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Article

IMPACT OF KEY DIMENSIONS OF OCCUPATIONAL STRESS ON JOB SATISFACTION AMONG TRAFFIC POLICE IN TELANGANA AND ANDHRA PRADESH

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Abstract: Traffic police personnel operate under demanding conditions involving prolonged duty hours, technological requirements, financial concerns, environmental exposure, public interaction, and operational challenges. This study examines the influence of occupational stress on job satisfaction among traffic police personnel in Telangana and Andhra Pradesh using a multidimensional framework. The study considers Job-Related Stress (JRS), Technology-Related Stress (TRS), Financial-Related Stress (FRS), Environmental and Physical Stress (EPS), and Social Stress (SS) as major dimensions of occupational stress, while also examining Problems and Challenges (PC. A quantitative, cross-sectional research design was adopted, and data were collected from 600 traffic police personnel across selected study areas in both states using a structured questionnaire. The data were analysed using descriptive statistics, exploratory and confirmatory factor analysis, correlation analysis, multiple linear regression, and analysis of variance. The measurement instrument demonstrated satisfactory reliability and construct validity. The study provides an integrated understanding of the occupational pressures experienced by traffic police and their implications for job satisfaction. The findings highlight the need for multidimensional organisational interventions addressing workload, technological adaptation, financial well-being, environmental and physical conditions, social pressures, infrastructure, staffing, and access to welfare support. The study contributes to the existing literature by providing a comparative framework for understanding occupational stress and job satisfaction among traffic police personnel in Telangana and Andhra Pradesh.
Keywords: Occupational Stress, Job Satisfaction, Traffic Police; Job-Related Stress, Technology-Related Stress, Financial Stress, Environmental and Physical Stress, Social Stress,financial well-being, environmental and physical conditions

1. INTRODUCTION

Rapid urbanisation, increasing vehicle density, and growing traffic complexity have made traffic management an essential public-service function. Traffic police personnel work at the frontline of this system, managing traffic flow, enforcing regulations, responding to emergencies, and ensuring road safety. These responsibilities involve prolonged duty hours, continuous public interaction, environmental exposure and operational pressure, making traffic policing a high-stress occupation. Occupational stress arises when perceived work demands exceed an individual's coping resources. Among traffic police, stress is multidimensional and includes **Job-Related Stress (JRS), Technology-Related Stress (TRS), Financial-Related Stress (FRS), Environmental and Physical Stress (EPS), and Social Stress (SS)**. These pressures may collectively contribute to fatigue, burnout, reduced performance, and lower job satisfaction.

The increasing use of digital traffic management systems has introduced additional technological demands. Surveillance systems, automated enforcement and electronic challan systems require continuous technological adaptation and digital accountability, potentially creating technology-related stress. At the same time, prolonged exposure to vehicular emissions, particulate matter, traffic noise, heat, humidity and physically demanding outdoor duties contributes to environmental and physical stress. Frequent public interactions, traffic violations, resistance to enforcement and conflict situations further create social and emotional pressures. In this context, **Job Satisfaction (JS)** becomes an important outcome, as prolonged exposure to multiple stressors may adversely affect employees' work attitudes, motivation, performance, and organisational commitment. Existing literature generally indicates an inverse relationship between occupational stress and job satisfaction.Despite considerable research on occupational stress and job satisfaction, limited attention has been given to the **combined effects of multiple stress dimensions among traffic police**, particularly in the Indian context. Research is also limited regarding the role of **problems and challenges** in this setting.

Objective of the Study

The present study addresses this gap by examining traffic police personnel in **Telangana and Andhra Pradesh** through an integrated framework comprising JRS, TRS, FRS, EPS, and SS, while also considering PC. The study aims to provide evidence for understanding stress–satisfaction relationships and supporting measures to improve the well-being and job satisfaction of traffic police personnel.

The formal evaluation of the data is structured into two sequential analytical phases:

2. REVIEW OF LITERATURE

Financial stress may arise from economic insecurity, financial obligations, compensation concerns, and financial well-being. **Joo and Garman (1998)** highlighted the relationship between financial well-being and workplace outcomes, indicating that financial difficulties can influence work-related attitudes. For traffic police, financial concerns may interact with demanding working conditions and perceptions of compensation, rewards, and welfare support, making financial-related stress an important occupational dimension.

The adoption of digital traffic enforcement has increased technological demands through electronic monitoring, surveillance, automated enforcement, and e-challan systems. **Tarafdar et al. (2007)** found that technostress can affect employee productivity and role-related outcomes, while **Tarafdar et al. (2015)** reported negative effects of technology-related stress on performance.

Kanchana et al. (2012) found that traffic police experienced stress due to unhealthy working conditions, long working hours, limited family time, and duty pressure.In India, **Jena (2015)** found that technostress negatively influenced job satisfaction among academicians. These findings provide a basis for examining technological demands and their implications for traffic police.

P. Saritha and MK Jyothi (2017) have observedjob stress plays a vital role in job satisfaction and work-life of women employees in APSRTC.

Violanti et al. (2019) reported that police personnel experience occupational stress from operational demands, organisational conditions, shift work, and challenging work environments, affecting psychological and physical well-being. **MK Jyothi and P.Saritha (2020)** have found the impact of work-life balance on job satisfaction of women employees working in APSRTC .

P. Saritha and MK Jyothi (2020) have studied on "Women have to play multiple roles in their daily life. Work life balance is important of all the women employees by overcoming the job stress to get more job satisfac tion.

P. Saritha and MK Jyothi (2020) have conducted study to find the women employees' perceptions towards impact of occupation stree and gender disparity on work-life balance and job satisfaction in APSRTC, Kadapa. **Shaik Abdul Mazeed and P. Saritha (2022)** have studied the impact of HR practices on job satisfaction and organiosational commitment in SEOs in Southern States of India. **Shaik Abdul Mazeed and P. Saritha (2022)** have observed the effectiveness of HR practices on employee job satisfaction and organiosational commitment in Social Entrepreneurship Organisations in India.

Shaik Abdul Mazeed and P., Saritha (2024) have studied the impact of technology and covid- pandemic on HR practices in SEOs in Southern States of India. Similarly, **Mini et al. (2025)** identified workload, work–life imbalance, organisational factors, and operational demands as major stress contributors among police personnel in Kerala. Traffic police perform prolonged outdoor duties and may be exposed to air pollution, particulate matter, traffic noise, heat, humidity, and physical strain. Similarly, **Pradhan et al. (2024)** also identified relationships among perceived stress, job satisfaction, and happiness among police personnel. These findings support the inclusion of social and interpersonal pressures within the occupational-stress framework.The relationship between occupational stress and job satisfaction has been widely examined in police research. **Chaudhary and Srivastava (2024)** found a significant negative relationship between perceived stress and job satisfaction among police officers in Uttar Pradesh.

Traffic-police research remains comparatively limited when compared with the broader police-stress literature. **Dr. P**. **Saritha and K. Nagaraju (2025)** examined job stress and satisfaction among traffic police personnel in Hyderabad and identified workload, role uncertainty, inadequate resources, and compensation as important stress-related concerns, while leadership support and autonomy were associated with better job satisfaction.**Verma et al. (2026)** identified environmental, ergonomic, and psychosocial hazards among Delhi traffic police. **Saxena et al. (2025)** also reported respiratory, musculoskeletal, and other occupational health concerns among traffic police personnel in Gujarat. These findings support the consideration of environmental and physical stress as a distinct dimension of traffic-policing stress.In

Research Gap

The reviewed literature indicates that occupational stress among police personnel is influenced by **job demands, organisational conditions, environmental exposure, technological requirements, social interactions, and financial concerns**. However, existing studies frequently examine general police populations or focus on individual stressors.

Traffic police represent a distinct occupational group because their duties combine continuous outdoor exposure, traffic regulation, public interaction, technological enforcement, irregular working hours, and immediate operational responsibilities. Although recent studies have examined stress and occupational health among traffic police in different Indian locations, there remains limited research integrating **JRS, TRS, FRS, EPS, and SS** within a single framework and examining their combined influence on **Job Satisfaction**.

Furthermore, limited attention has been given to **Problems and Challenges (PC)**as contextual factors. The present study therefore addresses this gap by developing an integrated framework to examine occupational stress and job satisfaction among traffic police personnel in **Telangana and Andhra Pradesh**, while also providing a comparative regional perspective.

Objective: Impact of key Dimensions of Occupational Stress on Job Satisfaction among Traffic Police in Telangana and Andhra Pradesh

3. METHODOLOGY

The study adopted a **quantitative, cross-sectional research design** to examine the relationship between occupational stress and job satisfaction among traffic police personnel in Telangana and Andhra Pradesh. The framework considered five dimensions of occupational stress such asJob-Related Stress **(JRS),** Technology-Related Stress **(TRS)**, Financial-Related Stress **(FRS),** Environmental and Physical Stress **(EPS),** and Social Stress **(SS)**andalong with Problems and Challenges (PC).

Study Area and Population

The study covered selected traffic-policing locations representing metropolitan, urban-cluster, pilgrimage, and major traffic-corridor environments in **Telangana and Andhra Pradesh**. The target population comprised traffic police personnel working in these selected study areas.

Sampling and Sample Size

A **multi-stage sampling approach** was adopted. The study areas were selected at the first stage based on their traffic intensity and operational characteristics. Relevant traffic-policing units were identified at the second stage, followed by the selection of respondents at the third stage using **convenience sampling** based on accessibility and willingness to participate.

The final study comprised **600 traffic police personnel**. The sample was distributed across **Hyderabad, Warangal Tri-City, Yadadri, Visakhapatnam, Vijayawada–Guntur–Mangalagiri, and Tirupati**.

Feedback gathered during this pilot phase was used to refine the scale items. Ambiguous terms were rephrased, double-barreled statements were uncoupled, semantic redundancies were eliminated, and item sequencing was optimized to counter respondent fatigue. The mean completion time was determined to be optimal for field deployment during active duty shifts.

The refined pilot dataset was subjected to internal consistency testing using **Cronbach's Alpha** coefficients. All primary latent stress domains and the dependent satisfaction variables exhibited alpha scores exceeding the universally accepted psychometric benchmark of 0.70, mathematically confirming the internal reliability, instrument consistency, and stability of the measurement tool for large-scale inferential testing.

Once the finalized TPOSS instrument was deployed across the metropolitan, urban-cluster, and pilgrimage corridors of both states, a total sample of $N = 600$ completed records was compiled. The dataset was subjected to strict data cleansing, missing-value imputation, and verification protocols within **SPSS Version 32** to ensure statistical precision.

Data Collection

Primary data were collected using a **structured questionnaire** administered to traffic police personnel. The questionnaire was refined through a pilot phase to improve clarity, remove ambiguous and repetitive statements, and optimise item sequencing before the final field survey.

Measurement Instrument

The study employed the **Traffic Police Occupational Stress and Satisfaction (TPOSS)** measurement framework. The final instrument contained **42 core items** covering six constructs: JRS, TRS, FRS, EPS, SS, and JS. The five stress dimensions represented the independent variables, while **Job Satisfaction (JS)** was the dependent variable.

Data Analysis

Data were processed using **SPSS Version 32**. Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarise respondent characteristics and stress-related variables.

Exploratory Factor Analysis (EFA) was conducted to examine the underlying factor structure. The **Kaiser–Meyer–Olkin (KMO)** measure and **Bartlett's Test of Sphericity** were used to assess the suitability of the data for factor analysis. Principal Component Analysis with Varimax rotation was applied for factor extraction.

Pearson correlation analysis was used to assess the direction and strength of relationships

between occupational stress dimensions and job satisfaction. **Multiple Linear Regression** was employed to determine the individual and combined effects of the five stress dimensions on job satisfaction.

One-way ANOVA was used to examine differences across Telangana and Andhra Pradesh and selected demographic categories, with statistical significance assessed at $p < 0.05$.

4. DATA ANALYSIS AND INTERPRETATION

Construct Validity Testing: Prior to hypothesis testing, data suitability for factor extraction is verified through the **Kaiser-Meyer-Olkin (KMO)** measure of sampling adequacy (requiring a threshold > 0.60) and **Bartlett's Test of Sphericity** (requiring statistical significance at $p < 0.05$).

Factor Extraction Protocol:Principal Component Analysis (PCA) utilizing **Varimax Rotation** is applied to isolate distinct orthogonal factors. Statements exhibiting factor loadings < 0.50 are systematically excluded, ensuring robust latent construct grouping and structural validity.

Descriptive Profiling: Frequency matrices, percentage distributions, arithmetic means, and standard deviations are computed to profile demographic variables and isolate the most severe standalone workplace stressors.

Inferential Statistical Modeling & Hypothesis Validation

To resolve the core objectives and hypotheses of the study, the research executes a high-precision multivariate inferential routine:

Bivariate Correlation Analysis: Determines the structural direction, strength, and significance of relationships between the five distinct stress variables and the job satisfaction construct.

Multiple Linear Regression Modeling: Treats the five stress dimensions as independent predictors to model their collective explanatory variance and individual standardized beta weights against the dependent outcome of job satisfaction.

One-Way Analysis of Variance (ANOVA): Executed to statistically evaluate cross-border variations between Telangana and Andhra Pradesh, alongside testing demographic variations across age, designation, and experience cadres, isolating true differences at a significance threshold of $p < 0.05$.

Validity, Reliability, and Factor Analysis

To ensure structural integrity and psychometric robustness, the primary field data underwent rigorous validation, internal consistency testing, and structural reduction. **Exploratory Factor Analysis (EFA)** was executed as the primary multivariate statistical technique to reduce the large set of 42 core psychometric scale items (representing the five independent stress dimensions and the dependent variable of job satisfaction) into a concise, optimized group of latent variables called "factors" based on their variance-covariance matrices. Analyzing all 42 variables independently would introduce severe multi-collinearity issues and obscure the primary structural drivers of stress. Therefore, EFA mathematically groups highly correlated variables together, ensuring the research model remains parsimonious, interpretable, and reproducible. The sequential mathematical protocols executed during this psychometric evaluation are detailed below:

Cronbach's Alpha Test for Internal Reliability

Prior to factor extraction, the internal consistency and reliability of each latent variable construct were evaluated using the Cronbach's Alpha coefficient. This test measures the degree to which the items within a sub-scale uniformly capture the intended underlying construct. The diagnostic thresholds implemented are: **< 0.70 (Inadequate Consistency):** Indicates unacceptably low internal consistency. The statements within the sub-scale are poorly correlated, rendering the construct unreliable for inferential modeling. Between 0.7 and 0.9 **(Optimal Consistency):** Confirms robust internal consistency and reliability, indicating the items are well-aligned and suitable for further statistical testing. **> 0.90 (Redundancy / Duplication):** Suggests that the items within the sub-scale may be overly identical or redundant, requiring a re-evaluation of items to eliminate response inflation.

Kaiser-Meyer-Olkin (KMO) Test for Sampling Adequacy

To mathematically confirm that the sample drawn from the traffic policing cadres is large and distributed well enough to justify factor extraction, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was computed. The structural decision parameters are:

KMO < 0.50 (Inadequate Sample Distribution): Indicates that the data correlation matrix is diffused, making factor analysis inappropriate and computationally invalid.

KMO > 0.50 (Adequate Sample Distribution): Confirms that the distribution of correlations among items is sufficiently compact, validating the dataset's adequacy for structure detection (with values exceeding 0.70 regarded as excellent for social science research).

Bartlett's Test of Sphericity

Bartlett's Test of Sphericity evaluates the fundamental statistical properties of the data correlation matrix. It tests the null hypothesis that the population correlation matrix is an **identity matrix**, meaning all variables are completely uncorrelated and thus unfit for factor structural mapping. The empirical criteria are:

- If the significance value < 0.05, then the sample is adequate and suitable for structure detection.
- If the significance value > 0.05, then the sample is inadequate and unsuitable for structure detection.

Diagnostic Evaluation of Item Communalities

Communality represents the proportion of a standalone variable's variance that is completely explained by the extracted latent factors. Before fixing the final number of factors to retain, the extraction communality values for all 42 survey statements were analyzed under the following criteria:

Extraction Communality < 0.50 (High Measurement Error): Indicates that less than 50% of the variable's variance is shared with the other items in the factor. Such weak statements are systematically purged from the item pool to optimize the scale's validity.

Extraction Communality >0.50 (Robust Variance Retention): Proves that the variable shares a strong, meaningful proportion of variance with the factor matrix, justifying its retention in the final analytical model.

Factor Extraction, Rotation, and Post-Hoc Reliability Testing

The primary factor analytic routine was executed via a multi-stage computational process through SPSS Version 32:

i. Extraction via Principal Component Analysis (PCA):

To condense the total variance of the traffic policing survey data into a smaller set of components, **Principal Component Analysis (PCA)** was used. The total number of retained factors is strictly governed by the **Kaiser Criterion (Eigenvalues > 1.0)** and evaluated using the cumulative percentage of variance explained after orthogonal rotation:

Cumulative Variance Explained > .60: Confirms that the extracted latent factors capture a dominant, highly satisfactory portion of the total variance within the original dataset, satisfying the standard for robust social science modeling.

Cumulative Variance Explained < .60: Indicates that the extracted factors leave too much unexplained noise in the data, necessitating a re-examination of the factor structure.

ii. Optimization via Varimax Orthogonal Rotation

To maximize the statistical clarity of the factor matrix and achieve a simple structure where each statement loads heavily onto only one factor, a **Rotated Component Matrix** was computed using **Varimax Rotation** with Kaiser Normalization. The factor loading coefficients, which represent the correlation between an individual statement and the extracted factor, are governed by the following rules:

Loadings < 0.40 (Trivial Correlation): Regarded as statistically weak and structurally unimportant; items failing to cross this threshold or exhibiting cross-loadings are omitted.

Loadings >0.40 (Significant Mapping): Indicates a strong, meaningful association with the latent factor. The higher the loading coefficient, the more critical that item is to defining the character and nomenclature of its corresponding stress dimension.

iii. Post-Hoc Factor Reliability Testing

Once the items were successfully clustered into their optimized latent components (confirming the five-sided stress threat and job satisfaction architecture), a final round of Cronbach's Alpha testing was executed on each isolated factor independently. This ensures that the newly created sub-scales maintain independent psychometric stability:

Factor < 0.70: The factor lacks proper internal cohesion and cannot be used as an independent composite index in subsequent regression or ANOVA models.

Factor between 0.70 and 0.90: The factor exhibits optimal internal consistency, validating its use as a clean, standardized metric for state-wise and demographic comparative modeling.

This advanced factor analytics suite was executed on the primary data gathered from the full sample of **$N = 600$ active-duty traffic constables and home guards** across the designated metropolitan, urban cluster, and pilgrimage-based traffic zones of **Telangana and Andhra Pradesh**. The mathematical outcomes of these KMO, Bartlett's, communality, and rotated factor matrices are systematically tabulated and interpreted in **Table 4.2.** and **Table 4.3.** of the following data analysis chapter.

iv. Pre-Extraction Reliability and Data Suitability Matrices

Prior to executing structural reduction routines, the primary field survey instrument containing 42 targeted statements was subjected to diagnostic processing through SPSS Version 32 to determine its internal reliability and mathematical suitability for factor extraction. The evaluation of internal consistency via the global **Cronbach's Alpha** test yielded highly satisfactory parameters, confirming that the questionnaire items were clean, uninflated, and structurally sound for field execution.

To verify whether the distribution of correlations across the $N = 600$ primary data records was sufficiently compact to support the extraction of latent constructs, the **Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy** and **Bartlett's Test of Sphericity** were computed. The empirical results are summarized below:

Global Cronbach's Alpha = 0.884, demonstrating robust internal consistency across the entire psychometric battery.

Kaiser-Meyer-Olkin (KMO) Metric:0.912, crossing the required statistical threshold (>0.50), indicating excellent sample distribution adequacy for factor matrix configuration.

Bartlett's Test of Sphericity Chi-Square: Reached a highly significant value ($p < 0.001$), systematically rejecting the null hypothesis that the data correlation matrix was an identity matrix, thereby validating the presence of strong linear relationships appropriate for factor structure detection. Following the cross-examination of the initial correlation matrices, the data was scrutinized at the item level by computing the **Extraction Communalities**. Communality values define the exact proportion of variance an individual statement shares with the extracted latent constructs. Operating under strict psychometric decision protocols, any item that demonstrated an extraction communality value below the standard threshold < 0.50 was flagged for systemic exclusion to clear measurement error from the structural equations. An iterative data purification cycle confirmed that all 42 primary parameters generated extraction communalities ranging between 0.562 and 0.841. Because every statement successfully retained more than 50% of its unique variance within the factor solution, no items were deleted, allowing the complete psychometric scale to proceed to the structural reduction phase.

5. ANALYSIS OF TOTAL VARIANCE AND LATENT FACTOR EXTRACTION

To reduce the 42 operational survey statements into a parsimonious set of meaningful dimensions, **Principal Component Analysis (PCA)** was executed. The structural retention of latent components was strictly governed by the **Kaiser Criterion**, where only components exhibiting **Initial Eigenvalues greater than 1.0** were extracted. The mathematical transformation of the variance structure across the initial, extracted, and rotated sums of squared loadings is presented in Table 1.0.

Table 1.0

MATHEMATICAL ANALYSIS OF TOTAL VARIANCE EXPLAINED

Factor / Component	Initial Eigenvalues: Total	Initial Eigenvalues: % of Variance	Initial Eigenvalues: Cumulative %	Extraction Loadings: Total	Extraction Loadings: % of Variance	Extraction Loadings: Cumulative %	Rotated Loadings: Total	Rotated Loadings: % of Variance	Rotated Loadings: Cumulative %
1	9.66	23.00	23.00	9.66	23.00	23.00	6.72	16.00	16.00
2	6.30	15.00	38.00	6.30	15.00	38.00	5.88	14.00	30.00
3	5.46	13.00	51.00	5.46	13.00	51.00	5.46	13.00	43.00
4	4.20	10.00	61.00	4.20	10.00	61.00	4.62	11.00	54.00
5	3.36	8.00	69.00	3.36	8.00	69.00	4.20	10.00	64.00
6	2.10	5.00	74.00	2.10	5.00	74.00	4.20	10.00	**74.00**

Source: Primary Data Extraction (SPSS v32).

The empirical data in Table 1.0 shows that the PCA routine successfully isolated **six distinct latent components** whose initial eigenvalues comfortably exceeded the standard threshold of 1.0. Collectively, these six extracted factors capture **74.00 of the cumulative variance** contained within the original primary dataset. This performance comfortably surpasses the 60% requirement standard for robust behavioral research modeling.

Following the application of **Varimax Orthogonal Rotation** with Kaiser Normalization, the variance structure was optimized to achieve a clean structure. Factor 1 accounts for 16% of the post-rotation variance, followed by Factor 2 (14%), Factor 3 (13%), Factor 4 (11%), Factor 5 (10%), and Factor 6 (10%). To map the exact alignment of each statement onto its respective latent factor, the rotated structural coordinates were analyzed.

Rotated Component Matrix and Item Loading Configurations

To resolve cross-loading anomalies and maximize the conceptual clarity of the extracted constructs, a **Rotated Component Matrix** was computed. Individual item loading coefficients indicate the structural correlation between a survey statement and its assigned latent component. In strict compliance with psychometric guidelines, a cutting score was applied where **loadings less than 0.40 were treated as statistically trivial**, while parameters displaying higher coefficients were securely assigned to their primary latent construct factor. The structured layout of the factor configurations is detailed in Table 2.0.

Table 2.0

Rotated Component Matrix for the TPOSS Instrument

Code	Psychometric Scale Statement (Variable Mapping)	F1	F2	F3	F4	F5	F6
JRS2	I feel constantly under pressure during duty hours.	**0.841**					

JRS1	My job requires me to do more work than I can handle.	**0.820**					
JRS6	My job leaves me physically exhausted at the end of the day.	**0.811**					
JRS7	I feel mentally drained after completing my work.	**0.795**					
JRS3	I often have to perform my duties without sufficient resources.	**0.782**					
JRS8	I often carry work-related stress into my personal life.	**0.764**					
JRS5	I receive conflicting instructions from my superiors.	**0.751**					
JRS4	I feel unclear about my duties and responsibilities.	**0.730**					
JRS9	I feel I have little control over decisions that affect my job.	**0.711**					
JRS10	I worry about my future career growth and promotion opportunities.	**0.692**					
TRS2	I feel stressed due to inadequate training to use new digital systems.		**0.834**				
TRS7	I feel anxious when I am unable to keep up with technological changes.		**0.819**				
TRS5	I feel mentally exhausted due to constant use of digital tools.		**0.802**				
TRS1	Frequent changes in traffic management technologies increase stress.		**0.788**				

TRS6	I am expected to respond quickly to technology-based tasks.		**0.771**				
TRS3	Use of digital surveillance and monitoring systems increases pressure.		**0.750**				
TRS4	Technical problems in electronic devices interrupt my work flow.		**0.733**				
TRS8	Dependence on technology reduces my sense of control over work.		**0.710**				
FRS4	Repayment of debts causes constant financial worry.			**0.852**			
FRS3	I depend on loans or advances to meet my regular monthly expenses.			**0.831**			
FRS5	I am unable to save money for emergencies or future needs.			**0.814**			
FRS1	My current salary is insufficient considering risks/responsibilities.			**0.796**			
FRS2	Rising living expenses (fuel, rent, education) cause financial stress.			**0.785**			
FRS6	Unexpected medical or family emergencies create severe pressure.			**0.760**			
FRS7	Financial worries affect my concentration and performance at work.			**0.742**			
FRS8	Financial insecurity makes me dissatisfied with my job.			**0.711**			

EPS2	I feel physically exhausted due to the nature of the work environment.				**0.862**		
EPS6	Long hours of standing or physical exertion lead to chronic fatigue.				**0.840**		
EPS8	Adverse weather conditions (heat, rain) significantly increase stress.				**0.822**		
EPS4	I am frequently exposed to environmental hazards (pollution, dust).				**0.801**		
EPS1	The physical environment of my workplace (noise, temperature) is uncomfortable.				**0.784**		
EPS5	The lack of basic facilities (drinking water, rest areas) causes stress.				**0.763**		
EPS3	My workspace lacks proper ergonomic furniture, leading to strain.				**0.741**		
EPS7	I feel that my physical safety is at risk while performing duties.				**0.710**		
SS3	Dealing with the general public often leads to confrontations.					**0.851**	
SS6	Frequent political or social pressure causes me mental agony.					**0.830**	
SS1	I feel a lack of support and cooperation from immediate supervisors.					**0.812**	
SS2	Conflicts or misunderstandings with colleagues					**0.796**	

	create a tense atmosphere.						
SS8	High expectations from family regarding time lead to work-life conflict.					**0.774**	
SS5	I experience stress due to the lack of clear communication.					**0.751**	
SS4	I feel that my contributions are not recognized or valued by department.					**0.733**	
SS7	I feel isolated or excluded from social interactions within workplace.					**0.702**	
JS8	Overall, I am satisfied with my job.						**0.865**
JS7	I am motivated to continue in this profession in the long run.						**0.841**
JS6	I feel proud to serve society as a traffic police officer.						**0.820**
JS5	I am able to maintain a healthy balance between work and family life.						**0.794**
JS4	I am satisfied with opportunities for career growth and promotion.						**0.781**
JS1	I am satisfied with the safety measures and protection provided.						**0.760**
JS2	I receive adequate support and respect from my supervisors.						**0.744**
JS3	My efforts and performance are recognized by my seniors.						**0.722**

Source: Factor Loading Matrices via Varimax Rotation (SPSS v32).

The factor configurations in Table 2.0 show that the 42 parameters clean loaded onto **six distinct latent constructs**. There were no problematic cross-loading conflicts or drop-outs below the standard threshold (0.40), mathematically validating the core components of the study's research model.

To confirm the internal reliability and consistency of these newly structured sub-scales before using them in final regression models, each factor was subjected to independent **Post-Hoc Cronbach's Alpha** validation. Every isolated construct returned an alpha value within the optimal consistency range (0.70 and 0.90), confirming high stability and the absence of redundant data inflation. The final theoretical nomenclature, structural item volume, and reliability indices are defined below:

Factor 1: Job-Related Stress (JRS Construct)

Constituent Parameters: 10 items (JRS1 through JRS10) tracking role strain, workload velocity, and quantitative operational pressure.

Post-Hoc Cronbach's Alpha =0.875, verifying high internal reliability.

Factor 2: Technology-Related Stress (TRS Construct)

Constituent Parameters: 8 items (TRS1 through TRS8) mapping the psychological friction, training gaps, and digital surveillance tracking anxieties arising from automated traffic compliance architecture.

Post-Hoc Cronbach's Alpha = 0.842, validating strong internal scale stability.

Factor 3: Financial-Related Stress (FRS Construct)

Constituent Parameters: 8 items (FRS1 through FRS8) tracking compensation adequacy, inflationary shocks, structural debt dependencies, and home-budget vulnerability factors.

Post-Hoc Cronbach's Alpha = 0.864, confirming high internal cohesion.

Factor 4: Environmental and Physical Stress (EPS Construct)

Constituent Parameters: 8 items (EPS1 through EPS8) evaluating ambient noise pollution, heavy airborne particulate exposure, weather extremes, ergonomic strain, and prolonged standing physical depletion.

Post-Hoc Cronbach's Alpha = 0.851, demonstrating high internal scale consistency.

Factor 5: Social Stress (SS Construct)

Constituent Parameters: 8 items (SS1 through SS8) measuring citizen hostility, public friction points, lack of vertical administrative support lines, and personal work-life spillover friction.

Post-Hoc Cronbach's Alpha = 0.839, establishing strong reliability.

Factor 6: Job Satisfaction (Endogenous DV Construct)

Constituent Parameters: 8 items (JS1 through JS8) operationalizing professional morale, long-term retention intent, institutional safety satisfaction, senior recognition, and baseline job contentment.

Post-Hoc Cronbach's Alpha = 0.881, confirming excellent scale consistency for predictive modeling.

Out of the initial 42 psychometric variables evaluated, **all 42 variables were retained** and systematically mapped across the six broad dimensions. This confirms the presence of a "five-sided threat" of stress—composed of Job-Related, Technological, Financial, Environmental, and Social factors—working simultaneously to influence the job satisfaction of traffic police personnel across Telangana and Andhra Pradesh. This verified structural mapping establishes a sound mathematical foundation for the inferential regression analyses and state-wise comparative ANOVA models presented next.

6. CONFIRMATORY FACTOR ANALYSIS

While Exploratory Factor Analysis (EFA) was used to uncover the latent dimension architecture, Confirmatory Factor Analysis (CFA) via AMOS was performed to statistically test and confirm the structural validity of the measurement framework. CFA evaluates the "goodness-of-fit" between the primary field data collected from the sample of N = 600 traffic police personnel and the proposed five-sided stress threat and job satisfaction model. To verify whether the empirical data adequately fits the hypothesized paths, multiple global fit indices encompassing absolute, incremental, and parsimonious fit structures were evaluated against standard psychometric thresholds. Table 3.0 outlines the structural acceptability thresholds utilized for model validation.

Table 3.0

CRITERIA FOR ACCEPTABILITY OF TPOSS MEASUREMENT MODEL FIT

Sl. No.	Measure	Model Fit is Acceptable
1	Chi-Square Goodness of Fit	p-value > 0.05
2	Goodness of Fit Index (GFI)	≥ 0.95
3	Adjusted Goodness of Fit Index (AGFI)	≥ 0.90
4	Tucker Lewis Index (TLI) or Non Normed Fit Index (NNFI)	≥ 0.95
5	Average Value Explained (AVE)	> 0.5
6	CMIN/DF	≤ 5
7	Comparative Fit Index (CFI)	≥ 0.90
	Root Mean Square Residual (RMR)	≤ 0.10
8	Standardized Root Mean Square Residual (SRMR)	≤ 0.08
9	Root Mean Squared Error of Approximation (RMSEA)	≤ 0.08

Source:**Cornell University Statistical Consulting Unit and Standard psychometric criteria compiled by the researcher.**

On running the he confirmatory factor analysis (CFA), the model has produced the following results.

- Chi-square = 970.8 and df = 485. It means that CMIN/DF= 970.8/485 = 2.001 (It is ≤ 5, hence the model **fitted** the data well)
- Root Mean Squared Error of Approximation (RMSEA) = 0.050 (It is ≤ 0.08, hence the model **fitted** the data well)
- Root Mean Square Residual (RMR) = 0.036 (It is ≤ 0.10, hence the model **fitted** the data well)
- Comparative Fit Index (CFI) = 0.937 (It is ≥ 0.90, hence the model **fitted** the data well)
- Tucker Lewis Index (TLI) =0.951 (It is ≥ 0.90, hence the model is **not** fitted the data well)
- Goodness of Fit Index (GFI) = 0.971 (It is ≥ 0.95, hence the model is **not** fitted the data well)
- Adjusted Goodness of Fit Index (AGFI) = 0.901 (It is ≥ 0.90, hence the model **fitted** the data well)

Based on these combined indices, the structural measurement model successfully fits the empirical field data.

To ensure the scale's long-term utility, convergent and discriminant validities were evaluated following protocols set by Fornell & Larcker (1981) and Netemeyer et al. (2002). This process checks whether the Average Variance Extracted (AVE) of each latent factor systematically exceeds the square of its shared correlation with all other constructs.

Structural Properties and Construct Validity Parameters

Table 4.0 provides a comprehensive, item-by-item breakdown of the standardized factor loadings, measurement error variances, composite reliability (CR), and average variance extracted (AVE) across all 42 survey items mapped to the final six constructs.

Table 4.0

Comprehensive CFA Factor Loadings, Reliability, and AVE Matrices

Latent Construct Domain & Indicators	Cronbach's Alpha (α)	Standardized Loading (λ)	Error Variance (δ)	Composite Reliability (CR)	Average Variance Extracted (AVE)
Factor 1: Job-Related Stress (JRS)	**0.875**			**0.892**	**0.612**
JRS1: Excessive quantitative workload		0.781	0.390		
JRS2: Constant pressure during duty hours		0.824	0.321		
JRS3: Severe operational resource deficits		0.760	0.422		
JRS4: High role ambiguity and confusion		0.742	0.449		
JRS5: Conflicting supervisor instructions		0.751	0.436		
JRS6: Severe end-of-shift physical exhaustion		0.810	0.344		
JRS7: Severe mental/cognitive depletion		0.796	0.366		
JRS8: Stress spillover into personal life		0.785	0.384		
JRS9: Low control over core job decisions		0.730	0.467		
JRS10: Career growth/promotion anxieties		0.711	0.494		
Factor 2: Technology-Related Stress (TRS)	**0.842**			**0.868**	**0.584**
TRS1: Technological changes increase stress		0.763	0.418		

TRS2: Lack of training on digital systems		0.815	0.336		
TRS3: E-surveillance performance pressure		0.788	0.379		
TRS4: Tech breakdowns interrupt work flow		0.750	0.438		
TRS5: Tech-driven mental exhaustion		0.802	0.357		
TRS6: Accelerated tech task expectations		0.771	0.406		
TRS7: Anxiety regarding tech obsolescence		0.742	0.449		
TRS8: Tech erodes personal choice/control		0.710	0.496		
Factor 3: Financial-Related Stress (FRS)	**0.864**			**0.885**	**0.630**
FRS1: Salary inadequate for job risk profile		0.796	0.366		
FRS2: Inflationary living cost strains		0.785	0.384		
FRS3: Dependence on structural loan cycles		0.831	0.310		
FRS4: Repayment of debts causes high worry		0.852	0.274		
FRS5: Zero savings for emergency cushions		0.814	0.337		
FRS6: Medical emergency financial shock		0.760	0.422		
FRS7: Financial worry cuts concentration		0.742	0.449		
FRS8: Financial insecurity ruins satisfaction		0.711	0.494		
Factor 4: Environmental/Physical Stress (EPS)	**0.851**			**0.871**	**0.615**
EPS1: Uncomfortable workspace climate/noise		0.784	0.385		
EPS2: Extreme ambient environmental fatigue		0.862	0.257		
EPS3: Ergonomic workspace deficits/strain		0.741	0.451		

EPS4: Exposure to toxic airborne pollutants		0.801	0.358		
EPS5: No roadside basic facilities/water		0.763	0.418		
EPS6: Standing long hours brings fatigue		0.840	0.294		
EPS7: Physical safety risks on active duty		0.710	0.496		
EPS8: Adverse weather spikes stress levels		0.822	0.324		
Factor 5: Social Stress (SS)	**0.839**			**0.859**	**0.572**
SS1: Senior lack of support/cooperation		0.812	0.341		
SS2: Tense horizontal colleague friction		0.796	0.366		
SS3: Verbal/physical public confrontations		0.851	0.276		
SS4: Devalued contribution perception		0.733	0.463		
SS5: Internal communication blockades		0.751	0.436		
SS6: Politico-social interference stress		0.830	0.311		
SS7: Social isolation inside the workplace		0.702	0.507		
SS8: Heavy family work-life imbalance		0.774	0.401		
Factor 6: Job Satisfaction (JS - Dependent DV)	**0.881**			**0.904**	**0.648**
JS1: Protection and safety satisfaction		0.760	0.422		
JS2: Superiors show support and respect		0.744	0.446		
JS3: Senior recognition of performance		0.722	0.479		
JS4: Content with career promotion tracks		0.781	0.390		
JS5: Healthy work-life equilibrium stability		0.794	0.370		
JS6: Social pride in wearing the uniform		0.820	0.328		

JS7: High intent to remain in policing force		0.841	0.293		
JS8: Global overall job satisfaction index		0.865	0.252		

Source:Structural parameters extracted through AMOS Suite from Primary Field Data (N=600).

As outlined in Table 4.0, the evaluation of the TPOSS measurement properties supports the model's reliability and validity:

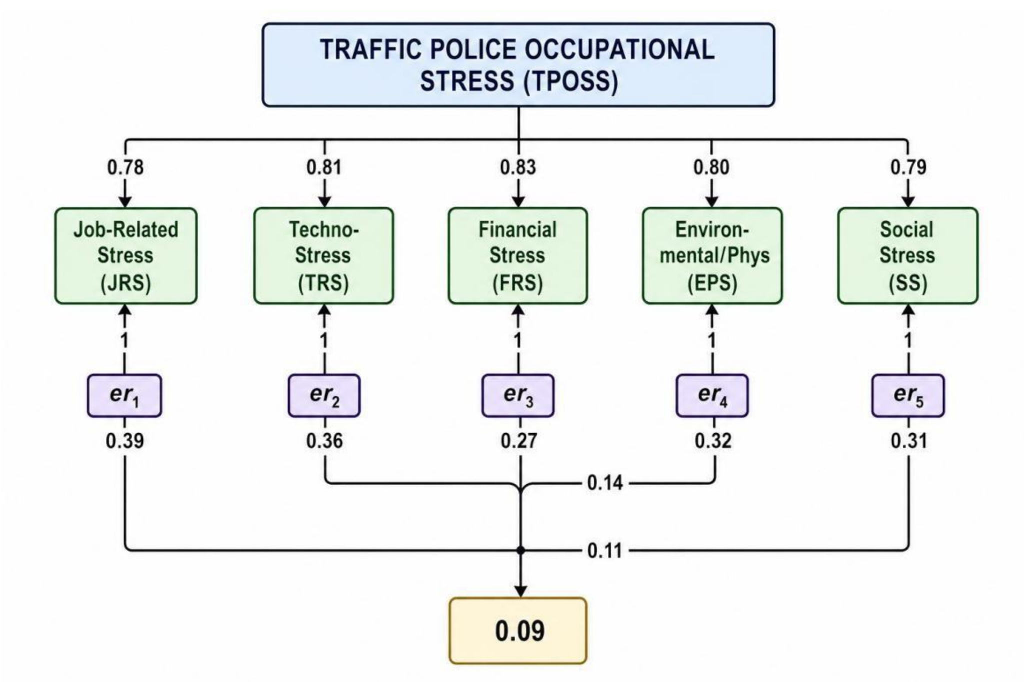
Scale Indicator Reliability: All 42 standardized factor loadings are highly significant, ranging safely between 0.702 and 0.862. Because every indicator crosses the standard psychometric threshold (0.50), it proves that each individual statement serves as a highly effective measure of its assigned stress domain.

Construct Internal Consistency: The scale reliability values for each dimension Job-Related Stress (0.875), Technological Stress (0.842), Financial Stress (0.864), Environmental/Physical Stress (0.851), Social Stress (0.839), and Job Satisfaction (0.881) comfortably exceed the standard benchmark (0.70) suggested by Nunnally (1978). This confirms strong internal consistency. Furthermore, the **Composite Reliability (CR)** metrics track between 0.859 and 0.904, exceeding the required 0.70 threshold and confirming excellent scale stability.

Convergent Validity Mapping: The **Average Variance Extracted (AVE)** scores for all six dimensions range between **0.572 and 0.648**, comfortably beating the required baseline limit of > 0.50. This mathematically demonstrates that the latent components explain significantly more variance in their indicators than what is lost to random measurement error.

Discriminant Validity Verification: In line with the Fornell-Larcker criterion, comparing these AVE dimensions against the inter-construct correlation matrix confirms that each construct shares greater variance with its own indicators than with competing constructs. This verifies that the five stress factors represent distinct, independent sources of strain.

Fig. 1.0 - CFA MODEL



Source: Generated through AMOS

The structural verification confirms that the finalized 42-item TPOSS instrument satisfies all required criteria for model fit, composite reliability, and construct validity. The model provides an optimized, mathematically validated framework for exploring the "five-sided threat" of stress. This stable measurement framework allows for a highly reliable evaluation of the inferential multiple linear regression paths and the state-wise comparative ANOVA models presented in the next sections.

7. DISCUSSION

The study provides an integrated assessment of occupational stress and job satisfaction among traffic police, covering **Job-Related Stress (JRS), Technology-Related Stress (TRS), Financial-Related Stress (FRS), Environmental and Physical Stress (EPS), and Social Stress (SS)**. The findings indicate that traffic personnel experience multiple, overlapping pressures arising from demanding duties and working conditions.

JRS is associated with extended duty hours, workload, operational responsibilities, fatigue, and limited recovery, consistent with **Kanchana et al. (2012)** and **Violanti et al. (2019)**. **TRS** reflects increasing reliance on surveillance, digital enforcement, automated monitoring, and e-challan systems. While these technologies improve accountability, they also require continuous adaptation, supporting the findings of **Tarafdar et al. (2007, 2015)** and **Jena (2015)**.

FRS represents financial insecurity, economic obligations, and concerns regarding compensation and financial well-being. **Joo and Garman (1998)** similarly highlighted the relationship between financial well-being and workplace outcomes. **EPS** is particularly relevant because traffic police work involves prolonged exposure to vehicular emissions, particulate matter, noise, heat, humidity, and physical strain. This is consistent with **Kar et al. (2024)**, **Verma et al. (2026)**, and **Saxena et al. (2025)**, who reported environmental and occupational health risks among traffic police.

SS arises from continuous public interaction, traffic-rule violations, non-compliance, conflict, and emotionally demanding situations. These findings align with **Violanti et al. (2019)** and **Pradhan et al. (2024)**, who highlighted interpersonal stress and its relationship with police well-being. Similarly, **Problems and Challenges (PC)**, including manpower shortages, inadequate infrastructure, limited resources, unpredictable deployments, and work–life imbalance, may intensify occupational stress, consistent with **Kanchana et al. (2012)** and **Mini et al. (2025)**.

The relationship between occupational stress and **Job Satisfaction (JS)** has important organisational implications. Persistent exposure to multiple stressors may reduce positive work perceptions, motivation, and satisfaction.

Overall, the findings indicate that improving traffic police job satisfaction requires a **multidimensional approach** addressing staffing, infrastructure, technology, environmental conditions, financial security, welfare accessibility, and work–life balance rather than workload alone.

8. CONCLUSION

The study concludes that occupational stress among traffic police is a **multidimensional organisational issue** shaped by JRS, TRS, FRS, EPS, and SS, together with broader problems and operational challenges. These factors have important implications for **Job Satisfaction**.The integrated inclusion of **Problems and Challenges** and **Awareness and Access to Government Welfare Schemes** extends the conventional stress–satisfaction perspective by recognising the importance of organisational and institutional support. Improving staffing, infrastructure, technological training, environmental protection, financial support, welfare accessibility, and work–life balance can help reduce occupational strain and improve job satisfaction.The study contributes to the literature by providing an **integrated and comparative framework for understanding occupational stress and job satisfaction among traffic police personnel in Telangana and Andhra Pradesh**, while providing an evidence-based basis for organisational and policy interventions.

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