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Examining Employee Attrition Through Job Attitudes and Work Demands: An Empirical Analysis Using Logistic Regression

Dr. M. Kavitha

Associate Professor Siddhartha Institute of Computer Sciences Department of Business Management Hyderabad, Telangana, India.

Abstract: Purpose: Employee attrition imposes direct replacement costs and indirect losses of knowledge, productivity and morale. This study examines how job attitudes (job satisfaction, environment satisfaction, relationship satisfaction, job involvement and work-life balance) and work demands (overtime, frequent business travel, commuting distance and career stagnation) relate to the likelihood that an employee leaves the organisation.

Design/methodology/approach: Drawing on the job demands–resources model, conservation of resources theory and social exchange theory, nine hypotheses were tested on the publicly available IBM HR Analytics Employee Attrition and Performance dataset (N = 1,470; 237 leavers). Welch t-tests, chi-square tests of association and hierarchical binary logistic regression were used, with demographic and compensation variables as controls.

Findings: Overtime was the strongest single predictor of attrition: employees working overtime had 5.79 times the odds of leaving, after controls (95% CI 4.08–8.20). Each one-point increase in job involvement, environment satisfaction and job satisfaction reduced the odds of leaving by 41%, 34% and 33% respectively. Frequent travel, longer commutes and more years since the last promotion raised attrition risk, while longer tenure with the current manager and more training lowered it. Job attitudes added significantly to a controls-only model (likelihood-ratio $\chi^2 = 71.0$, $p < .001$) and work demands added further ($\chi^2 = 172.2$, $p < .001$); the full model achieved an area under the ROC curve of 0.84. Contrary to expectation, job satisfaction and work-life balance did not buffer the effect of overtime. Attrition rose from 3.8% among employees with no risk factors to 48.4% among those with four.

Practical implications: Managing workload and overtime, improving the work environment, building stable supervisory relationships and maintaining career progression offer the most promising levers for retention.

Originality/value: The study integrates attitudinal and structural predictors of attrition in a single hierarchical model and shows that structural work demands explain more variance than attitudes, a finding with direct implications for HR analytics and retention policy.

Keywords: Employee attrition; Turnover; Job satisfaction; Job involvement; Work-life balance; Overtime; Job demands–resources model; Logistic regression; HR analytics; Organisational behaviour

1. Introduction

Retaining capable employees is one of the most persistent challenges in organisational behaviour and human resource management. When an employee leaves voluntarily, the organisation bears the direct costs of recruitment, selection and training of a replacement, and the indirect costs of lost tacit knowledge, disrupted client relationships, reduced team cohesion and a period of lower productivity while the newcomer learns the role. Meta-analytic evidence shows that higher turnover rates are associated with lower organisational performance (Hancock et al., 2013), and the effect is particularly damaging where work depends on accumulated firm-specific knowledge (Shaw et al., 2005).

For more than a century, scholars have sought to explain why people leave their jobs (Hom et al., 2017). Classic theories emphasised the perceived desirability and ease of movement (March & Simon, 1958) and the cognitive sequence through which dissatisfaction leads to thoughts of quitting, job search and eventual departure (Mobley, 1977). Later work broadened the focus to include the many links that embed people in their jobs and communities (Mitchell et al., 2001) and the shocks that can trigger departure even among satisfied employees (Lee & Mitchell, 1994). Meta-analyses consistently identify job satisfaction, organisational commitment, job involvement, supervisory relations and workload as correlates of turnover (Griffeth et al., 2000).

Despite this large literature, two gaps motivate the present study. First, attitudinal predictors such as satisfaction are frequently studied separately from structural features of the job such as overtime, travel and promotion opportunities. Yet organisations can act directly on structural features, whereas attitudes are outcomes of many influences. Understanding the relative contribution of each group of predictors is therefore of practical as well as theoretical value. Second, the rise of HR analytics has made employee records available for predictive modelling, but much of this work is atheoretical, reporting classification accuracy without testing hypotheses grounded in organisational behaviour theory.

This study addresses these gaps by testing a theoretically grounded model of attrition on a widely used HR analytics dataset. It asks three questions:

1. How strongly are job attitudes (job satisfaction, environment satisfaction, relationship satisfaction, job involvement and work-life balance) associated with attrition after controlling for demographic and compensation variables?
2. Do work demands (overtime, frequent business travel, commuting distance and career stagnation) and supervisory continuity add explanatory power beyond attitudes?
3. Do favourable attitudes buffer the effect of demanding working conditions on attrition?

The remainder of the paper is organised as follows. Section 2 reviews the relevant theory and develops the hypotheses. Section 3 describes the data, measures and analytical approach. Section 4 presents the results. Section 5 discusses theoretical and practical implications, Section 6 notes limitations and directions for future research, and Section 7 concludes.

2. Theoretical Background and Hypotheses

2.1 Theoretical Foundations

Three complementary perspectives inform the hypotheses.

The job demands–resources (JD-R) model proposes that every job has demands (physical, psychological, social or organisational aspects that require sustained effort and carry physiological and psychological costs) and resources (aspects that help achieve goals, reduce demands or stimulate growth) (Demerouti et al., 2001; Bakker & Demerouti, 2007). High demands trigger a health-impairment process leading to exhaustion, while resources trigger a motivational process leading to engagement and commitment. Both processes are linked to withdrawal, including turnover.

Conservation of resources (COR) theory holds that people strive to obtain, retain and protect valued resources, and that stress arises when resources are threatened or lost (Hobfoll, 1989). Long hours, frequent travel and long commutes drain time and energy; when losses accumulate, leaving the job is a way to stop further depletion.

Social exchange theory views the employment relationship as a series of reciprocal exchanges (Blau, 1964). When employees perceive that the organisation values their contributions and cares about their well-being, they

reciprocate with loyalty and effort (Eisenberger et al., 1986; Rhoades & Eisenberger, 2002). Fair rewards, opportunities for advancement and good relationships with supervisors signal such support, while their absence weakens the obligation to stay. Equity theory adds that perceived imbalance between contributions and rewards motivates people to restore balance, including by leaving.

2.2 Job Attitudes and Attrition

Job satisfaction is a pleasurable or positive emotional state resulting from the appraisal of one's job or job experiences (Locke, 1976). It occupies a central place in turnover models: dissatisfaction initiates the withdrawal sequence described by Mobley (1977), and meta-analyses report a consistent negative relationship between satisfaction and turnover (Griffeth et al., 2000). Herzberg et al. (1959) further distinguished between motivating features of the work itself and hygiene factors in the context of work, both of which shape overall satisfaction.

H1: Job satisfaction is negatively associated with attrition.

Environment satisfaction captures employees' evaluation of the physical and social work environment. In JD-R terms, a supportive environment is a resource that reduces strain and fosters engagement, while a poor environment is a chronic demand. Hygiene factors in Herzberg's framework, such as working conditions and organisational policies, are expected to prevent dissatisfaction and, when deficient, to prompt departure.

H2: Environment satisfaction is negatively associated with attrition.

Relationship satisfaction refers to the quality of interpersonal relationships at work. Positive relationships are social resources that buffer stress and create links that embed employees in the organisation (Dr.Naveen Prasadula, 2023). Leader–member exchange research shows that high-quality relationships with supervisors and colleagues are associated with greater commitment and lower turnover intentions (Graen & Uhl-Bien, 1995).

H3: Relationship satisfaction is negatively associated with attrition.

Job involvement is the degree to which a person psychologically identifies with their work and regards it as important to their self-image (Lodahl & Kejner, 1965). Highly involved employees invest more of themselves in their roles, which is closely related to the notion of personal engagement (Kahn, 1990). Because leaving would mean giving up a valued part of their identity, involved employees should be less likely to quit. Job characteristics such as autonomy, task significance and feedback promote involvement and internal motivation (Hackman & Oldham, 1976).

H4: Job involvement is negatively associated with attrition.

Work-life balance reflects the extent to which employees can meet the demands of both work and personal life. Work-family conflict arises when role pressures from the two domains are mutually incompatible (Greenhaus & Beutell, 1985). Under COR theory, persistent conflict depletes resources and motivates people to seek jobs that allow better balance.

H5: Work-life balance is negatively associated with attrition.

2.3 Work Demands and Attrition

Overtime is a direct indicator of quantitative workload. Long working hours are associated with poorer health and well-being (Sparks et al., 1997; Ng & Feldman, 2008). From a JD-R perspective, sustained overtime is a job demand that drives exhaustion; from a COR perspective, it consumes time and energy that employees need for recovery and for non-work roles. Both perspectives predict that employees who regularly work overtime are more likely to leave.

H6: Working overtime is positively associated with attrition.

Career stagnation, indicated by a long period since the last promotion, signals that the organisation's exchange is falling short of the employee's expectations. Under social exchange and equity theories, a perceived lack of advancement weakens the obligation to remain and makes alternative employers more attractive (Allen et al., 2010).

H7: Years since the last promotion is positively associated with attrition.

Supervisory continuity, the length of time an employee has worked with the same manager, provides the opportunity to build a high-quality exchange relationship characterised by trust, support and mutual obligation (Graen & Uhl-Bien, 1995). Because supervisors mediate many of the resources employees receive, a stable relationship should reduce the likelihood of departure.

H8: Years with the current manager is negatively associated with attrition.

2.4 The Buffering Role of Job Attitudes

The JD-R model proposes that job resources can buffer the impact of job demands on strain (Bakker & Demerouti, 2007). Employees who are satisfied with their work, or who maintain a good balance between work and personal life, may be better able to tolerate demanding periods without deciding to leave. We therefore expect favourable attitudes to weaken the relationship between overtime and attrition.

H9: Job satisfaction (H9a) and work-life balance (H9b) moderate the relationship between overtime and attrition, such that the positive effect of overtime is weaker when satisfaction or balance is high.

Table 1 summarises the variables and the expected direction of each relationship.

3. Methodology

3.1 Data Source

The study uses the IBM HR Analytics Employee Attrition and Performance dataset, which contains records of 1,470 employees and 35 variables covering demographics, job characteristics, compensation, attitudes and attrition status (Subhash, 2017). The dataset was created by IBM data scientists to resemble the records of a real organisation and is distributed under the Open Database License through Kaggle and the IBM employee-attrition-aif360 repository on GitHub (IBM, n.d.). Because it is fictional, it contains no personal information, and it has become a standard benchmark for teaching and research in HR analytics. Its synthetic nature has implications for the generalisability of findings, which are discussed in Section 6.

Of the 1,470 employees, 237 (16.1%) had left the organisation. The sample is 60% male, with a mean age of 36.9 years (SD = 9.1), mean total work experience of 11.3 years (SD = 7.8) and mean tenure with the organisation of 7.0 years (SD = 6.1). Employees work in Research and Development (65.4%), Sales (30.3%) and Human Resources (4.3%).

3.2 Measures

Dependent variable. Attrition is coded 1 if the employee left the organisation and 0 otherwise.

Job attitudes. Job satisfaction, environment satisfaction and relationship satisfaction are each rated on a four-point scale (1 = low, 2 = medium, 3 = high, 4 = very high). Job involvement uses the same four-point scale. Work-life balance is rated from 1 (bad) to 4 (best). Each attitude is measured by a single item, consistent with the dataset's design.

Work demands and career variables. Overtime is coded 1 if the employee works overtime and 0 otherwise. Frequent travel is coded 1 for employees who travel frequently on business and 0 for those who travel rarely or not at all. Distance from home is measured in kilometres. Years since last promotion, years with current manager and the number of training sessions attended in the previous year are continuous.

Control variables. Following prior research, we control for age, gender (1 = female), marital status (1 = single), the natural logarithm of monthly income, job level (1–5), total working years and stock option level (0–3).

Table 1: Study variables, measurement and expected relationship with attrition

Variable	Measurement	Expected sign
Attrition (DV)	1 = left, 0 = stayed	–
Job satisfaction	1–4 rating	Negative (H1)
Environment satisfaction	1–4 rating	Negative (H2)
Relationship satisfaction	1–4 rating	Negative (H3)
Job involvement	1–4 rating	Negative (H4)
Work-life balance	1–4 rating	Negative (H5)
Overtime	1 = yes, 0 = no	Positive (H6)
Years since last promotion	Years	Positive (H7)
Years with current manager	Years	Negative (H8)
Overtime × job satisfaction; Overtime × work-life balance	Product terms (centred)	Negative (H9a, H9b)
Frequent travel, distance from home, training	Dummy; km; count	Controls for context
Age, gender, marital status, log income, job level, total working years, stock options	Various	Controls

3.3 Analytical Strategy

The analysis proceeded in four stages. First, employees who stayed and those who left were compared on continuous variables using Welch's t-test, which does not assume equal variances, with Cohen's d as the effect size (Cohen, 1988). Second, attrition rates across categories of attitudinal and categorical variables were compared using Pearson chi-square tests, with Cramér's V as the effect size.

Third, hierarchical binary logistic regression was used to test the hypotheses. Model 1 contained only the control variables. Model 2 added the five job attitudes (H1–H5). Model 3 added the work demand, career and supervisory variables (H6–H8) together with travel, distance and training. Model 4 added the two interaction

terms (H9), with job satisfaction and work-life balance mean-centred before forming products. The improvement in fit at each step was assessed by the likelihood-ratio chi-square test. Model fit was summarised by McFadden's and Nagelkerke's pseudo-R^2, the Akaike information criterion (AIC), classification accuracy at a 0.5 probability threshold, the area under the receiver operating characteristic curve (AUC) and the Hosmer–Lemeshow test (Hosmer et al., 2013). Odds ratios with 95% confidence intervals are reported for interpretation.

Finally, to translate the results into a practical tool, a simple cumulative risk index was constructed by counting five risk factors: overtime, and low ratings (1 or 2) of job satisfaction, environment satisfaction, work-life balance and job involvement.

Multicollinearity was checked using variance inflation factors (VIFs). All VIFs were below 10; the highest values were for job level (7.75) and log income (6.67), which are conceptually related, and all attitude and demand variables had VIFs below 1.6. The analysis was carried out in Python using the pandas, NumPy, SciPy and scikit-learn libraries, with logistic regression estimated by maximum likelihood.

4. Results

4.1 Comparison of Leavers and Stayers

Table 2 compares employees who stayed with those who left on continuous variables. Leavers were younger (33.6 vs 37.6 years), earned less (mean monthly income of 4,787 vs 6,833 units; the dataset does not specify a currency), had fewer years of total experience and tenure, and had spent less time with their current manager. The differences were of small-to-medium size (d between 0.37 and 0.47). Leavers lived further from work (10.6 vs 8.9 km) and had attended slightly fewer training sessions.

Among attitudes, leavers reported lower job involvement (d = 0.36), job satisfaction (d = 0.28) and environment satisfaction (d = 0.28), and slightly lower work-life balance (d = 0.17). The difference in relationship satisfaction was small and not statistically significant (p = .090). Years since last promotion did not differ significantly between the two groups in this bivariate comparison (p = .199), an observation revisited in the multivariate analysis.

Table 2: Comparison of employees who stayed and left (Welch t-tests)

Variable	Overall mean (SD)	Stayed (n = 1,233)	Left (n = 237)	t	p	Cohen's d
Age (years)	36.92 (9.14)	37.56	33.61	5.83	< .001	0.44
Monthly income	6,502.9 (4,708.0)	6,832.70	4,787.10	7.48	< .001	0.44
Total working years	11.28 (7.78)	11.86	8.24	7.02	< .001	0.47
Years at company	7.01 (6.13)	7.37	5.13	5.28	< .001	0.37
Years since	2.19	2.23	1.95	1.29	0.199	0.09

last promotion	(3.22)					
Years with current manager	4.12 (3.57)	4.37	2.85	6.63	< .001	0.43
Distance from home (km)	9.19 (8.11)	8.92	10.63	–2.89	0.004	–0.21
Training sessions last year	2.80 (1.29)	2.83	2.62	2.33	0.02	0.16
Job satisfaction (1–4)	2.73 (1.10)	2.78	2.47	3.93	< .001	0.28
Environment satisfaction (1–4)	2.72 (1.09)	2.77	2.46	3.75	< .001	0.28
Relationship satisfaction (1–4)	2.71 (1.08)	2.73	2.6	1.7	0.09	0.12
Job involvement (1–4)	2.73 (0.71)	2.77	2.52	4.66	< .001	0.36
Work-life balance (1–4)	2.76 (0.71)	2.78	2.66	2.17	0.031	0.17

4.2 Attrition Rates across Categories

Table 3 reports attrition rates across categories of the main attitudinal and organisational variables, and Figure 1 displays the pattern for the five attitudes. Attrition fell steadily with job involvement, from 33.7% among employees with low involvement to 9.0% among those with very high involvement ($\chi^2 = 28.49$, $p < .001$). Job satisfaction showed a similar gradient, from 22.8% to 11.3% ($\chi^2 = 17.51$, $p < .001$), and environment satisfaction fell from 25.4% at the lowest rating to around 14% at the higher ratings ($\chi^2 = 22.50$, $p < .001$).

Work-life balance showed a non-linear pattern. Attrition was highest among employees who rated their balance as bad (31.2%), fell to 14.2% at the "better" rating, but rose again to 17.6% among those who rated it "best" ($\chi^2 = 16.33$, $p < .001$). Relationship satisfaction was not significantly associated with attrition at the bivariate level ($\chi^2 = 5.24$, $p = .155$), although the lowest category had a noticeably higher rate (20.7%).

Overtime showed the strongest association of any variable (Cramér's V = 0.244). Employees who worked overtime left at a rate of 30.5%, nearly three times the 10.4% rate among those who did not. Frequent business travellers (24.9%), single employees (25.5%), employees at the entry job level (26.3%) and those without stock options (24.4%) also showed high attrition. Gender was not associated with attrition (p = .291).

Table 3: Attrition rates by category and chi-square tests of association

Variable	Attrition rate by category (%)	χ^2 (df)	p	Cramér's V
Job satisfaction	1: 22.8; 2: 16.4; 3: 16.5; 4: 11.3	17.51 (3)	< .001	0.109
Environment satisfaction	1: 25.4; 2: 15.0; 3: 13.7; 4: 13.5	22.50 (3)	< .001	0.124
Relationship satisfaction	1: 20.7; 2: 14.9; 3: 15.5; 4: 14.8	5.24 (3)	.155	0.060
Job involvement	1: 33.7; 2: 18.9; 3: 14.4; 4: 9.0	28.49 (3)	< .001	0.139
Work-life balance	1: 31.2; 2: 16.9; 3: 14.2; 4: 17.6	16.33 (3)	< .001	0.105
Overtime	No: 10.4; Yes: 30.5	87.56 (1)	< .001	0.244
Business travel	None: 8.0; Rarely: 15.0; Frequently: 24.9	24.18 (2)	< .001	0.128
Marital status	Divorced: 10.1; Married: 12.5; Single: 25.5	46.16 (2)	< .001	0.177
Job level	1: 26.3; 2: 9.7; 3: 14.7; 4: 4.7; 5: 7.2	72.53 (4)	< .001	0.222
Stock option level	0: 24.4; 1: 9.4; 2: 7.6; 3: 17.6	60.60 (3)	< .001	0.203
Department	HR: 19.0; R&D: 13.8; Sales: 20.6	10.80 (2)	.005	0.086
Gender	Female: 14.8; Male: 17.0	1.12 (1)	.291	0.028

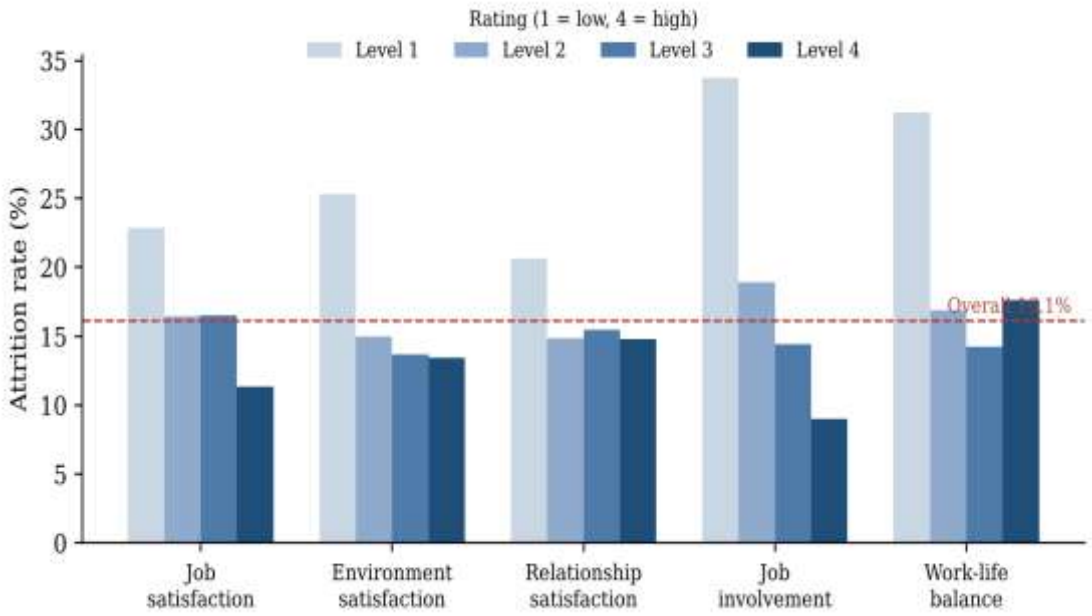


Figure 1: Attrition rate by rating level of each job attitude. The dashed line marks the overall attrition rate of 16.1%.

Two further patterns are relevant for practice. Attrition is concentrated early in the employment relationship: 29.8% of employees with two years' tenure or less had left, compared with 13.8% at three to five years, 12.3% at six to ten years and 8.1% beyond ten years. Attrition is also concentrated among the young: 35.8% of employees aged 18–25 had left, compared with 19.1% of those aged 26–35 and 9.2% of those aged 36–45.

The Spearman correlations among the five attitude variables were close to zero (all $|\rho| < 0.04$), indicating that each captures a distinct aspect of the employee experience. Their correlations with attrition ranged from –0.04 (relationship satisfaction) to –0.12 (job involvement).

4.3 Hierarchical Logistic Regression

Table 4 presents the results of the hierarchical logistic regression. All four models were statistically significant.

Model 1 (controls). The control variables were jointly significant (LR $\chi^2 = 106.91$, df = 7, $p < .001$; Nagelkerke $R^2 = 0.120$). Being single (OR = 1.80) and lower income (OR for log income = 0.44) were associated with higher attrition.

Model 2 (adding job attitudes). Adding the five attitudes significantly improved the model (ΔLR $\chi^2 = 71.00$, df = 5, $p < .001$), raising Nagelkerke R^2 to 0.194 and reducing the AIC from 1,207.7 to 1,146.7. Job involvement (OR = 0.61), job satisfaction (OR = 0.74), environment satisfaction (OR = 0.74) and work-life balance (OR = 0.77) were each significantly and negatively associated with attrition. Relationship satisfaction was marginal (OR = 0.88, p = .069).

Model 3 (adding work demands and supervisory variables). Adding the demand, career and supervisory variables produced a much larger improvement (ΔLR $\chi^2 = 172.20$, df = 6, $p < .001$). Nagelkerke R^2 nearly doubled to 0.361, AIC fell to 986.5 and the AUC rose to 0.837, indicating good discrimination between leavers and stayers. This is the main model for hypothesis testing.

Table 4: Hierarchical logistic regression predicting attrition (odds ratios)

Predictor	Model 1 OR	Model 2 OR	Model 3 OR	Model 3 b (SE)	Model 3 95% CI
Age	0.984	0.988	0.982	–0.018 (0.012)	0.959–1.007
Female	0.853	0.826	0.701*	–0.355 (0.174)	0.498–0.986
Single	1.799**	1.907**	2.385***	0.869 (0.230)	1.519–3.747
Log monthly income	0.444**	0.380***	0.347***	–1.059 (0.313)	0.188–0.640
Job level	1.175	1.317	1.348	0.299 (0.219)	0.877–2.073
Total working years	0.979	0.969	0.966	–0.034 (0.024)	0.922–1.012
Stock option level	0.796	0.807	0.813	–0.208 (0.139)	0.619–1.067
Job satisfaction		0.736***	0.666***	–0.406 (0.077)	0.573–0.774
Environment satisfaction		0.743***	0.662***	–0.412 (0.078)	0.569–0.771
Relationship satisfaction		0.880	0.796**	–0.228 (0.077)	0.684–0.926
Job involvement		0.605***	0.589***	–0.529 (0.114)	0.471–0.737
Work-life balance		0.771*	0.762*	–0.272 (0.116)	0.607–0.957
Overtime			5.787***	1.756 (0.178)	4.083–8.201
Frequent travel			2.449***	0.896 (0.194)	1.672–3.585
Distance from home			1.036***	0.036 (0.010)	1.016–1.057

Predictor	Model 1 OR	Model 2 OR	Model 3 OR	Model 3 b (SE)	Model 3 95% CI
Years since last promotion			1.165***	0.153 (0.035)	1.089–1.248
Years with current manager			0.860***	–0.151 (0.035)	0.803–0.921
Training sessions			0.844*	–0.169 (0.069)	0.738–0.966
LR χ^2 (df)	106.91 (7)	177.91 (12)	350.11 (18)		
ΔLR χ^2 (df)	–	71.00 (5)***	172.20 (6)***		
McFadden R^2	0.082	0.137	0.270		
Nagelkerke R^2	0.120	0.194	0.361		
AIC	1,207.7	1,146.7	986.5		
Classification accuracy	84.2%	85.1%	87.9%		
AUC	0.700	0.748	0.837		

Note: N = 1,470. OR = odds ratio; b = logit coefficient; SE = standard error; CI = confidence interval for the odds ratio. * p < .05; ** p < .01; *** p < .001.

In Model 3, all five attitude hypotheses were supported. Holding other variables constant, each one-point increase in job involvement reduced the odds of attrition by 41% (OR = 0.589), in environment satisfaction by 34% (OR = 0.662), in job satisfaction by 33% (OR = 0.666), in work-life balance by 24% (OR = 0.762) and in relationship satisfaction by 20% (OR = 0.796). Relationship satisfaction, which was not significant in the bivariate analysis, became significant once work demands were controlled, suggesting that its effect had been masked by its association with other variables.

Among the work demand variables, overtime had by far the largest effect. Employees who worked overtime had 5.79 times the odds of leaving compared with otherwise similar employees who did not (95% CI 4.08–8.20), supporting H6. Frequent business travel more than doubled the odds (OR = 2.45), and each additional kilometre of commuting distance raised the odds by 3.6%.

Each additional year since the last promotion increased the odds of attrition by 16.5% (OR = 1.165), supporting H7. This effect emerged only after controlling for tenure-related variables, because employees with long gaps since promotion also tend to have long tenure, which itself is associated with staying. Each additional year with the current manager reduced the odds by 14% (OR = 0.860), supporting H8. Training also had a protective effect (OR = 0.844 per session).

Among the controls, single employees had more than twice the odds of leaving as married or divorced employees (OR = 2.39), and higher income was strongly protective. Female employees were somewhat less likely to leave once other variables were controlled (OR = 0.70, p = .041).

Figure 2 presents the odds ratios and confidence intervals from Model 3 graphically.

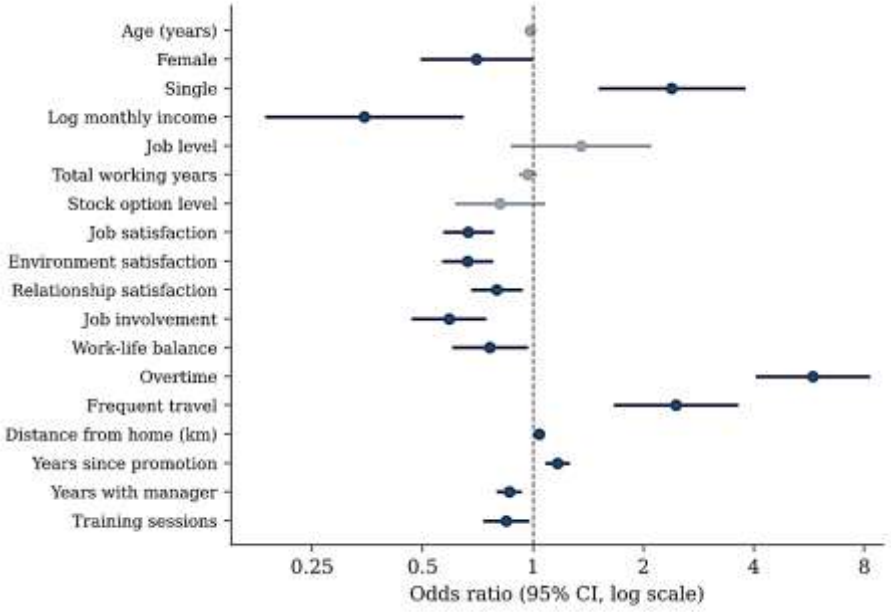


Figure 2: Odds ratios and 95% confidence intervals from Model 3. Dark markers indicate effects significant at p < .05.

Model diagnostics. At a probability threshold of 0.5, Model 3 correctly classified 87.9% of employees, with a specificity of 97.8% and a sensitivity of 36.3%. The low sensitivity reflects the imbalance between leavers and stayers; organisations using such a model to flag at-risk employees would typically lower the threshold to identify more potential leavers at the cost of more false alarms. The Hosmer–Lemeshow test was significant (χ^2 = 65.61, df = 8, p < .001), indicating that predicted probabilities are not perfectly calibrated across risk deciles, even though the model discriminates well (AUC = 0.837). The results should therefore be interpreted primarily in terms of the direction and relative size of effects rather than as precise probability estimates.

4.4 Test of Moderation

Model 4 added the interactions between overtime and the centred job satisfaction and work-life balance variables. Neither interaction was significant (overtime × job satisfaction: OR = 1.065, p = .679; overtime × work-life balance: OR = 1.104, p = .676), and the two terms together did not improve the model (ΔLR χ^2 = 0.32, df = 2, p = .851). The AIC rose slightly to 990.1. H9a and H9b were therefore not supported.

Figure 3 illustrates the pattern for work-life balance. At every level of work-life balance, employees working overtime were much more likely to leave than those who were not. Among employees who rated their balance

as "better", for example, attrition was 28.7% with overtime and 8.5% without. Even among employees who rated their balance as "best", the overtime group's attrition rate (33.3%) was more than double that of the non-overtime group (12.8%). The two lines are roughly parallel on the odds scale, which is what the non-significant interaction indicates: favourable attitudes lower attrition, and overtime raises it, but the two effects operate largely independently.

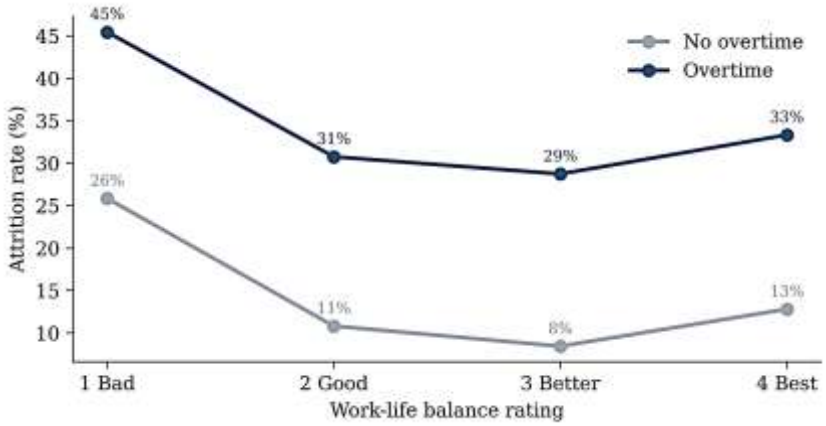


Figure 3: Attrition rate by work-life balance rating for employees with and without overtime.

4.5 Cumulative Risk

Because the effects of attitudes and overtime are additive, risk factors accumulate. Figure 4 shows attrition rates by the number of risk factors present. Among the 183 employees with none of the five risk factors, only 3.8% left. The rate rose to 10.6% with one risk factor, 16.1% with two, 29.3% with three and 48.4% with four. Only three employees had all five risk factors, too few for a reliable estimate. The index is simple enough to be calculated from routine HR survey data and offers an intuitive way to target retention efforts.

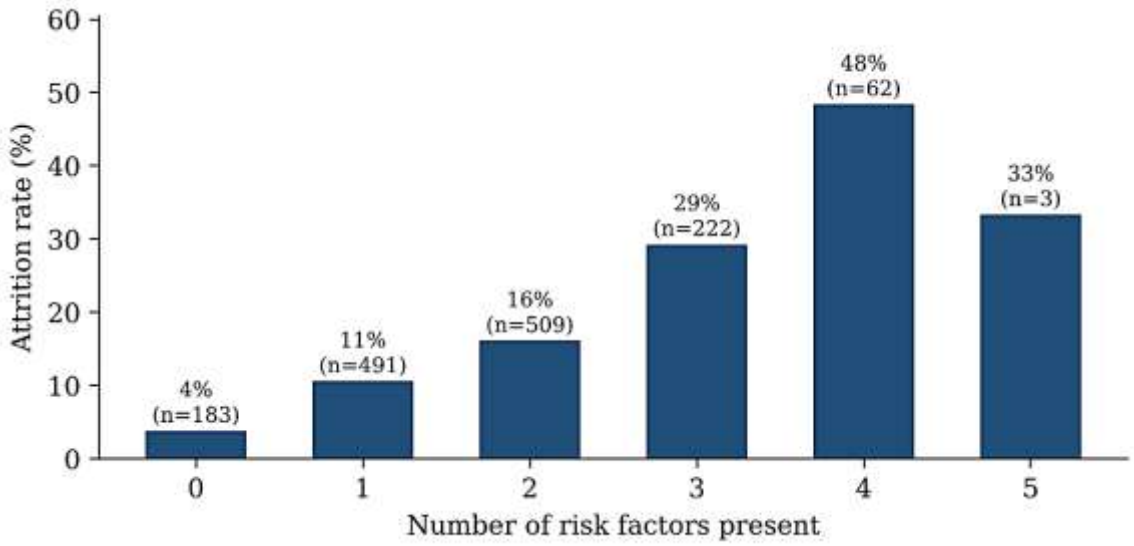


Figure 4: Attrition rate by number of risk factors (overtime; low job satisfaction, environment satisfaction, work-life balance or job involvement).

4.6 Summary of Hypothesis Tests

Table 5: Summary of hypothesis tests (Model 3 unless stated)

Hypothesis	Relationship	Odds ratio	Result
H1	Job satisfaction → attrition (–)	0.666***	Supported
H2	Environment satisfaction → attrition (–)	0.662***	Supported
H3	Relationship satisfaction → attrition (–)	0.796**	Supported (multivariate only)
H4	Job involvement → attrition (–)	0.589***	Supported
H5	Work-life balance → attrition (–)	0.762*	Supported (non-linear pattern)
H6	Overtime → attrition (+)	5.787***	Supported
H7	Years since promotion → attrition (+)	1.165***	Supported (multivariate only)
H8	Years with current manager → attrition (–)	0.860***	Supported
H9a	Overtime × job satisfaction (–)	1.065 (Model 4)	Not supported
H9b	Overtime × work-life balance (–)	1.104 (Model 4)	Not supported

5. Discussion

This study examined how job attitudes and work demands relate to employee attrition. Eight of the nine main hypotheses were supported, while the moderation hypotheses were not. Several findings merit discussion.

5.1 Structural Demands Matter More than Attitudes

The most striking result is the dominance of work demands. Adding overtime, travel, commuting distance, career stagnation and supervisory continuity to the model more than doubled the likelihood-ratio improvement achieved by the five attitudes, and nearly doubled the explained variance. Overtime alone raised the odds of leaving almost sixfold. This finding is consistent with the health-impairment pathway of the JD-R model (Demerouti et al., 2001) and with COR theory's emphasis on resource loss (Hobfoll, 1989): employees who repeatedly give up personal time and energy to meet work demands eventually withdraw.

The finding also has an important practical implication. Attitudes such as satisfaction are outcomes of many influences and cannot be changed directly. Workload, travel requirements and promotion practices, by contrast, are under the organisation's control. The results suggest that organisations seeking to reduce attrition may achieve more by redesigning work than by trying to improve attitudes through engagement campaigns alone.

5.2 Job Involvement as a Key Attitude

Among the attitudes, job involvement had the strongest protective effect. This supports the view that psychological identification with work creates a strong bond with the job (Lodahl & Kejner, 1965; Kahn, 1990). It also connects with job characteristics theory: work that provides autonomy, variety, significance and feedback fosters involvement (Hackman & Oldham, 1976). That job involvement mattered more than job satisfaction suggests that meaning and identification may be more powerful retention forces than general contentment.

5.3 The Non-linear Role of Work-Life Balance

Employees who rated their work-life balance as "best" left at a higher rate than those who rated it "better". One plausible explanation is that some employees with very low work pressure may be under-challenged or in roles with limited prospects, and therefore open to opportunities elsewhere. Another is that employees who are already planning to leave may disengage from work and so experience less conflict. This pattern cautions against assuming that more balance is always better and calls for longitudinal research to establish the direction of causation.

5.4 Why Attitudes Did Not Buffer Overtime

Contrary to the buffering hypothesis of the JD-R model, favourable attitudes did not weaken the effect of overtime. Satisfied, well-balanced employees who worked overtime were still far more likely to leave than comparable employees who did not. One interpretation is that overtime represents a cost that employees weigh independently of how they feel about the job: even an enjoyable job becomes unattractive if it consumes too much time. Another is that single-item attitude measures may not capture the specific resources, such as recovery opportunities or schedule control, that would be needed to offset long hours. Whatever the explanation, the finding implies that organisations cannot rely on a positive culture to compensate for excessive workload.

5.5 Career Progression and Supervisory Relationships

The effect of years since promotion emerged only after controlling for tenure, which illustrates the value of multivariate analysis. Employees who have waited longer for promotion are more likely to leave, consistent with social exchange and equity perspectives (Blau, 1964; Adams, 1965). Equally, the protective effect of years with the current manager supports leader–member exchange theory (Graen & Uhl-Bien, 1995): stable supervisory relationships provide support, information and advocacy that bind employees to the organisation. Frequent managerial rotation may therefore carry hidden retention costs.

5.6 Implications for Practice

The findings suggest a set of evidence-based retention actions:

- **Manage workload and overtime.** Monitor overtime as a key retention indicator, set limits on sustained overtime, and address chronic overtime through staffing, process redesign or redistribution of work rather than treating it as normal.
- **Reduce unnecessary travel and commuting burden.** Replace routine travel with virtual meetings where possible, and offer hybrid or flexible arrangements to employees with long commutes.
- **Strengthen job involvement.** Redesign jobs to increase autonomy, task significance and feedback, and involve employees in decisions about their work.
- **Improve the work environment.** Act on environment satisfaction survey results, including physical conditions, tools and organisational policies.

- **Maintain career progression.** Track time since last promotion, provide clear career paths, and use lateral moves, skill-based pay and recognition where promotion opportunities are limited.
- **Build stable supervisory relationships.** Limit unnecessary manager rotation, train managers in coaching and support, and include retention in managers' performance goals.
- **Focus on early-tenure and young employees.** Strengthen onboarding, mentoring and early career conversations, since attrition is highest in the first two years and among those aged 18–25.
- **Use a simple risk index.** Combining overtime and low attitude ratings into a risk score allows HR teams to target stay interviews and interventions where they are most needed, while respecting employee privacy and fairness.

These implications are particularly relevant for knowledge-intensive sectors such as information technology, financial services and consulting, where attrition is a recurring concern for employers in India and elsewhere and where long working hours and frequent client travel are common.

6. Limitations and Directions for Future Research

Several limitations should be acknowledged. First, the dataset is fictional, created by IBM data scientists to resemble real HR records. Although it is widely used and its relationships are broadly consistent with established theory, findings must be replicated with real organisational data before strong generalisations are drawn. The near-zero correlations among the attitude variables, which would be unusual in real survey data, are one sign of the dataset's synthetic construction.

Second, the data are cross-sectional. Attitudes and attrition status are recorded together, so the direction of causality cannot be established. Employees who have decided to leave may report lower satisfaction as a consequence rather than a cause. Longitudinal designs that measure attitudes before departure would provide stronger evidence.

Third, attitudes are measured by single items on four-point scales. Multi-item validated scales for job satisfaction, involvement, work-life balance and perceived organisational support would improve reliability and allow tests of measurement quality. Because attitudes and some demands come from the same source, common method variance may also be present (Podsakoff et al., 2003).

Fourth, the dataset does not distinguish voluntary from involuntary attrition, nor does it record the reasons for leaving or the availability of external alternatives, both of which are central to turnover theory (March & Simon, 1958; Lee & Mitchell, 1994).

Fifth, the Hosmer–Lemeshow test indicated imperfect calibration of predicted probabilities. Future studies could explore non-linear specifications, additional predictors or machine learning methods, while retaining theoretical interpretability.

Future research could test the model in specific Indian industries such as IT services, banking and healthcare; incorporate job embeddedness, perceived organisational support and leadership style; examine the mechanisms, such as exhaustion and work-family conflict, through which overtime leads to attrition; and evaluate the effect of interventions such as overtime caps or flexible work arrangements on actual retention.

7. Conclusion

This study examined the attitudinal and structural predictors of employee attrition using hierarchical logistic regression on a dataset of 1,470 employees. Job satisfaction, environment satisfaction, relationship satisfaction, job involvement and work-life balance were all associated with lower attrition, but work demands, especially overtime, explained considerably more. Employees who worked overtime were almost six times as likely to

leave, regardless of how satisfied they were or how well they balanced work and life. Career stagnation increased attrition, while stable relationships with managers and investment in training reduced it.

The central message for managers is that retention depends not only on how employees feel about their jobs but also on how their jobs are designed. Sustainable workloads, reasonable travel, visible career progression and stable leadership are concrete, controllable levers. By combining theory-driven analysis with routinely collected HR data, organisations can identify employees at risk and act before valuable people walk out of the door.

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