randomly, leading conclusion that the relationships of variables are minimal or non-existent.

Autocorrelation Test

Table 8 Autocorrelation Test

Model Summary ^b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.381 ^a	.145	.129	4.532	2.112

a. Predictors: (Constant), Infrastruktur_Kerja_X3_Z, Kuantitas_SDM_X1, Komunikasi_X2

b. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

Analysis of Table 8 shows that the Durbin-Watson (DW) value is 2.112, with a lower bound (dL) of 1.6960 and an upper bound (dU) of 1.7953. Based on the criterion ($dL < DW < dU$) = (1.7953 < 2.112 < 2.2047), it can be concluded that no autocorrelation is present in the model.

Multiple Linear Regression Analysis

to test the influence of human resource quantity and communication on OTP.

Table 9 Multiple Linear Regression Analysis

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	10.400	3.709		2.804	.006
Kuantitas_SDM_X1	.196	.093	.168	2.114	.036
Komunikasi_X2	.217	.081	.219	2.688	.008
Infrastruktur Kerja X3 Z	.188	.095	.148	1.983	.049

a. Dependent Variable: On Time Performance Y

Source: SPSS Data Processing (2025)

Based on the results presented in Table 9 the multiple linear regression model examining the influence of Human Resource Quantity (X1), Communication (X2), and Work Infrastructure (X3) on On-Time Performance can be expressed as follows:

$$Y = a + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \varepsilon$$

$$Y = 10,400 + 0,196X_1 + 0,217X_2 + 0,188X_3 + 3,709$$

The constant value of 10.400 represents the estimated baseline of On-Time Performance when all predictor variables are equal to zero, reflecting the initial performance level without the influence of independent variables. The coefficient for X1 (0.196) indicates that a one-unit increase human resource quantity is associated with a 0.196-unit improvement in the performance, holding other factors constant. Similarly, the coefficient for X2 (0.217) suggests that each additional based of communication quality contributes 0.217 to performance improvement, ceteris paribus. The coefficient for X3 (0.188) implies that a one-unit increase in the work infrastructure quality enhances employee performance by 0.188 units, assuming other variable remain constant. The standard error of 3.709 represents the average deviation between predicted and actual performance values; lower values indicate higher predictive accuracy of the regression model.

Moderation Test

Using interaction test (Moderated Regression Analysis) to determine the role of workplace infrastructure in strengthening or weakening the relationship between independent variables and OTP.

a. Analisis Regresi Moderasi 2.1

Work Infrastructure as a Moderator in the Relationship between Human Resource Quantity and On-Time Performance.

Table 10 Analisis Regresi Moderasi 2.1

Model	Coefficients ^a				
	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	20.399	2.587		7.887	.000
Kuantitas_SDM_X1	.073	.130	.063	.561	.576
X1 Z	.008	.003	.272	2.434	.016

a. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

$$Y = a + \beta_1 X_1 + \beta_2 (X_1 \cdot Z) + \varepsilon$$

$$Y = 20,399 + 0,073(X_1) + 0,008 (X_1 \cdot Z) + 2,587$$

- The constant value (**20.399**) indicates the estimated baseline On-Time Performance when all predictor variables (X1, X1×Z, and Y) are equal to zero, representing the absence of any contribution from the independent variables in the model.
- The coefficient for **X1 (Human Resource Quantity)** is **0.073**, suggesting that for every one-unit increase in human resource quantity, On-Time Performance is expected to increase by 0.073 units, assuming other factors remain constant.

- The coefficient for the interaction term ($X1 \times Z$) is **0.008**, which implies that each one-unit increase in the moderating effect of work infrastructure strengthens the relationship between human resource quantity and On-Time Performance by 0.008 units.
- The standard error (**2.587**) reflects the average deviation between the predicted and actual On-Time Performance values. A smaller standard error denotes higher predictive accuracy of the regression model.

b. Analisis Regresi Moderasi 2.2

Work Infrastructure as a Moderator in the Relationship between Communication and On-Time Performance.

Table 11 Analisis Regresi Moderasi 2.2

Model	Coefficients ^a		Standardized Coefficients Beta	t	Sig.
	Unstandardized Coefficients B	Std. Error			
1 (Constant)	19.111	2.637		7.248	.000
Komunikasi X2	.126	.118	.127	1.067	.288
X2 Z	.006	.003	.243	2.036	.043

a. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

$$Y = a + \beta_1 X_2 + \beta_2 (X_2 \cdot Z) + \varepsilon$$

$$Y = 19,111 + 0,126(X_2) + 0,006 (X_2 \cdot Z) + 2,637$$

- The constant value (**19.111**) represents the projected On-Time Performance when all predictors (X_2 , $X_2 \times Z$, and Y) are set to zero, implying no influence from the independent variables.
- The coefficient for **X2 (Communication)** is **0.126**, indicating that each one-unit increase in communication quality is associated with an improvement of 0.126 units in On-Time Performance, with other variables held constant.
- The coefficient for the interaction term ($X_2 \times Z$) is **0.006**, meaning that each one-unit enhancement in the moderating factor (work infrastructure) amplifies the positive relationship between communication and On-Time Performance by 0.006 units.
- The standard error (**2.637**) demonstrates the average prediction error of the regression equation. Lower values correspond to more precise estimations of On-Time Performance.

Hypothesis Testing

Hypothesis testing was conducted to determine whether the examined variables exert significant direct or indirect effects, thereby guiding strategic improvements.

a. Partial Test (t-test)

For Models 1 and 2, the decision rule is:

- Reject H_0 if $t_{calculated} > t_{table}$ or $Sig < 0.05$
- Accept H_0 if $t_{calculated} < t_{table}$ or $Sig > 0.05$

Table 12 Partial Test (t-test) Model 1

Model	Coefficients ^a		Standardized Coefficients Beta	t	Sig.
	Unstandardized Coefficients B	Std. Error			
1 (Constant)	10.400	3.709		2.804	.006
Kuantitas SDM X1	.196	.093	.168	2.114	.036
Komunikasi X2	.217	.081	.219	2.688	.008
Infrastruktur Kerja X3 Z	.188	.095	.148	1.983	.049

a. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

Model 1:

$X_1 \rightarrow Y : t = 2.114 > 1.654, Sig = 0.036 \rightarrow \text{significant} \rightarrow H_1 \text{ accepted.}$

$X_2 \rightarrow Y : t = 2.688 > 1.654, Sig = 0.008 \rightarrow \text{significant} \rightarrow H_2 \text{ accepted.}$

$X_3 \rightarrow Y : t = 1.983 > 1.654, Sig = 0.049 \rightarrow \text{significant} \rightarrow H_3 \text{ accepted.}$

Table 13 Partial Test (t-test) Model 2

Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients		t	Sig.
	B	Std. Error	Beta			
1 (Constant)	20.109	1.883			10.676	.000
X1 Z	.004	.003	.151		1.438	.152
X2 Z	.005	.002	.234		2.226	.027

a. Dependent Variable: On_Time_Performance_Y

Source: SPSS Data Processing (2025)

Model 2: $X_1Z \rightarrow Y : t = 1.438 < 1.654, Sig = 0.152 \rightarrow$ not significant $\rightarrow H_5$ rejected. $X_2Z \rightarrow Y : t = 2.226 > 1.654, Sig = 0.027 \rightarrow$ significant $\rightarrow H_6$ accepted.**b. Simultaneous Test (F-test)**

Table 14 Simultaneous Test (F-test)

ANOVA ^a						
Model	Sum of Squares	df	Mean Square	F	Sig.	
1 Regression	560.399	3	186.800	9.094	b	
Residual	3306.995	161	20.540			
Total	3867.394	164				

a. Dependent Variable: On_Time_Performance_Y

b. Predictors: (Constant), Infrastruktur_Kerja_X3_Z, Kuantitas_SDM_X1, Komunikasi_X2

Source: SPSS Data Processing (2025)

The regression model yields $F = 9.094 > 2.66$ and $Sig < 0.05$, indicating that work infrastructure, human resource quantity, and communication jointly have a statistically significant impact on on-time performance (H_4 accepted).

c. Coefficient of Determination (R^2)Table 15 Coefficient of Determination (R^2) Multiple Regression

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.381 ^a	.145	.129	4.532

a. Predictors: (Constant), Infrastruktur_Kerja_X3_Z, Kuantitas_SDM_X1, Komunikasi_X2

Source: SPSS Data Processing (2025)

✓ **Multiple Regression :** $R^2 = 0.145$, indicating that 14.5% of on-time performance variance is explained by the predictors, with the remaining 85.5% attributed to factors outside the model.

Table 16 Coefficient of Determination (R^2) Moderated Regression – X_1 Output 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.266 ^a	.071	.065	4.695

a. Predictors: (Constant), Kuantitas_SDM_X1

Source: SPSS Data Processing (2025)

Table 17 Coefficient of Determination (R^2) Moderated Regression – X_1 Output 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.329 ^a	.108	.091	4.629

a. Predictors: (Constant), X_1_Z , Infrastruktur_Kerja_X3_Z, Kuantitas_SDM_X1

Source: SPSS Data Processing (2025)

✓ **Moderated Regression – X_1 :** Based of the comparison data from Table 16 and 17, R^2 : value in the first regression was 0.071 (7.1%), whereas after including the second regression equation, the R^2 increased to 0.108 (10.8%). These results indicate that the presence of work infrastructure (as a moderating variable) strengthens the relationship with of HR quantity and the achievement of On-Time Performance (OTP).

Table 18 Coefficient of Determination (R^2) Moderated Regression – X_2 Output 1

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.318 ^a	.101	.096	4.618

a. Predictors: (Constant), Komunikasi_X2

Source: SPSS Data Processing (2025)

Table 19 Coefficient of Determination (R^2) Moderated Regression – X_2 Output 2

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.355 ^a	.126	.110	4.582
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a. Predictors: (Constant), X2_Z, Infrastruktur_Kerja_X3_Z, Komunikasi_X2

Source: SPSS Data Processing (2025)

- ✓ **Moderated Regression – X_2** : Based of the comparison of data from Table 18 and 19, R^2 : value in the first regression was 0.101 (10.1%), while after including the second regression equation, the R^2 increased to 0.126 (12.6%). These findings indicate that work infrastructure (as a moderating) strengthens the relationship communication and the achievement On-Time Performance (OTP).

Discussion

a. Questionnaire Data Analysis

The questionnaire distributed within the Handling & Delivery Department of PT Aerofood Indonesia (Garuda Indonesia Group) was found to be both valid and reliable across all items measuring HR quantity, communication, and work infrastructure in relation to On-Time Performance (OTP). Statistical analysis confirmed data views up were normalization distributed (Asymp. Sig. 2-tailed = 0.55 > 0.05). No multicollinearity issues were detected among HR Quantity (X_1), Communication (X_2), and Work Infrastructure (X_3/Z), with Tolerance and VIF values within safe limits. Heteroskedasticity was absent, and Durbin-Watson (DW = 2.112) indicated no autocorrelation in the regression model.

b. Influence of HR Quantity on On-Time Performance

The results demonstrate that HR quantity positively and significantly affects OTP. Respondents reported scores ranging from 18 to 40, with an average of 29.47 (SD = 0.324), indicating generally adequate and consistent HR levels. This finding aligns with previous studies by Rahmasari (2021), Budirahayu (2024), and Arham (2023), which confirm that HR quantity contributes positively to OTP.

Survey data views that 84.2% of respondents agrees of employee selection criteria is appropriate, though 15.8% expressed doubt regarding the selection for Handling Staff. Additionally, 69% of Handling personnel did not fully meet the required skills, particularly English proficiency, which affects communication with on-duty flight attendants. Regarding education, 61.2% felt the educational level was sufficient, but 35.2% were unsure, as the department's workforce mainly consisted of high school graduates (70%) compared to diploma holders (13%). Training effectiveness was supported by 53.9% of respondents, yet 42.4% were doubtful due to a lack of certifications in areas such as Ramp Safety, Food Safety, Logistics & Supply Chain, and QHSE standards. Employee motivation was reported by 49.7% as adequate, though 43% expressed concern over slow career development and limited attention to interns, who comprised 37% of staff (contract: 18%; permanent: 45%).

c. Influence of Communication on On-Time Performance

Communication was found to positively and significantly impact OTP, with respondents reporting a mean score of 35.03 (SD = 0.381). These results align with studies by Ardiansyah (2019), Setyawati (2023), Jackson (2021), and Mikael (2021). While 42.4% of respondents supported current data collection methods, 55.2% expressed uncertainty due to ad hoc and closed data-gathering processes. Furthermore, 53.9% reported issues with information accuracy and verification. Although 47.2% were satisfied with information dissemination, 49.1% were concerned about inconsistent messaging. Only 42.4% believed the information was relevant, highlighting the need for centralized communication channels. Decision-making effectiveness was affirmed by 56.4%, though 32.7% expressed doubt, showing areas for improving employee engagement and communication.

d. Influence of Work Infrastructure on On-Time Performance

Work infrastructure positively and significantly influenced OTP, with scores ranging from 22 to 28.02 (SD = 0.297), lower than HR quantity and communication, indicating potential

for improvement. This finding aligns with Arham (2023), Zulaichah (2014), Siahaan (2023), and Tarigan (2022), who found infrastructure affects operational timeliness.

Survey responses indicated mixed perceptions: 47.9% agreed that handling technology was sufficient, but 46.1% expressed doubt due to equipment issues and spoilage incidents. Experience and skill levels were also seen as critical, with nearly half of respondents unsure about their impact on performance. Stakeholder commitment and effective communication were emphasized as essential to enhance operational outcomes.

e. Combined Effect of HR Quantity, Communication, and Work Infrastructure

Simultaneous analysis showed that HR quantity, communication, and Jobs infrastructure collective had positive and significant effect to OTP. The descriptive average was 29.06, indicating generally good OTP, though respondents expressed concerns about schedule consistency, team professionalism, and infrastructure influence. These results support previous research by Ardiansyah (2019), Zulaichah (2014), Siahaan (2023), Rahmasari (2021), and Budirahayu (2024).

f. Moderating Effect of Work Infrastructure on HR Quantity → On-Time Performance

Moderation analysis revealed that work infrastructure did not significantly strengthen the relationship between HR quantity and OTP ($t = 1.438 < 1.654$; $p = 0.152$), although it contributed 10.8% to the coefficient of determination. Previous studies, such as Rahmasari (2021), Budirahayu (2024), and Arham (2023), confirm the positive effect of HR quantity on OTP, while Zulaichah (2014) and Tarigan (2022) highlight the importance of infrastructure in operational efficiency. This study contributes by positioning work infrastructure as a supportive factor rather than an independent variable, facilitating team efficiency but not directly moderating HR impact.

g. Moderating Effect of Work Infrastructure on Communication → On-Time Performance

Work infrastructure significantly moderated the relationship between communication and OTP ($t = 2.226 > 1.654$; $p = 0.027$), increasing the coefficient of determination to 12.6%. While no prior studies have directly integrated communication, OTP, and infrastructure in a single model, related research emphasizes communication's role (Setiawan, 2022; Prasetyo, 2023) and digital infrastructure support (Yusuf, 2021; Handayani, 2024). Clear instructions and accurate information significantly impact OTP (Sari et al., 2020).

Infrastructure enhances communication effectiveness through:

1. Improved Information Clarity and Flow – Digital systems and internal communication devices facilitate faster and more accurate information delivery, reducing misunderstandings and supporting timely decision-making.
2. Enhanced Interdepartmental Coordination – Real-time communication tools and operational tracking systems allow teams to work efficiently, minimizing delays.

Faster Response to Operational Issues – Adequate infrastructure ensures prompt follow-up on operational challenges, directly supporting OTP achievement.

CONCLUSION

According to the results of this study, Human Resource Quantity (HR Quantity), Communication, and Work Infrastructure all have a no problem & statistically significant impact for On Time Performance (OTP) based of Handling & Delivery Department of PT Aerofood Indonesia (Garuda Indonesia Group). Despite ongoing issues in employee skills, training, and motivation, sufficient and appropriately skilled human resources support seamless operational procedures.

Despite certain areas needing work, such as data collection methods and clear communication, OTP is further supported by efficient communication through informed data

delivery, coordination, and decision-making. Although work infrastructure is mostly a supporting element, it improves operational efficiency and enhances internal communication. The research further reveals that, while Work Infrastructure improves the effect of communication on OTP, it does not significantly moderate the relationship of HR Quantity & OTP, emphasizing the importance of a well-developed infrastructure for fostering effective communication and inter-team collaboration.

These results suggest that the business should focus on enhancing employee selection and training to ensure that skills match job demands, especially in operational procedures and language fluency. To guarantee that information is provided openly, systematically, and is readily available to all personnel, internal communication needs to be improved.

Furthermore, improving work infrastructure, especially communication and operational efficiency technologies, may enhance coordination and decrease mistakes. Although our after-research offer's significant insights into for moderating influence until Work Infrastructure based on-link between communication and OTP, future studies should look into other factors such as organizational culture, leadership, technology-based management systems, training quality, and operational procedure management systems.

A better understanding of communication issues and infrastructure usage in improving operational performance may also be gained through the use of qualitative or mixed-method methods. This study is limited by its focus on one firm, which could limit its generalizability, its reliance on subjective questionnaire responses, and its analysis of only three variables, thereby ignoring other potentially important factors that influence OTP. In addition, the quantitative method restricts study of the qualitative features of operational issues. Recommendations For an in-depth understanding of the variables impacting On-Time Performance, future research should be extended to other areas, taking into account mixed-method approaches and including more variables.

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