

# Work Responsiveness, Work Efficiency, and Call Center Employee Performance at Persahabatan General Hospital: A Cross-Sectional Study

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## ABSTRACT

Background: Hospital call centers are a frontline service channel in which prompt and efficient employee work may influence the quality and continuity of patient communication. Objective: This study examined the associations of work responsiveness and work efficiency with call center employee performance at Persahabatan General Hospital. Methods: A quantitative cross-sectional design was used. The population and sample comprised all 40 call center employees, selected through total sampling. Questionnaire data were analyzed using multiple linear regression after diagnostic tests for normality, multicollinearity, and heteroscedasticity. Results: Work responsiveness was positively associated with performance ( $B = 0.273$ ,  $SE = 0.094$ ,  $t = 2.917$ ,  $p = .006$ ), as was work efficiency ( $B = 0.454$ ,  $SE = 0.106$ ,  $t = 4.273$ ,  $p < .001$ ). The overall model was significant,  $F(2, 37) = 28.051$ ,  $p < .001$ , and explained 60.3% of the variance in performance ( $R^2 = .603$ ; adjusted  $R^2 = .581$ ). The bivariate correlations of responsiveness and efficiency with performance were  $r = .638$  and  $r = .715$ , respectively (both  $p < .001$ ). Conclusion: Both work responsiveness and work efficiency were positively related to employee performance in this hospital call center. Because the data were cross-sectional and based on a small, single-site sample, the findings should be interpreted as associations rather than causal effects.

**Keywords:** call center; employee performance; work efficiency; work responsiveness; hospital service quality

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## 1. Introduction

Hospital call centers are an important interface between patients and health-service organizations. Employees in these units receive questions, provide information, direct patients to appropriate services, and often manage requests under time pressure. The source manuscript describes increased call volume during peak hours (07:00-10:00) and during disruptions of the BPJS online service system. Because patients may also depend on digital service channels, electronic service-quality dimensions are relevant to the continuity and usability of such interactions (Parasuraman et al., 2005). These conditions require employees to respond promptly and accurately while maintaining service continuity.

At the health-system level, quality health services are expected to be effective, safe, people-centred, timely, equitable, integrated, and efficient (World Health Organization et al., 2018). Responsiveness is also a central element of perceived service quality because users evaluate whether a service provider is willing and able to provide prompt assistance (Parasuraman et al., 1988; Grönroos, 1984). In a hospital call center, work responsiveness can therefore be understood as the promptness, accuracy, and attentiveness with which employees address patient needs.

Call center work is shaped by repeated service interactions, performance monitoring, workload, job design, and the degree of support available to employees. Prior research shows that employee well-being and service performance in call centers are related to how work is organized and monitored (Holman, 2003; Zapf et al., 2003; Deery et al., 2002). Human-resource practices may also be connected with performance in call centers, especially when monitoring and support are used to develop rather than merely control employees (Wood et al., 2006). These findings support examining employee-level work behaviours alongside service outcomes.

Work efficiency refers in this study to the ability to manage time, information, and other work resources to complete assigned tasks without unnecessary delay or rework. This construct is relevant to the job demands-resources perspective: high demands, such as call peaks and complex patient requests, can be managed more effectively when employees have adequate resources, skills, and work processes (Demerouti et al., 2001; Bakker & Demerouti, 2007). A supportive service climate may further connect organizational practices with employee service performance and customer outcomes (Schneider et al., 1998; Bowen & Schneider, 2014; Liao & Chuang, 2004).

Employee performance is not limited to the number of completed tasks. It can include task performance, contextual contributions, adaptability, and other behaviours that support organizational goals (Campbell et al., 1993; Borman & Motowidlo, 1993; Griffin et al., 2007). The Individual Work Performance Questionnaire literature likewise treats performance as a multidimensional construct that can be assessed across occupational settings (Koopmans et al., 2014). This perspective is appropriate for call center employees, whose performance depends on both the completion of service tasks and the quality of interaction with patients.

Although responsiveness and efficiency are frequently discussed in relation to service quality and employee performance, evidence from hospital call centers in Indonesia remains limited. The present study addresses this gap by examining whether work responsiveness and work efficiency are statistically associated with the performance of call center employees at Persahabatan General Hospital. The study tests three hypotheses: H1, work responsiveness is positively associated with employee performance; H2, work efficiency is positively associated with employee performance; and H3, work responsiveness and work efficiency jointly explain a significant proportion of variance in employee performance.

## 2. Methods

This study used a quantitative, cross-sectional design and was conducted in the call center unit of Persahabatan General Hospital. The design was appropriate for estimating the strength and direction of associations among the measured variables at one point in time; it does not permit causal conclusions.

The study population consisted of 40 call center employees. Because the entire accessible population was included, the study used total sampling (a census of the unit), and the final sample size was  $n = 40$ . Demographic characteristics and the data-collection period were not reported in the source manuscript and are therefore not inferred in this revision.

Work responsiveness (X1) and work efficiency (X2) were treated as independent variables, while call center employee performance (Y) was treated as the dependent variable. Data were collected using a questionnaire. Consistent with the service-quality literature, responsiveness was defined as the speed and accuracy of responding to patient needs (Parasuraman et al., 1988). Efficiency was defined as the effective use of time and work resources, and performance was defined as work behaviour and outcomes relevant to the unit's service goals (Campbell et al., 1993; Koopmans et al., 2014). The source manuscript did not report the number of questionnaire items, response anchors, evidence of validity, or reliability coefficients. These measurement details should be added before submission to a journal.

The data were analyzed using multiple linear regression. Before model estimation, the source analysis assessed normality, multicollinearity, and heteroscedasticity. The reported inferential tests included the individual coefficient test (t-test), the overall model test (F-test), and the coefficient of determination ( $R^2$ ). Statistical significance was evaluated at  $\alpha = .05$ . Regression diagnostics and the interpretation of coefficients followed standard multivariate guidance (Hair et al., 2019; Field, 2018). Consistent with statistical reporting guidance,  $p = .000$  is reported as  $p < .001$  rather than as an exact probability of zero (Wasserstein & Lazar, 2016).

The source manuscript did not provide an ethics approval number, informed-consent procedure, data-protection statement, or data-availability statement. These elements should be completed by the authors before submission, particularly because the study involved hospital employees.

### 3. Results

#### a. Diagnostic tests

The multicollinearity diagnostics indicated that work responsiveness and work efficiency each had a tolerance value of .715 and a VIF of 1.399. These values were within commonly used screening thresholds (tolerance  $> .10$  and VIF  $< 10$ ), suggesting no material multicollinearity between the predictors.

**Table 1. Regression diagnostics reported for the independent variables**

| Predictor           | Tolerance | VIF   | p for heteroscedasticity test |
|---------------------|-----------|-------|-------------------------------|
| Work responsiveness | .715      | 1.399 | .432                          |
| Work efficiency     | .715      | 1.399 | .086                          |

*Note. Both heteroscedasticity-test p-values exceeded .05. The source manuscript states that normality was assessed, but it does not report the corresponding statistic or plot.*

The reported significance values for the heteroscedasticity test were .432 for work responsiveness and .086 for work efficiency. Because both values exceeded .05, the reported diagnostic did not indicate heteroscedasticity.

#### b. Multiple regression model

The regression model explained 60.3% of the variance in call center employee performance ( $R^2 = .603$ ; adjusted  $R^2 = .581$ ). The overall model was statistically significant,  $F(2, 37) = 28.051$ ,  $p < .001$ , indicating that the two predictors jointly contributed to explaining variation in performance.

**Table 2. Multiple linear regression predicting call center employee performance**

| Predictor           | B    | SE    | t     | p      |
|---------------------|------|-------|-------|--------|
| Constant            | .762 | 2.961 | .257  | .798   |
| Work responsiveness | .273 | .094  | 2.917 | .006   |
| Work efficiency     | .454 | .106  | 4.273 | < .001 |

Note. Dependent variable = call center employee performance. Model fit:  $R^2 = .603$ ; adjusted  $R^2 = .581$ ;  $F(2, 37) = 28.051$ ,  $p < .001$ .

The estimated regression equation was:  $Y = 0.762 + 0.273X_1 + 0.454X_2 + e$ . Holding work efficiency constant, a one-unit increase in work responsiveness was associated with a .273-unit increase in performance ( $B = .273$ ,  $SE = .094$ ,  $t = 2.917$ ,  $p = .006$ ). Holding work responsiveness constant, a one-unit increase in work efficiency was associated with a .454-unit increase in performance ( $B = .454$ ,  $SE = .106$ ,  $t = 4.273$ ,  $p < .001$ ). Thus, the results support H1 and H2, while the significant F-test supports H3.

The larger unstandardized coefficient for work efficiency should not, by itself, be interpreted as proof that efficiency is more important than responsiveness unless the predictors were measured on identical scales. Standardized coefficients and confidence intervals were not reported in the source analysis.

#### c. Bivariate correlations

The correlation matrix showed positive associations among all three variables. Work responsiveness correlated with employee performance at  $r = .638$ , and work efficiency correlated with employee performance at  $r = .715$ ; both associations were statistically significant at  $p < .001$ . The correlation between work responsiveness and work efficiency was  $r = .534$  ( $p < .001$ ), which is consistent with the absence of problematic multicollinearity in the regression model.

**Table 3. Pearson correlations among study variables**

| Variable            | Work responsiveness | Work efficiency | Performance |
|---------------------|---------------------|-----------------|-------------|
| Work responsiveness | 1.000               | .534            | .638        |
| Work efficiency     | .534                | 1.000           | .715        |
| Performance         | .638                | .715            | 1.000       |

Note. All off-diagonal correlations were reported as significant at  $p < .001$  (two-tailed).

#### Discussion

This study examined the relationships of work responsiveness and work efficiency with call center employee performance at Persahabatan General Hospital. The findings show that both predictors were positively associated with performance, both individually and jointly. The model explained 60.3% of the observed variance, while 39.7% remained attributable to factors not included in the model. The results should be interpreted as evidence of statistical association rather than causal effects because the study was cross-sectional.

**a. Work responsiveness and employee performance**

Work responsiveness had a positive and statistically significant association with performance ( $B = .273$ ,  $p = .006$ ;  $r = .638$ ,  $p < .001$ ). This finding is theoretically plausible because call center employees perform service work through direct, often time-sensitive interactions. Service-quality models identify responsiveness and functional service delivery as important components of how service encounters are evaluated (Parasuraman et al., 1988; Grönroos, 1984). Research on service climate further suggests that organizational practices and the conditions supporting employees can shape service behaviours and customer-relevant outcomes (Schneider et al., 1998; Bowen & Schneider, 2014; Liao & Chuang, 2004). In practical terms, employees who respond promptly and accurately may be better able to complete core call center tasks and maintain effective patient communication.

**b. Work efficiency and employee performance**

Work efficiency showed the stronger bivariate association with performance in this sample ( $r = .715$ ,  $p < .001$ ), and its regression coefficient was positive and statistically significant ( $B = .454$ ,  $p < .001$ ). Call center employees operate under demands related to call volume, information processing, emotional interaction, and time constraints. The job demands-resources model predicts that such demands are more sustainable when employees have sufficient resources, skills, and supportive work arrangements (Demerouti et al., 2001; Bakker & Demerouti, 2007). Studies of call center work likewise emphasize job design, monitoring, supervisory support, and employee well-being as conditions that can influence service performance (Holman, 2003; Zapf et al., 2003; Deery et al., 2002; Wood et al., 2006).

The coefficient comparison must nevertheless be made cautiously. The reported coefficients are unstandardized, and the manuscript does not establish whether responsiveness and efficiency were measured on exactly the same scale. Consequently, the data support a positive association for both variables, but they do not establish that efficiency has a larger causal or relative effect.

**c. Joint contribution and practical implications**

The significant F-test and  $R^2$  of .603 indicate that responsiveness and efficiency jointly provide a meaningful statistical explanation of performance in this unit. This result is consistent with the view that performance is multidimensional and depends on both the execution of task-related behaviours and the broader work context (Campbell et al., 1993; Borman & Motowidlo, 1993; Rotundo & Sackett, 2002; Koopmans et al., 2014). For hospital managers, the findings support a combined improvement strategy: targeted communication and service training, a current knowledge base or call script, clear escalation procedures, queue and shift management, and efficiency monitoring that is developmental rather than punitive. The call center literature cautions that intensive monitoring without support may undermine employee well-being, whereas supportive job design and human-resource practices can help employees sustain service quality (Holman, 2003; Wood et al., 2006).

#### d. Limitations and future research

Several limitations qualify the findings. First, the study used a census of only 40 employees in one hospital, which limits statistical precision and generalizability. Second, the cross-sectional design prevents assessment of temporal order and causality. Third, the use of a questionnaire may introduce common-method and self-report bias. Fourth, the source manuscript does not report the instrument items, scale anchors, reliability, standardized coefficients, confidence intervals, or the numerical normality test. Finally, the remaining 39.7% of unexplained variance indicates that relevant factors, such as leadership, workload, work environment, motivation, technology, staffing, and reward systems, were not modeled. Future studies should use multi-site or longitudinal designs, validate the measures, report standardized effects and confidence intervals, and combine survey data with objective indicators such as response time, first-call resolution, accuracy, abandonment rate, and patient-service outcomes.

#### 4. Conclusion

Among the 40 call center employees included in this study, work responsiveness and work efficiency were each positively associated with employee performance. Responsiveness showed a significant association ( $B = .273$ ,  $p = .006$ ;  $r = .638$ ), and efficiency showed a significant association ( $B = .454$ ,  $p < .001$ ;  $r = .715$ ). Together, the predictors explained 60.3% of the variance in performance,  $F(2, 37) = 28.051$ ,  $p < .001$ . The findings suggest that hospital call center improvement should address both prompt, accurate service behaviour and efficient work processes. Because the study was cross-sectional, single-site, and based on a small questionnaire sample, these results should guide further validation and improvement efforts rather than be interpreted as proof of causality.

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