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WHICH DIMENSIONS OF WORK DISCIPLINE MATTER FOR EMPLOYEE PERFORMANCE? DOMINANCE AND ROBUSTNESS EVIDENCE FROM AN ISLAMIC HOSPITAL IN WEST SUMATRA, INDONESIA

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Abstract

This study examines how work discipline is associated with employee performance at Ibnu Sina Islamic Hospital, Padang Panjang, West Sumatra, and which dimensions of discipline carry that association. Existing discipline–performance studies typically report one overall coefficient and rarely test its sensitivity to measurement artefacts, ssiho this study positions itself as a dimension-level, robustness-oriented re-examination of a standard model. A cross-sectional survey of 104 randomly sampled employees (population N = 140) measured discipline with 17 items and performance with 19 items (both α = .92). Data were analysed with HC3-robust regression, bootstrap intervals, dominance analysis, and sensitivity checks. Discipline was strongly associated with performance (b = 0.82; β = .758; R^2 = .575). Responsibility, work awareness, and obedience to superiors accounted for about 77% of the explained variance, whereas attendance and work procedures accounted for about 23%. Attendance was the lowest-rated dimension and was consistent with administrative lateness records. Removing overlapping items and invariant responders reduced R^2 to between .40 and .56. The novelty lies in showing which discipline dimensions matter and how far conventional estimates are inflated, which gives hospital managers a more targeted basis for discipline policy.

Keywords: *Work discipline, employee performance, dominance analysis, hospital, Islamic organization*

1. Introduction

Human resources are the principal asset through which hospitals convert facilities and clinical expertise into safe, timely, and reliable services. Hospital managers therefore pay close attention to how employees comply with working rules and how well they perform their tasks. Work discipline, defined as employees' awareness of, and willingness to comply with, organisational regulations and prevailing social norms (Hasibuan, 2018), is among the most frequently studied antecedents of employee performance in Indonesian organisations. Studies in hospitals, public offices, and state-owned companies

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generally report that discipline is positively and significantly associated with performance or productivity. Apriyanti et al. (2022) found that work discipline affected the productivity of 85 employees of a postal service company in Madiun, and Mandak et al. (2026) found discipline to be the most dominant of three predictors of employee performance at a regional general hospital (n = 270). Pamungkas et al. (2023) reported a positive and significant coefficient in a hospital in Makassar (n = 67), Airlangga and Sulaimiah (2026) found that discipline predicted productivity more strongly than motivation in a provincial health office, and Sudirman and Baviga (2026) reported a positive effect of discipline on performance in a regency personnel agency (n = 37).

Research on the Ibnu Sina Islamic hospitals of West Sumatra, much of it by public administration scholars at Universitas Mohammad Natsir Bukittinggi and collaborators, has so far concentrated on other determinants. Delita et al. (2024) found that professionalism and work motivation were significantly related to employee performance at the Ibnu Sina hospital in Payakumbuh (n = 213), Yulianti et al. (2023) reported that age and length of service together accounted for 33.1% of employee productivity at the Ibnu Sina hospital in Bukittinggi (n = 212), and Assyahri et al. (2025) examined pharmacy service quality and patient satisfaction at the Ibnu Sina hospital in Simpang Empat. None of these studies examined work discipline as a predictor, which leaves a gap in the evidence for this hospital network.

Despite this consistency, three shortcomings characterise much of this literature. First, most studies summarise the relationship with a single coefficient and treat discipline as a unitary construct, even though it comprises conceptually distinct dimensions (attendance, adherence to work procedures, obedience to superiors, work awareness, and responsibility) that need not contribute equally to performance. Knowing which dimensions carry the association is more useful to managers than knowing that the overall association is positive. Second, discipline and performance are usually measured with the same self-report questionnaire, which exposes the association to common-method variance (Podsakoff et al., 2012), to careless or invariant responding (Meade & Craig, 2012), and, in some instruments, to content overlap when performance items explicitly mention discipline. Third, although attendance is the dimension that hospitals monitor most closely, the evidence rarely compares self-reported discipline with administrative records, and it seldom considers that digital attendance systems may themselves shape how discipline is experienced (Kartika Sari et al., 2026).

These issues are visible at Ibnu Sina Islamic Hospital in Padang Panjang, West Sumatra, one of six hospital units under the Islamic Hospital Foundation of West Sumatra (YARSI Sumbar). Discipline (*disiplin*) is one of the four core values (JADI: honesty, trustworthiness, discipline, and sincerity) that the hospital formally promotes. Working hours are regulated by the 2017 collective labour agreement between the foundation and the employees' union, with a five-minute tolerance at the start of each shift, and employees who are repeatedly late or fail to clock in or out receive a first warning letter (SP1). Nevertheless, administrative records for 2023 show that between 9 and 22 of the hospital's 140 employees (6.4%–15.7%) were flagged each month for lateness or missing attendance records. Preliminary interviews in June 2024 pointed to a mixture of personal reasons (oversleeping, commuting delays, forgetting to clock in) and technical friction

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with a smartphone attendance application whose location detection sometimes failed to match the hospital area.

The gap is therefore threefold: studies of the Ibnu Sina hospitals have not examined discipline, the wider literature seldom shows which discipline dimensions matter for performance, and it seldom shows how much of the conventional single-coefficient estimate survives when measurement artefacts are examined. This study pursues four objectives: (1) to estimate the association between work discipline and employee performance with inference that is robust to heteroscedasticity and non-normal residuals; (2) to decompose this association across five discipline dimensions with dominance analysis; (3) to test the sensitivity of the estimate to content overlap and invariant responding; and (4) to triangulate the attendance dimension with administrative records and interview evidence. The novelty lies in combining these four elements in a faith-based hospital in a secondary Indonesian city, a setting in which discipline has not yet been studied as a performance predictor, and in reporting a transparent range of estimates rather than a single figure. The study thereby contributes evidence on where hospital disciplinary efforts are likely to pay off most.

2. Literature Review

Work Discipline And Its Dimensions

Work discipline refers to employees' awareness of and willingness to comply with organisational rules and social norms (Hasibuan, 2018). It may arise from individual awareness or be enforced through managerial action such as warnings, suspension, or dismissal (Arvey & Jones, 1985), and enforcement is often organised progressively, with sanctions rising in severity after repeated violations (Sitanggang, 2016). Following Sitanggang (2016), this study operationalises discipline through five dimensions: attendance, work procedures, obedience to superiors, work awareness, and responsibility.

Internalisation And The Dimensions Of Discipline

The dimensions differ in how visible they are to management and in how far they depend on internal motivation. Attendance and adherence to work procedures are observable and can be monitored through clocking systems, supervisors' checks, and audits. Work awareness and responsibility reflect employees' own acceptance of the rules and their sense of ownership of outcomes. Self-determination theory distinguishes forms of regulation along a continuum from external control to integrated, self-endorsed regulation, and holds that more internalised regulation is associated with more persistent and higher-quality behaviour (Ryan & Deci, 2000). Applied to discipline, this suggests that dimensions closer to the internalised end should be more strongly related to performance than dimensions that can be satisfied by outward compliance alone. Obedience to superiors occupies an intermediate position because it combines hierarchical compliance with willingness to carry out instructions.

Islamic organisations add a further normative layer. The Islamic work ethic treats work as a means of personal growth and social contribution rather than an end in itself, and emphasises effort, transparency, and morally responsible conduct (Ali & Al-Owaihan,

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2008). In a hospital that adopts discipline as an explicit religious-organisational value, internalised responsibility may therefore be especially salient.

Digital Supervision Of Attendance

Many organisations now monitor attendance with smartphone applications that verify the employee's location. Kartika Sari et al. (2026) argue, on the basis of a Foucauldian literature review, that digital supervision shapes work discipline through several mechanisms, including continuous scrutiny, the narrowing of performance criteria, and the internalisation of self-responsibility, and that supervision is defensible to the extent that it is proportionate, transparent, and open to challenge by those who are supervised. Their principle of reciprocal visibility is relevant here: if an application mis-registers an employee's location and the employee cannot see or contest the record, recorded lateness may reflect system friction rather than a lack of discipline. Digital work culture has also been studied in Indonesian public administration, for example in a civil registration office where a work culture based on digital governance was examined as a determinant of public happiness (Assyahri & Bila, 2024). Research by public administration scholars at Universitas Mohammad Natsir Bukittinggi points to similar adoption barriers in West Sumatran public offices: in a nagari government office, digital systems were constrained by limited technological infrastructure and low digital literacy among officials, and resistance to change was linked to habit and to concerns about data security and possible added workload (Candra Efendi & Ningsih, 2025). A systematic review of village development planning in Indonesia likewise found technology integration to be suboptimal and stressed the need to strengthen governance systems and transparency (Ningsih et al., 2024). Rigid time-based rules can also generate strain. In a study of government treasurers, deadline pressure was the only significant direct predictor of burnout, and perceived organisational support did not neutralise deadlines imposed by external regulation (Paputungan et al., 2026).

Employee Performance

Employee performance is commonly understood as the quality and quantity of work that employees accomplish in line with their assigned responsibilities. This study measures it through six dimensions (quality, quantity, timeliness, effectiveness, independence, and commitment), which the original thesis adopted from Robbins's performance indicators as cited in Nur Aziz and Dewanto (2022).

Empirical evidence and hypothesis

Empirical studies consistently report positive associations between discipline and performance or productivity (Airlangga & Sulaimiah, 2026; Apriyanti et al., 2022; Mandak et al., 2026; Pamungkas et al., 2023; Sudirman & Baviga, 2026). Airlangga and Sulaimiah (2026), for instance, reported a standardised coefficient of .455 for discipline when motivation was included in the model, and found that effective use of working time was the strongest discipline dimension in their sample. Research on public-sector performance also increasingly models motivational and cultural pathways. Mokodompit et al. (2026) found that agile work culture was directly associated with village apparatus

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performance (β = .384) and that work motivation mediated the link between organisational commitment and performance, and Bahagia Gonibala et al. (2026) report that work motivation was the dominant predictor of employee performance in a local-government sample (β = .73; 41.9% of performance variance explained). These findings imply that discipline may operate partly through motivation. The same motivational emphasis appears in the Ibnu Sina hospital network, where professionalism and work motivation were significantly related to performance both separately and jointly (Delita et al., 2024), and individual characteristics such as age and length of service were related to productivity (Yulianti et al., 2023). Because the present study has no motivation measure, it examines the direct association only. Accordingly:

H1: Work discipline is positively associated with employee performance.

Beyond H1, the study asks three exploratory research questions. RQ1: Which dimensions of discipline carry the greatest weight in the association with performance? RQ2: Is self-reported attendance lower than the other dimensions, and is it consistent with administrative records? RQ3: How sensitive is the overall association to content overlap between items and to invariant responding?

3. Research Method

Research Approach

The study used a quantitative, cross-sectional survey design with an explanatory (associational) purpose. Work discipline was the independent variable and employee performance the dependent variable, both measured by employee self-report. Administrative attendance records and preliminary interviews were used for context and triangulation.

Types Of Research Data

The primary data were quantitative item-level responses to the questionnaire. Supporting data were quantitative (monthly counts of employees flagged for lateness or missing attendance entries) and qualitative (interview statements).

Research Data Sources

Primary data came from employees of Ibnu Sina Islamic Hospital in Padang Panjang, West Sumatra. Secondary data came from the hospital's human resources unit: the employee population (140 employees), the 2017 collective labour agreement, and monthly attendance records for 2023. Interviews on 19 June 2024 involved two employees and the head of the human resources unit. Fieldwork began in July 2024 and the data were analysed in 2025.

Techniques For Determining Respondents

The sample size was determined with Slovin's formula at a 5% margin of error (n = 140 / [1 + 140 × 0.05^2] = 103.7, rounded to 104), and respondents were selected by simple random sampling (Sugiyono, 2013). Respondent characteristics are summarised in Table 1.

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Research Instruments

Both constructs were measured with four-point Likert scales (1 = strongly disagree, 4 = strongly agree) without a neutral midpoint. The work discipline scale has 17 items covering five dimensions based on Sitanggang (2016): attendance (3 items), work procedures (4), obedience to superiors (3), work awareness (4), and responsibility (3). Sample items are "I arrive at work on time, before the prescribed starting time" and "I always wear the work uniform stipulated by the hospital." The employee performance scale has 19 items covering six dimensions: quality (4 items), quantity (3), timeliness (3), effectiveness (3), independence (3), and commitment (3). A sample item is "I can work under pressure without reducing the quality of my work." Scores were averaged within dimensions (1–4 metric) and summed across items for the regression analyses (discipline: 17–68; performance: 19–76).

Data Collection Techniques

Questionnaires were distributed directly to the selected employees. The cover letter explained the purpose of the study and assured respondents that their answers would remain confidential and be used only for research. Interview data were collected in a preliminary study, and attendance counts were obtained from the hospital's records.

Theoretical Framework

The study draws on three strands of theory. Discipline is conceptualised through its five dimensions (Hasibuan, 2018; Sitanggang, 2016); the contrast between externally enforced and internalised regulation is drawn from self-determination theory (Ryan & Deci, 2000); and the interpretation of attendance monitoring draws on the literature on digital supervision (Kartika Sari et al., 2026). The resulting framework expects discipline to be positively associated with performance (H1), with internalised dimensions carrying more weight than compliance-oriented dimensions (RQ1).

Data Analysis Techniques

The original analyses were run in SPSS; for this article the item-level data (n = 104) were re-analysed in Python (NumPy, SciPy, and statsmodels), and the original results (a = 16.563, b = 0.816, R^2 = .575) were reproduced exactly. Descriptive statistics and reliability coefficients were computed first. Performance was then regressed on discipline (summed scores). Residual diagnostics included Kolmogorov–Smirnov and Shapiro–Wilk tests, Glejser (1969) and Breusch–Pagan (1979) tests, and Cook's distance. Because the diagnostics indicated mild heteroscedasticity, inference is reported with HC3 heteroscedasticity-consistent standard errors (Long & Ervin, 2000) and percentile bootstrap intervals from 5,000 resamples (Efron & Tibshirani, 1993), together with Spearman's rank correlation.

Dimension-level analyses comprised a correlation matrix, a multiple regression of performance on the five dimension scores (with variance inflation factors), and dominance analysis (Budescu, 1993; Azen & Budescu, 2003), which averages each

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predictor's incremental R^2 across all possible subset models; bootstrap intervals (2,000 resamples) were computed for dominance shares. Attendance was compared with the other dimensions using paired t tests with Holm (1979) correction. The grouping of dimensions into an internalised composite and a compliance composite was decided after inspecting the dominance results and is reported as exploratory. All tests were two-tailed with $\alpha = .05$.

Data Credibility

Reliability was computed on the full sample ($n = 104$). Cronbach's alpha was .916 for discipline and .923 for performance, and corrected item–total correlations ranged from .340 to .750 (discipline) and from .480 to .710 (performance), so no item fell below .30 (Nunnally & Bernstein, 1994). Credibility was further examined through sensitivity analyses that re-estimated the association (a) after removing four performance items that explicitly mention discipline (items 9, 10, 12, and 19) and two discipline items that refer to outcomes (items 10 and 13), (b) after excluding respondents who gave identical answers to all 36 items or to 30 or more consecutive items (Meade & Craig, 2012), and (c) under the most conservative combination of the two. Discriminant validity between the scales was assessed with the heterotrait–monotrait ratio (HTMT; Henseler et al., 2015) and Harman's single-factor test, and dimension–performance correlations were corrected for attenuation (Spearman, 1904). Triangulation with administrative records and interviews supported the interpretation of the attendance results.

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4. Result

Respondent Characteristics

Table 1. Characteristics of Respondents (n = 104)

Variable	Category	Frequency	%
Gender	Male	33	31.7
	Female	71	68.3
Age (years)	<20	3	2.9
	21–30	35	33.7
	31–40	41	39.4
	41–50	22	21.2
	≥51	3	2.9
Education	Senior high school	30	28.8
	Diploma (D1–D3)	51	49.0
	Bachelor's/D4	23	22.1
Employment status	Contract	29	27.9
	Permanent	75	72.1
Tenure (years)	0–10	59	56.7
	11–20	35	33.7
	21–30	9	8.7
	31–40	1	1.0
Position	General/administrative	24	23.1
	Nurse/midwife	43	41.3
	Supporting staff	37	35.6
Total		**104**	**100.0**

Note. Percentages are of the 104 respondents. Source: respondent-profile tables in the first author's undergraduate thesis (2025).

Most respondents were female (68.3%), permanent employees (72.1%), aged 31–40 years (39.4%), diploma holders (49.0%), and nurses or midwives (41.3%); 56.7% had worked for ten years or less.

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Descriptive statistics and reliability

Table 2. Descriptive Statistics and Reliability of the Scales

Scale / dimension	Items	M	SD	95% CI of M	α
Work discipline (total)	**17**	**3.40**	**0.34**	**[3.33, 3.47]**	**.916**
Attendance	3	3.27	0.40	[3.19, 3.34]	.561
Work procedures	4	3.50	0.40	[3.42, 3.57]	.782
Obedience to superiors	3	3.40	0.43	[3.32, 3.48]	.777
Work awareness	4	3.38	0.40	[3.30, 3.46]	.774
Responsibility	3	3.44	0.41	[3.36, 3.51]	.675
Employee performance (total)	**19**	**3.36**	**0.33**	**[3.29, 3.42]**	**.923**
Quality	4	3.34	0.40	[3.27, 3.42]	.734
Quantity	3	3.34	0.39	[3.27, 3.42]	.712
Timeliness	3	3.38	0.42	[3.29, 3.46]	.774
Effectiveness	3	3.38	0.39	[3.30, 3.45]	.662
Independence	3	3.34	0.39	[3.26, 3.42]	.667
Commitment	3	3.36	0.40	[3.28, 3.44]	.745

Note. Means are on the 1–4 response metric (item average). $N = 104$.

Employees rated both discipline ($M = 3.40$, $SD = 0.34$) and performance ($M = 3.36$, $SD = 0.33$) high on the four-point scale. Responses were concentrated in the upper categories: 98.3% of all 3,744 item responses were 3 ("agree", 58.9%) or 4 ("strongly agree", 39.4%), which indicates a ceiling effect and restricted range. Subscale alphas ranged from .561 to .782. The lowest was attendance (α = .561), a three-item subscale that includes the absolutely worded item "I feel that I have never been late", which has the lowest corrected item–total correlation of the instrument ($r = .335$).

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Association between discipline and performance (H1)

Table 3. Simple Linear Regression of Employee Performance on Work Discipline

Statistic	Estimate
Intercept (a)	16.563 (SE = 4.035)
Slope (b), unstandardised	0.816 (OLS SE = 0.069; HC3 SE = 0.071)
95% CI of b, HC3	[0.676, 0.957]
95% CI of b, bootstrap	[0.670, 0.945]
$t(102)$, p	11.75, < .001
Standardised β (= r) [95% CI]	.758 [.663, .830]
Spearman's ρ	.723
R^2 / adjusted R^2	.575 / .571
95% bootstrap CI of R^2	[.415, .723]
$F(1, 102)$	138.15, p < .001
Cohen's f^2	1.35
Standard error of estimate	4.09

Note. Discipline is the summed score (17–68) and performance the summed score (19–76). The bootstrap used 5,000 resamples.

Discipline was positively associated with performance. Each additional point on the summed discipline score was associated with 0.82 more points on the summed performance score (HC3 95% CI [0.68, 0.96]), p < .001, and discipline explained 57.5% of the variance in performance (Table 3). A one-standard-deviation difference in discipline (5.80 points) corresponded to a 4.74-point (0.76 *SD*) difference in performance. The effect size is large (f^2 = 1.35; Cohen, 1988), and the rank-based estimate was similar (ρ = .723). H1 was supported.

Residual diagnostics gave a mixed picture. No case was influential (maximum Cook's D = .166). The Kolmogorov–Smirnov test did not reject normality (p = .523), but the Shapiro–Wilk test did (p = .004), and the Glejser test (slope p = .022) and the Breusch–Pagan test (p = .027) indicated mild heteroscedasticity. A quadratic term was borderline (b = .026, p = .050) and raised R^2 by only .016, so the linear specification was retained. Because of these diagnostics, HC3 and bootstrap intervals are reported; they were almost identical to the conventional interval, so inference about H1 does not depend on the assumption of homoscedastic, normal errors.

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Dimension-level analysis (RQ1)

Table 4. Correlations between Discipline Dimensions and Performance Dimensions

Discipline dimension	Quality	Quantity	Timeliness	Effectiveness	Independence	Commitment	Total performance
Attendance	.447	.423	.539	.436	.301	.544	.545
Work procedures	.543	.460	.477	.398	.295	.611	.568
Obedience to superiors	.614	.450	.605	.553	.389	.638	.662
Work awareness	.599	.574	.656	.556	.438	.674	.708
Responsibility	.656	.533	.565	.539	.469	.685	.701

Note. N = 104. All correlations are significant at $p < .01$.

Every discipline dimension correlated positively with every performance dimension (r = .295–.685; Table 4). The discipline dimensions were themselves moderately to strongly intercorrelated (r = .511–.718), so their unique contributions were examined with multiple regression and dominance analysis (Table 5).

Table 5. Multiple Regression of Performance on the Five Discipline Dimensions, with General Dominance Analysis

Dimension	b	β	HC3 SE	*p* (HC3)	VIF	Dominance ΔR^2	Share of R^2 (%) [95% CI]
Attendance	1.31	.085	1.60	.414	2.11	.071	11.3 [4.8, 21.1]
Work procedures	−0.95	−.060	1.74	.586	2.73	.073	11.6 [7.2, 18.1]
Obedience to superiors	3.37	.230	1.19	.006	2.69	.130	20.6 [13.7, 27.6]
Work awareness	5.06	.326	1.67	.003	2.47	.174	27.6 [17.2, 38.6]
Responsibility	5.18	.336	1.14	< .001	1.99	.182	28.9 [20.1, 38.7]

Note. Model R^2 = .631, adjusted R^2 = .612, $F(5, 98) = 33.50$, $p < .001$. Dominance ΔR^2 is the average incremental R^2 across all subset models; shares sum to 100%. Bootstrap intervals use 2,000 resamples.

The five dimensions together explained 63.1% of the variance in performance (adjusted R^2 = .612). Three dimensions retained significant unique coefficients with HC3 standard errors: responsibility (β = .336, $p < .001$), work awareness (β = .326, p = .003), and obedience to superiors (β = .230, p = .006). Attendance (β = .085, p = .414) and work procedures (β = −.060, p = .586) did not. Multicollinearity was moderate (VIF ≤ 2.7). In

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the dominance analysis (Table 5 and Figure 1B), responsibility (28.9%), work awareness (27.6%), and obedience to superiors (20.6%) jointly accounted for 77.1% of the explained variance, whereas work procedures (11.6%) and attendance (11.3%) accounted for 22.9%. The bootstrap intervals overlap considerably, so the order of adjacent dimensions should not be over-interpreted; attendance had the smallest share in 56% of the resamples.

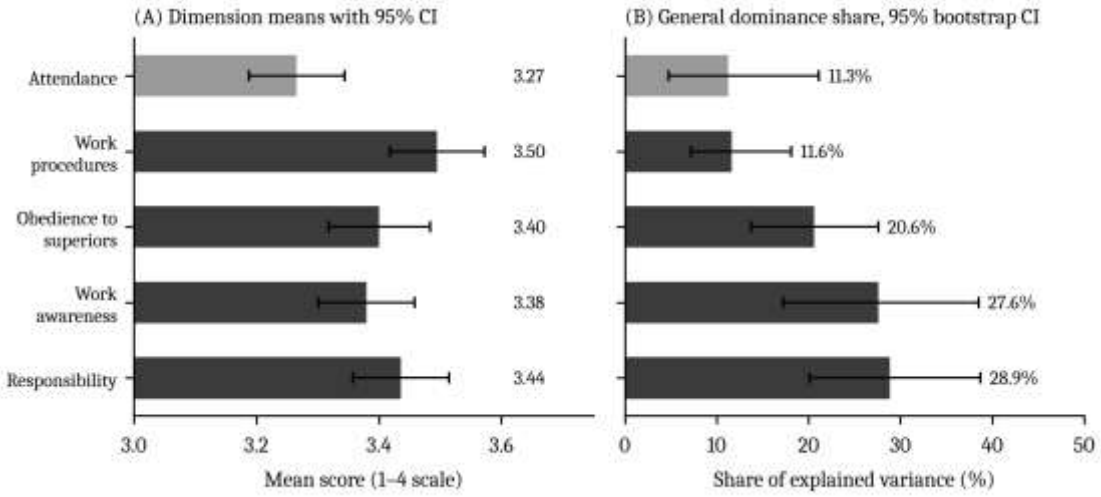


Figure 1. (A) Mean Scores of the Five Discipline Dimensions; (B) Share of Explained Variance in Performance (General Dominance)

Note. Panel A's axis starts at 3.0. Grey bars mark attendance. Error bars are 95% confidence intervals (panel A) and 95% bootstrap intervals (panel B).

As an exploratory summary, dimension scores were combined into an internalised composite (work awareness and responsibility) and a compliance composite (attendance and work procedures). The internalised composite had a much larger standardised coefficient (β = .669, 95% bootstrap CI [.456, .830]) than the compliance composite (β = .151, [−.033, .370]); the difference between the two coefficients was reliable (95% CI [.092, .849]), and the model explained 60.9% of the variance (composite correlation r = .682). Because this grouping was chosen after inspecting the dominance results, it should be read as hypothesis-generating.

Attendance, administrative records, and interviews (RQ2)

Attendance was the lowest-rated discipline dimension (M = 3.27). It scored significantly lower than work procedures (Δ = −0.23, d_z = −0.71), obedience to superiors (Δ = −0.13, d_z = −0.39), work awareness (Δ = −0.11, d_z = −0.29), and responsibility (Δ = −0.17, d_z = −0.43); all Holm-adjusted $p \leq .003$. Within the attendance subscale, the lowest item was "I feel that I have never been late" (M = 2.96): 21 of 104 respondents (20.2%, 95% Wilson CI [13.6, 28.9]) disagreed or strongly disagreed with it, whereas none disagreed with the item on arriving before the starting time and only one disagreed with the item on returning from breaks on time.

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Administrative records for 2023 flagged between 9 and 22 employees per month for lateness or missing attendance entries (6.4%–15.7% of 140 employees; mean = 14.3, *SD* = 4.0, or 10.2% per month), with peaks in March (22), July (20), and December (17). The two sources measure different things in different periods (any self-acknowledged lateness in the survey versus threshold-based flags in 2023) and cannot be compared formally, but they point in the same direction. The interviews added two explanations. One employee (29 years old) reported that the location map in the attendance application sometimes failed to match the hospital area when clocking in. Another employee (27 years old) attributed lateness to personal reasons: oversleeping before the morning shift, traffic when travelling from his home town, and forgetting to clock in or out. The head of the human resources unit identified lateness, missing clock-in or clock-out records, and incomplete uniform attributes as the main disciplinary problems.

Attendance was also the dimension whose association with performance appeared weakest (r = .545, Table 4); its correlation with performance was lower than that of the average of the other four dimensions (r = .770; difference, 95% CI [−.377, −.089]). This ranking must be interpreted together with measurement reliability. After correction for attenuation, the correlations with total performance were .756 for attendance, .668 for work procedures, .781 for obedience to superiors, .838 for work awareness, and .888 for responsibility. Attendance therefore moved from the lowest to a middle position, which indicates that its weak observed association is at least partly an artefact of the low reliability of its three-item scale (α = .561). Work procedures, which has acceptable reliability (α = .782), had the lowest corrected correlation.

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Sensitivity analyses (RQ3)

Table 6. Sensitivity of the Discipline–Performance Association to Item Overlap and Invariant Responding

Specification	n	r	R^2	95% bootstrap CI of R^2	b [95% CI]	HC3
S1 Original scales (17 × 19 items)	**104**	**.758**	**.575**	**[.415, .720]**	**0.82**	**[0.68, 0.96]**
S2 Performance items that mention discipline removed (15 items)	104	.731	.535	[.375, .682]	0.63	[0.51, 0.74]
S3 Discipline items that refer to outcomes removed (15 items)	104	.749	.562	[.396, .716]	0.92	[0.75, 1.08]
S4 Both scales purged (15 × 15 items)	104	.722	.521	[.363, .674]	0.70	[0.57, 0.83]
S5 Fully invariant responders excluded (36 identical answers)	93	.683	.466	[.293, .637]	0.72	[0.55, 0.89]
S6 Long-string responders excluded (≥30 identical consecutive answers)	89	.657	.432	[.249, .610]	0.69	[0.51, 0.86]
S7 Most conservative: S4 plus S5	93	.635	.403	[.227, .573]	0.61	[0.45, 0.77]

Note. The summed scores of the retained items were used in each specification; b is therefore not comparable across specifications that use different numbers of items.

Removing the four performance items that mention discipline lowered R^2 from .575 to .535; removing the two outcome-referencing discipline items lowered it to .562, and removing both sets lowered it to .521 (Table 6). Response patterns mattered more. 11 respondents (10.6%) gave identical answers to all 36 items (6 answered 3 throughout and 5 answered 4 throughout), 19 did so for the discipline items and 22 for the performance items, and 15 gave 30 or more identical consecutive answers. Excluding the fully invariant responders reduced R^2 to .466, excluding long-string responders reduced it to .432, and the most conservative specification gave .403 (r = .635). The association therefore remained large in every specification, but the conventional estimate overstated it by roughly .109–.172 in R^2 terms.

The dimension-level pattern was also stable. Without the invariant responders (n = 93), responsibility (31.6%), work awareness (29.4%), and obedience to superiors (21.7%) accounted for 82.7% of the explained variance, only those three dimensions kept significant unique coefficients, attendance remained the lowest-rated dimension (M = 3.24 versus 3.42 for the others), and the internalised composite (β = .649, [.431, .814]) again exceeded the compliance composite (β = .102, [−.095, .333]; difference [.120, .888]). Finally, the two scales were empirically related but distinguishable: HTMT was 0.83 (0.77

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without invariant responders), below the .85 benchmark, and the first unrotated factor of the 36 items explained 38.6% of the variance (eight eigenvalues exceeded 1). These indicators do not rule out common-method variance, which cannot be separated from substantive covariance in a single-source design (Podsakoff et al., 2012).

5. Discussion

Overall association

Discipline was strongly associated with performance (R^2 = .575; r = .758), a result that held under heteroscedasticity-consistent and bootstrap inference and remained large (R^2 between .403 and .562) when content-overlapping items and invariant responders were removed. H1 was therefore supported, in line with studies that report positive discipline–performance or discipline–productivity associations (Airlangga & Sulaimiah, 2026; Apriyanti et al., 2022; Mandak et al., 2026; Pamungkas et al., 2023; Sudirman & Baviga, 2026). The standardised coefficient found here is larger than the β = .455 reported for discipline by Airlangga and Sulaimiah (2026), although theirs came from a model that also contained motivation, so the two are not directly comparable. The size of the present estimate is probably inflated by shared method variance and by the artefacts documented above; the most conservative estimate (R^2 = .403) is the more cautious benchmark.

Which Dimensions Matter

The association was not evenly distributed across dimensions. Responsibility, work awareness, and obedience to superiors accounted for about 77% of the explained variance and were the only dimensions with significant unique coefficients, whereas attendance and work procedures accounted for about 23% and added nothing once the other dimensions were controlled. The pattern persisted when invariant responders were removed (83% versus 17%). This is consistent with the self-determination perspective that more internalised forms of regulation are more closely related to the quality of behaviour (Ryan & Deci, 2000), and with the emphasis on morally responsible conduct in the Islamic work ethic (Ali & Al-Owaihan, 2008), which the hospital reinforces by listing discipline among its JADI values. It also echoes the argument that discipline is formed through internalisation and self-responsibility, not through surveillance alone (Kartika Sari et al., 2026). In practical terms, an employee who is punctual and follows procedures but does not feel responsible for outcomes is not what the data describe as high-performing. The grouping of dimensions into internalised and compliance-oriented sets was made after inspecting the results and requires confirmation in an independent sample.

Two cautions qualify this reading. Dimension scores contain measurement error, which attenuates correlations and unique coefficients in proportion to their unreliability. After correction for attenuation (Spearman, 1904), attendance correlated .756 with total performance, a mid-range value among the dimensions (.668–.888), so its low rank in Table 4 reflects, at least in part, the weak reliability of a three-item subscale and not necessarily a weak substantive association. Work procedures, by contrast, was measured

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with acceptable reliability and still had the lowest corrected correlation and no unique contribution, which suggests that following procedures matters less than accepting responsibility for the work. This does not contradict the case for standardised procedures in public service, which Assyahri and Latifah (2025) identify, together with apparatus competence, as a step towards aligning service performance with community expectations; it indicates that, in this sample, procedural adherence alone added little to employees' self-rated performance once responsibility and awareness were taken into account. Whether attendance contributes uniquely to performance cannot be settled with the present instrument; objective attendance logs would be a stronger test. The pathway literature adds a further caution: because work motivation and work culture are associated with performance in comparable public organisations (Bahagia Gonibala et al., 2026; Mokodompit et al., 2026), part of the discipline effect observed here may be shared with, or transmitted through, motivation, which this study did not measure.

The Attendance Gap And Digital Supervision

Attendance was the hospital's weakest discipline dimension in level terms, and this difference is not attenuated by random measurement error. It scored lower than every other dimension (differences of 0.11–0.23 scale points), and one in five employees (20.2%) did not endorse the statement that they have never been late, about twice the monthly share of employees flagged administratively (10.2%). The survey item and the administrative flags differ in period and definition, but they are compatible with a picture in which formal sanctions capture only part of the lateness that employees themselves recognise. The interviews suggest that this gap has two sources: personal and commuting factors, and technical friction with a geofenced attendance application. Such friction is consistent with local evidence that digital public-sector systems are held back by infrastructure limits, low digital literacy, and workload concerns, and that digital training and infrastructure strengthening are needed (Candra Efendi & Ningsih, 2025). In the terms of Kartika Sari et al. (2026), a monitoring tool is easier to defend when it is transparent and open to challenge; when location detection fails and employees cannot see or contest the log, recorded non-compliance may partly reflect system design rather than conduct. Rigid time rules may also impose strain that support arrangements cannot fully absorb, as Paputungan et al. (2026) found for externally imposed reporting deadlines. The contrast with the provincial health office studied by Airlangga and Sulaimiah (2026), where effective use of working time was the strongest discipline dimension, suggests that the attendance gap is context-specific and therefore addressable.

Methodological Implications

Removing items that mention discipline lowered R^2 only modestly (.575 to .521), but excluding the 11 fully invariant responders lowered it more (.466), and the most conservative specification gave .403. Content overlap and invariant responding therefore inflate the conventional estimate, but they do not account for it. Restriction of range (98.3% of responses in the top two categories) works in the opposite direction by attenuating correlations, so the net bias cannot be signed with confidence. The HTMT

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value of 0.83 lies below the usual .85 benchmark (Henseler et al., 2015) but close enough to suggest that the two self-report scales are not fully distinct empirically. We recommend that future discipline–performance studies report such sensitivity checks rather than a single coefficient.

Practical Implications

Three implications follow. First, hospital management should invest in internalised discipline, not only in sanctions. Hasibuan (2018) identifies leaders' example, fairness, and firmness of rules among the determinants of discipline; visible leadership role-modelling, consistent and fair application of rules, and explicit links between daily tasks and the JADI values can strengthen responsibility and work awareness, the dimensions that carried most of the association with performance. Second, the attendance system should be redesigned to support compliance: calibrate location detection, provide a short grace window for failed location matching, train employees in using the application (Candra Efendi & Ningsih, 2025), let employees see and request correction of their own records (reciprocal visibility; Kartika Sari et al., 2026), keep the governance of the system transparent (Ningsih et al., 2024), and offer coaching for recurring lateness before progressive sanctions are applied. Staff who commute from other towns may need scheduling support, and workload planning matters because punctuality problems also surface on the service side: at the Ibnu Sina hospital in Simpang Empat, pharmacy waiting time was the lowest-rated service aspect and the authors recommended adding staff during peak hours (Assyahri et al., 2025). Third, performance measurement should be strengthened by avoiding items that name discipline, using scales with a neutral midpoint or more response categories, adding attention checks, and combining self-ratings with supervisor ratings and objective attendance logs.

Limitations And Future Research

The design is cross-sectional and based on a single hospital and a single source, so the results describe associations rather than causal effects and cannot be generalised without replication; both constructs were self-rated and may share method variance and leniency. The sample was small (n = 104), and respondent-level demographic data were not available in the data file, so subgroup comparisons by position, tenure, or employment status were not possible, even though tenure and age have been linked to productivity in a sister hospital (Yulianti et al., 2023). The attendance subscale has only three items and low reliability. The dimension grouping used in the composite analysis was post hoc. The administrative records (2023) and the survey (2024–2025) refer to different periods and definitions, and the interview evidence comes from three informants. Future research should use multi-hospital and longitudinal designs, add motivation as a mediator (Bahagia Gonibala et al., 2026; Mokodompit et al., 2026; Sudirman & Baviga, 2026), measure the Islamic work ethic directly, and link survey responses to objective attendance logs and supervisor-rated performance.

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6. Conclusion

This study asked which dimensions of work discipline matter for employee performance in an Islamic hospital in West Sumatra and how robust the conventional discipline–performance estimate is. Work discipline was strongly and robustly associated with self-rated performance (R^2 between .403 and .562 depending on the treatment of overlapping items and invariant responders). The association was carried mainly by responsibility, work awareness, and obedience to superiors, while attendance and adherence to procedures added little unique explanatory power. Attendance was nevertheless the hospital's weakest dimension, and the evidence suggests that part of this weakness reflects personal circumstances and the design of the attendance system. The role of attendance in performance cannot be settled with the present, low-reliability subscale. The study contributes dimension-level evidence, a transparent range of estimates, and a triangulated reading of attendance, and it suggests that hospitals should combine efforts to build internalised responsibility with a fairer, more transparent attendance system.

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